
APPENDIX C

BIOLOGICAL RESOURCES EVALUATION

Biological Resources Evaluation Report
FOR THE
SAN DIMAS MUNICIPAL CODE TEXT AMENDMENT 20-0005)
CITY OF SAN DIMAS, LOS ANGELES COUNTY, CALIFORNIA



In Support of the CEQA Analysis

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Term
amsl	above mean sea level
AOU	American Ornithological Union
APHIS	Animal and Plant Health Inspection Service
APN	Assessor's Parcel Number
BMPs	best management practices
BRE	Biological Resources Evaluation Report
BSA	Biological Study Area
BUOW	burrowing owl
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
City	City of San Dimas
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	Los Angeles County
CRPR	California Rare Plant Rank
cuckoo	western yellow-billed cuckoo
CWA	Clean Water Act
DBESP	Determination of Biologically Equivalent or Superior Preservation
DSH	diameter at standard height
ESA	Endangered Species Act
°F	degrees Fahrenheit
FAC	facultative
FACW	facultative wetland
GIS	Geographic Information System
GPS	Global Positioning System
HCP	Habitat Conservation Plan
HMMP	Compensatory Habitat Mitigation and Monitoring Plan
IPaC	Information, Planning, and Conservation System
ISA	International Society of Arboriculture
LBV	least Bell's vireo
MBTA	Migratory Bird Treaty Act
MCTA	Municipal Code Text Amendment
MOU	Memorandum of Understanding
NCCP	Natural Community Conservation Plan
NCCP Act	California Natural Community Conservation Planning Act
NEPA	National Environmental Policy Act

Acronym/Abbreviation	Term
NHD	National Hydrography Dataset
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
Porter-Cologne	Porter-Cologne Water Quality Control Act
Rapanos	<i>Rapanos v. United States</i>
RWQCB	Regional Water Quality Control Board
Arid West Supplement	<i>Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)</i>
SWANCC	<i>Solid Waste Agency of Northern Cook County vs. United States Army Corps of Engineers</i>
SWFL	southwestern willow flycatchers
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
UltraSystems	UltraSystems Environmental, Inc.
U.S.	United States
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
1987 Manual	<i>Corps of Engineers Wetlands Delineation Manual</i>
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Waters of the U.S.	Waters of the United States
WDRs	Waste Discharge Requirement
WEAP	Worker Environmental Awareness Program
WQC	Water Quality Certification
§	Section
§§	Sections

EXECUTIVE SUMMARY

UltraSystems Environmental Inc. (UltraSystems) was retained by the City of San Dimas (City) to conduct biological surveys for the proposed Municipal Code Text Amendment (MCTA) 20-0005. The City of San Dimas is located in southeastern Los Angeles County, approximately 30 miles east of the City of Los Angeles.

The proposed MCTA 20-0005 would allow for up to one thousand (1,000) cubic yards of grading, cut and fill, beyond that grading necessary for the primary residence, driveway and garage (residence) for properties located within the proposed MCTA planning area (Planning Area I, Specific Plan 11). However, the proposed development area (project site(s)) includes the residence plus vacant land, up to the Scenic Easement area “conservation easement boundary” within each parcel. Per the previous Development Plan Review Board policy, a swimming pool and five (5) feet of decking surrounding the pool were exempted from the additional grading calculations, which will be codified as part of the proposed MCTA 20-0005. The proposed MCTA 20-0005 would also include development standards for the grading, landscaping and any retaining walls that the additional grading would require. Additional clean-up items are proposed by removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan. UltraSystems has prepared this Biological Resources Evaluation (BRE) Report for the MCTA 20-0005.

UltraSystems conducted a literature review and general surveys of the biological resources potentially associated with the proposed MCTA planning area; this area is referred to as the Biological Study Area (BSA) in this BRE. The BSA encompasses approximately 105.5 acres and includes all areas that could potentially be impacted by the project. Surveys did not extend beyond the BSA. The general biological surveys covered all accessible areas of the BSA. Biologists visited the BSA to conduct the following biological surveys:

- Habitat assessment and plant community mapping.
- General plant surveys.
- General wildlife surveys.
- Wildlife movement evaluation.
- Jurisdictional assessment of waters of the U.S. or State.

This BRE documents the methods and results of the literature review and the field surveys and provides a summary of existing conditions, an assessment of the potential presence of sensitive biological resources, and an analysis of the potential impacts to those resources from project construction and development. It summarizes the biological resources present within the BSA at the time of the field surveys including land cover types, plants and wildlife species, the potential occurrence of special-status plant and wildlife species, waters of the U.S. and State, critical habitat, and potential wildlife corridors within the BSA. The BRE also identifies and analyzes the potential biological significance of implementation of the proposed MCTA 20-0005 in view of federal, state, and local laws, regulations, policies, orders, ordinances and/or management plans, and the project's consistency with local policies and ordinances protecting biological resources.

This BRE was prepared in support of the California Environmental Quality Act (CEQA) review conducted in connection with the project, as well as permits and approvals required for the project by federal and state resource agencies.

Eleven land cover types were observed and mapped within the BSA during the field surveys, seven of which are considered sensitive by CDFW.

Approximately 53 plant species from 29 distinct plant families were observed within the BSA during the field survey. The dominant tree species are coast live oak and California black walnut, with occasional stands of Peruvian pepper trees; however, no special-status plant species were observed within the BSA during the surveys. Coast live oak, California black walnut, and other mature significant trees occur throughout the planning area. Coast live oak woodland and California black walnut woodland are considered to be sensitive by CDFW. Additionally, the City of San Dimas requires tree removal permits and adherence to applicable replacement standards, as per Chapter 18.62 Tree Preservation of San Dimas Municipal Code, are required for project activities that would remove or cause damage to these trees.

Seventeen bird species, seven mammal species, and one invertebrate species were observed within the BSA. Three special-status species, monarch butterfly, Nuttall's woodpecker, and Cooper's hawk were observed within the BSA during field surveys.

The BSA contains mapped water features including freshwater forested/shrub wetlands, riverine areas, and forested/shrub riparian areas. Evidence of hydrologic features, including potential waters of the U.S. and State, were observed within the BSA.

The BSA is not located within a designated or proposed United States Fish and Wildlife Service (USFWS)-designated critical habitat for listed plant or wildlife species. The nearest USFWS-designated critical habitat is for the federal listed species coastal California gnatcatcher (*Poliioptila californica californica*), located approximately 1.5 miles from the BSA.

The BSA acts as a hunting, foraging, and movement area; therefore, the BSA and surrounding areas are suitable wildlife movement corridors. Additionally, the BSA supports habitat for bat maternity roosts and hibernacula (i.e., native wildlife nursery sites).

Implementation of the proposed MCTA 20-0005 would result in direct and indirect impacts to biological resources, including potentially significant impacts to sensitive wildlife species and tree resources. Best management practices, avoidance and protection measures, and mitigation measures are recommended in this BRE to minimize or avoid impacts to biological resources. Implementation of these measures would reduce such impacts to less than significant levels.

Disclaimer Regarding MCTA Biological Analyses: The avoidance, minimization, and compensatory mitigation measures provided in Section 7.0 Mitigation Measures are intended to comprehensively address the potential impacts to biological resources within SP-11 as an entire ecological unit, and per individual parcel, based on preliminary reconnaissance surveys for the purposes of the MCTA. The MCTA considered conceptual impact areas at the time of review and were not applicable to project-specific impacts, which are unknown at this time.

The biological constraints that may require avoidance, minimization, and compensatory mitigation include sensitive vegetation communities, special-status species (e.g., plants and wildlife), seasonal species protections (e.g., reproduction and overwintering), jurisdictional wetlands and waters, riparian drainage segments, protected trees, wildlife corridors, and land management designations.

A qualified biologist will perform focused biological surveys for construction approvals, based on 65 percent to 95 percent complete professional engineering drawings at the time of proposed

development of each individual parcel. The biologist conducting the focused surveys will incorporate the focused survey results and those of the reconnaissance surveys (UltraSystems, 2022) to assign the relevant mitigation for each individual project. The City will require the mitigation in the construction specifications prior to issuance of grading plans approved for each individual land owner (or project applicant). The mitigation measures contained herein are legally binding and are required if impacts to protected biological resources occur as a result of the project.

1.0 INTRODUCTION

UltraSystems was retained by the City to conduct biological surveys and prepare this Biological Resources Evaluation (BRE) Report for the Municipal Code Text Amendment (MCTA) 20-0005. The project is located in the City of San Dimas, Los Angeles County, California (see **Appendix A, Figures**). The City is proposing a MCTA 20-0005 of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code (project), to amend grading limits within Specific Plan 11, Planning Area I (planning area) and to make various clean-up text amendments. The proposed MCTA would also include development standards for the grading, landscaping and any retaining walls that the additional grading would require. Additional text amendments include removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan. The City is the Lead Agency for the purposes of the CEQA.

UltraSystems conducted a literature review and general surveys of the biological resources potentially associated with the planning area (approximately 105.5 acres), this area is referred to as the Biological Study Area (BSA). The BSA includes all areas that could potentially be directly or indirectly impacted by the proposed MCTA (see **Appendix A, Figure 1, Project Boundary and Biological Study Area [BSA]**), including residential lots.

Biological surveys covered all accessible areas of the BSA and did not extend beyond the BSA. Biologists conducted the following biological surveys:

- Habitat assessment, vegetation community and land cover type mapping.
- General plant surveys.
- General wildlife surveys.
- burrowing owl (BUOW) (*Athene cunicularia*) habitat assessment.
- Wildlife movement evaluation.
- Jurisdictional assessment of waters of the U.S. and State.

UltraSystems presents the results and conclusions of the biological surveys within this BRE.

1.1 BRE Purpose

This BRE documents the methods and results of the literature review, and field surveys, and provides a summary of existing conditions, an assessment of the potential presence of sensitive biological resources, and an analysis of the potential impacts to those resources from implementation of the project. It summarizes the biological resources present within the BSA at the time of the field surveys including vegetation communities, plants, and wildlife; and the potential occurrence of special-status plant and wildlife species, jurisdictional waters, critical habitat, and potential wildlife corridors within the BSA. Plant and wildlife species protected by federal agencies, state agencies, and local conservation agencies and organizations, such as the California Native Plant Society (CNPS), are collectively referred to as “special-status species” in this BRE. Some of these plant and wildlife species are afforded special legal or management protection because they are limited in population size, and typically have a limited geographic range and/or limited habitat (avian species protected by the Migratory Bird Treaty Act are not considered special-status species). The BRE also identifies and analyzes the potential biological significance of project implementation in view of federal, state, and local laws, regulations, policies, orders, ordinances and/or management plans, and the project’s consistency with local policies and ordinances protecting biological resources. Finally, it recommends, as appropriate, mitigation measures, including best management practices (BMPs),

avoidance and protection measures, and mitigation measures, to minimize or avoid potential impacts to biological resources to a less than significant level.

This BRE was prepared in support of the CEQA review conducted in connection with the project, as well as permits and approvals required for the project by federal and state resource agencies.

Figures for this BRE can be found in **Appendix A, Figures**. Since common names of plants and wildlife vary between references, scientific names are included upon initial mention of each species, and then the common names are used thereafter. Plant nomenclature within this BRE is based on CNPS' *Inventory of Rare and Endangered Plants of California* (online; CNPS, 2022a) and *The Jepson Manual: Vascular Plants of California*, second edition (Baldwin et al., 2012). Common plant names, when not available from this source, were taken from the CNPS website.

Disclaimer Regarding MCTA Biological Analyses: The avoidance, minimization, and compensatory mitigation measures provided in Section 7.0 Mitigation Measures are intended to comprehensively address the potential impacts to biological resources within SP-11 as an entire ecological unit, and per individual parcel, based on preliminary reconnaissance surveys for the purposes of the MCTA. The MCTA considered conceptual impact areas at the time of review and were not applicable to project-specific impacts, which are unknown at this time.

The biological constraints that may require avoidance, minimization, and compensatory mitigation include sensitive vegetation communities, special-status species (e.g., plants and wildlife), seasonal species protections (e.g., reproduction and overwintering), jurisdictional wetlands and waters, riparian drainage segments, protected trees, wildlife corridors, and land management designations.

A qualified biologist will perform focused biological surveys for construction approvals, based on 65 percent to 95 percent complete professional engineering drawings at the time of proposed development of each individual parcel. The biologist conducting the focused surveys will incorporate the focused survey results and those of the reconnaissance surveys (UltraSystems, 2022) to assign the relevant mitigation for each individual project. The City will require the mitigation in the construction specifications prior to issuance of grading plans approved for each individual land owner (or project applicant). The mitigation measures contained herein are legally binding and are required if impacts to protected biological resources occur as a result of the project.

1.2 Project Location

The planning area is located in the City of San Dimas, Los Angeles County, California (**Appendix A, Figure 2, Regional Location**). It is located in the San Jose Hills, generally bounded by Interstate 10 (I- 10) on the south, State Route 57 (SR-57) on the east, and Walnut Creek on the north and west (**Appendix A, Figure 3, Project Vicinity** and **Figure 1 Project Location and Biological Study Area**). The eastern San Gabriel Valley is north and west of the San Jose Hills, and the Pomona Valley is on the east. The BSA is located on the United States Geological Survey (USGS) 7.5-Minute Topographic Map *San Dimas* Quadrangle, and occupies Township 1 South, and Range 8 West, Sections 17 Southeast and 20 North (**Appendix A, Figure 4, USGS Topographic Quadrangle Map**). The existing surface elevation at the subject property ranges from approximately 680 to 960 feet above mean sea level (amsl).

The BSA is located within the USGS Big Dalton Wash Hydrologic Unit (HU; HU Code 180701060402) within the larger San Gabriel watershed (USGS HUC 18070106) The Big Dalton Wash HU drains an area of approximately 80.7 square miles (USEPA, 2022a).

Under existing conditions, stormwater generated on the undeveloped areas of the BSA either sheet flows down slopes and into the small canyons, where it ponds and infiltrates, or flows into drainage channels and discharges into the surrounding neighborhoods. Stormwater generated on most of the developed areas (residences, streets) flows down local streets and into storm drain inlets on Calle Cristina and Calle Francesca; this storm drain system runs south on Covina Hills Road to Via Verde where it turns east/northeast to Puente Street. The storm drain follows Puente Street to Walnut Creek, where it discharges.

The BSA is in Area I of the City of San Dimas Specific Plan 11, which is located within the southwestern portion of the City. Area is bordered by Puente Street to the north, Via Verde to the southeast, East Covina Hills Road to the southwest, and the City of Covina to the west.

The BSA comprises the western half of Area I (Specific Plan 11). The site is subdivided into 36 residential lots; 29 lots are developed with single-family residences, and seven lots are vacant. The project parcels are mapped on **Appendix A**, Figure 5, *Parcel Map*; the Assessor's Parcel Numbers (APNs) of these 36 lots are presented below:

- | | | | |
|----------------|----------------|----------------|----------------|
| • 844-800-8041 | • 844-803-8034 | • 844-803-8043 | • 844-803-8045 |
| • 844-800-8042 | • 844-803-8036 | • 844-803-8044 | • 844-803-8047 |
| • 844-800-8048 | • 844-803-8040 | • 844-803-8041 | • 844-803-8054 |
| • 844-800-8044 | • 844-803-8033 | • 844-803-8042 | • 844-803-8032 |
| • 844-800-8046 | • 844-803-8035 | • 844-803-8049 | • 844-803-8055 |
| • 844-800-8055 | • 844-803-8037 | • 844-803-8051 | • 844-803-8057 |
| • 844-800-8043 | • 844-803-8039 | • 844-803-8053 | • 844-803-8050 |
| • 844-800-8045 | • 844-803-8046 | • 844-803-8031 | • 844-803-8052 |
| • 844-800-8047 | • 844-803-8048 | • 844-803-8038 | • 844-803-8056 |

According to the City of San Dimas Zoning Map and General Plan, the subject property is zoned “*Single Family, Very Low*”: *density uses are very low-density single family detached and large estate developments* (City of San Dimas, 1991).

The BSA is located in the southwestern portion of the City of San Dimas, County of Los Angeles, California. which is under the jurisdiction of the following resource agency field offices:

- **United States Fish and Wildlife Service (USFWS): Carlsbad Fish and Wildlife Office**
2177 Salk Avenue, Suite 250
Carlsbad, California 92008
Phone: (760) 431-9440
- **California Department of Fish and Wildlife (CDFW): South Coast Region (5)**
3883 Ruffin Road
San Diego, California 92123
Phone: (858) 467-4201
Fax: (858) 467-4299
- **United States Army Corps of Engineers (USACE): Los Angeles District**
915 Wilshire Boulevard, Suite 980
Los Angeles, California 90017
Phone: (213) 452-3908/3333
Fax: (213) 452-4209
- **RWQCB: Los Angeles Region (4)**
320 West Fourth Street, Suite 200
Los Angeles, California 91103
Phone: (213) 576-6600
Fax: (213) 576-6640

1.3 Project Background

The existing San Dimas Municipal Code Chapter 18.518: Specific Plan 11 allows for unlimited grading (cut and fill) for roadway access and excavation to construct building retaining foundations for the primary residence and garage. The Municipal Code also allows up to 35 percent of building lot coverage for the subject residential lots.

- The average lot size for SP-11, Planning Area 1 is 109,021 square feet (sf) (ranges between 30,371 sf to 932,170 sf).
- The average existing 1st floor lot coverage is 6.5 percent (ranges between 0.81 percent to 14.69 percent).
- The average additional first floor building area for the existing homes is 34,251 sf (ranges between 7,253 sf to 318,718 sf).
- The estimated average available grading to accommodate the additional 1st floor building area is 21,500 cubic yards (cy) (ranges between 850 cy to over 200,000 cy).

2.0 PROJECT DESCRIPTION

The project proposes to expand the allowable grading (cut and fill) on each of the 36 residential lots in the planning area by 1,000 cubic yards (cy) per lot, or a total of 36,000 cy. The increase in allowable grading is to permit owners to grade backyards. The current grading quantity permitted onsite is insufficient for grading backyards, and owners must use decks in the rear portions of their lots. The increase in allowable grading does not include what is necessary for the primary residence, driveway, and garage. The proposed increase in grading would not expand the allowable lot coverages of primary residences. Presently, grading for a swimming pool and decking is not allowed and thus also not included in the additional allowable grading calculations.

The current total grading quantity permitted for the primary residence, driveway, and garage on the 36 lots is approximately 774,000 cy (approximately 21,500 cy per lot); thus, the proposed increase is about 4.7 percent of the currently permitted grading quantity. Grading permitted under the existing approved Specific Plan is compared to the additional grading under the proposed MCTA 20-0005 in **Table 2.0-1** below.

Table 2.0-1
GRADING PERMITTED UNDER EXISTING SPECIFIC PLAN AND PROPOSED AMENDMENTS

	Existing Specific Plan Permitted Grading	Proposed Additional Grading
Grading quantity	774,000 total cubic yards average 21,500 cubic yards per lot	36,000 total cubic yards 1,000 cubic yards per lot
Purposes	Mass grading; grading building pads for primary residences, garages, and driveways.	Grading for usable backyards; currently decking is only option for backyard use. Additional grading is not for primary residences, garages, and driveways.

Sources: City of San Dimas, 2022. San Dimas, California Municipal Code Title 18 Zoning, Chapter 18.518 Specific Plan No. 11

2.1 Proposed Municipal Code Text Amendments

The proposed project includes the following amendments to San Dimas Municipal Code Chapter 18.518 Specific Plan No. 11 to preserve the original intent of the specific plan, minimize the visual impacts of potential grading and retaining walls, codify existing policies/practices and eliminate defunct sections of the code.

1. Requirements that proposed grading and retaining walls follow the existing topographic contours present onsite. The proposed grading cuts and/or retaining walls should not cut directly across contour lines.
2. A limitation of retaining walls to a maximum exposed height of twelve (12) feet per wall and a maximum combined exposed height of twenty-four (24) feet. This language is consistent with existing retaining wall height limit standards used in other hillside areas.

3. A requirement that if more than one retaining wall will be constructed directly adjacent to one another, the two walls must be separated by half (1/2) the height of the taller of the two adjacent walls.
4. Requirements to use gravity type retaining walls, unless onsite conditions prohibit their use.
5. Wall materials which must be either slump stone or split-face stone with a tan or earth tone color.

Landscape and irrigation standards which require the planting of trees at the base of the lowest retaining wall and drought tolerant shrubs at the base of every wall. Installation of permanent irrigation shall be required to ensure that the required landscaping survives and is healthy enough to provide screening.

2.2 Project Operation

Project implementation would not change operation of existing and future residences onsite. Land use of the planning area would not change.

3.0 REGULATORY CONTEXT

The project is subject to several federal, state, and local regulations designed to protect and promote environmental quality, and to protect biological resources because of their ecological importance. These regulations are summarized below and are addressed throughout the document in the appropriate subsections.

3.1 Federal Statues, Regulations and Executive Orders

3.1.1 Clean Water Act (CWA)

Section 401 – Clean Water Act

Although the Clean Water Act (CWA) is a federal law, Section 401 of that law recognizes that states have the primary authority and responsibility for setting surface water quality standards, and requires the U.S. Army Corps of Engineers to obtain a state certification that their permits for discharge or dredge and fill material do not violate state water quality standards. Section 401 of the CWA requires every applicant for a Section 404 permit resulting in any discharge of dredge or fill material into Waters of the U.S. to provide a certification that any discharges will comply with the applicable state water quality standards set pursuant to the CWA and applicable state law.

Section 401 is implemented through a Water Quality Certification (WQC) process. In the State of California, the State Water Resources Control Board (SWRCB) has given the responsibility for issuing Section 401 WQCs to the RWQCBs, unless a discharge of dredged or fill material is proposed within more than one region. In the event that a project proposes discharges of dredged or fill material in more than one region, responsibility for issuance of a Section 401 WQC will lie either with the SWRCB, or, upon agreement of the RWQCBs for the affected regions, with the RWQCB chosen in the discretion of the RWQCBs. Cal. Water Code, § 13160; Cal. Code Regs., tit. 23, § 3838. Certification must be based on a finding that the proposed discharge will comply with water quality standards, which include numeric and narrative water quality objectives applicable to identified surface waters in the Water Quality Control Plan (Basin Plan) for the region in which a discharge of fill is proposed. The project would be under the jurisdiction of the Los Angeles RWQCB.

Section 402 Clean Water Act

Pursuant to Section 402(p) CWA, storm water permits are required for discharges from a municipal separate storm sewer system (MS4) serving a population of 100,000 or more. The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) have been authorized by the U.S. Environmental Protection Agency (USEPA) to implement and enforce the Municipal Storm Water Program (USEPA, 2022b).

In the County of Los Angeles, *Order No. R4-2012-0175 as amended by State Water Board Order WQ 2015-0075 and Los Angeles Water Board Order R4-2012-0175-A01 NPDES Permit No. CAS004001 Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4* (MS4 Permit) is currently in effect; the city of San Dimas is a signatory to this permit, and is subject to the waste discharge requirements set forth in this Order.

Section VI(D)(8) of the MS4 Permit applies exclusively to construction sites with construction activities involving soil disturbance with the exception of agricultural activities. Activities covered by

this permit include but are not limited to grading, vegetation clearing, soil compaction, paving, re-paving and linear underground/overhead projects. The City of San Dimas, as signatory to the MS4 permit, shall, through their erosion and sediment control ordinance and/or building permit, require the implementation of an effective combination of erosion and sediment control BMPs to prevent erosion and sediment loss, and the discharge of construction wastes.

Section 404 – Clean Water Act

- Section 404 CWA requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), for the discharge of dredged or fill material into all waters of the United States, including wetlands. Authorizations are conducted through the issuance of Nationwide (or General) Permits, for activities that would cause only minimal permanent individual (between 0.1 and 0.5 acre) and cumulative impacts; through Individual (or Standard) Permits for activities that are likely to have more than a minimal permanent (greater than 0.5 acre) or cumulative impact on aquatic resources; and through Letters of Permission (LOPs) which are a type of individual permit issued through an abbreviated process that includes coordination with federal and state fish and wildlife agencies and a public interest evaluation, but without the 30-day permit notice period that is required for Individual Permits. The project would be under the jurisdiction of the Los Angeles District of the USACE.
- Wetlands and other waters that do not meet the definition of waters of the U.S. are not covered by the CWA; however, they are regulated by the State of California through the Porter-Cologne Water Quality Control Act (Porter-Cologne) and SWRCB Resolution No. 2019-0015 for California.

3.1.2 Endangered Species Act (ESA)

The federal Endangered Species Act of 1973 (Title 16, United States Code [U.S.C.] Sections 1531-1543) (ESA), as amended, designates and provides for protection of listed threatened and endangered plant and animal species, and their critical habitat. The USFWS, in the Department of the Interior, and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), in the Department of Commerce, share responsibility for administration of the ESA. These responsibilities include listing and delisting species, designating critical habitat, and formulating recovery plans. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife.

The ESA is divided into 18 Sections that are intended to work together to prevent species from going extinct by helping to stabilize populations, reduce the threats to their survival, and helping species recover to the point that they no longer require federal protection (USFWS, 2022a; b).

Section 4 (Determination of Endangered Species and Threatened Species)

Section 4 of the ESA addresses listing of species in need of the ESA's protection. Species are listed as either endangered or threatened under Section 4 of the ESA. A federally-endangered species is one that is facing extinction throughout all or a significant portion of its range. A federally-threatened species is one likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Under Section 4, actions needed to recover those species and conserve their habitat are also identified, along with a process for reaching recovery goals that allow for a species' removal from federal protection. The presence on a BSA of any fish or wildlife species that is federally listed as endangered or threatened generally imposes constraints on development to the

extent that development is likely to result in a prohibited “take” of the species or substantial adverse modification of its habitat as described in *Section 9 (Prohibited Acts)*, below.

Section 7 (Interagency Cooperation)

Two sections of the ESA (§7 and § 10) authorize incidental take. Section 7 of the ESA regulates take associated with federal projects or projects that require a federal permit. It also requires federal agencies to use their authority to carry out conservation programs to benefit endangered and threatened species. Under § 7, federal agencies are required to consult with the USFWS or the NMFS to ensure that any action they carry out, including those they fund or authorize (such as through a permit) will not likely jeopardize the continued existence of listed species, or result in the destruction or adverse modification of proposed or designated critical habitat of such species. Under § 7, consultations can either be informal or formal.

Section 9 (Prohibited Acts)

Once a species is listed, Section 9 of the ESA makes it unlawful for any person, including private and public entities, to “take species listed as endangered or without a permit issued pursuant to Section 10 or an incidental take statement issued pursuant to Section 7. Section 9 defines “take” as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” The term “harm” is defined as “an act which actually kills or injures wildlife. Such an act may include substantial habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.”

ESA Section 9s take prohibitions apply to listed wildlife and fish species, but not to plants. Endangered plants are not protected from take, although it is unlawful to remove, possess, or maliciously damage or destroy them on federal lands. Removing or damaging listed plants on state and private lands in knowing violation of state law, or in the course of violating a state criminal trespass law, also is illegal under the ESA.

Section 10 (Incidental Take Permits and Habitat Conservation Plans)

An incidental take permit pursuant to Section 10(a)(1)(B) is required when non-Federal, otherwise lawful activities, including lawful project development, will result in take of threatened or endangered wildlife. Under this provision, the USFWS and/or NMFS may, where appropriate, authorize the taking of federally listed wildlife or fish if such taking occurs incidentally during otherwise legal activities. Section 10(a)(2)(B) requires an application for an incidental take permit to include an HCP. The purpose of the habitat conservation planning process associated with the permit is to ensure there is adequate avoidance, minimization and mitigation measures to address the effects of the authorized incidental take. Section 10 provides a clear regulatory mechanism to permit the incidental take of federally listed fish and wildlife species by private interests and non-Federal governmental agencies.

3.1.3 Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) of 1918 (Title 16, U.S.C. Sections 703 - 712), as amended, implements various treaties and conventions between the United States (U.S.) and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a

permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined in regulations implementing the MBTA as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to carry out these activities.” The MBTA prohibits the collection and destruction of a migratory bird, its nest, and birds or eggs contained in the nest. The USFWS’ Migratory Bird Permit Memorandum (MBPM-2) dated April 15, 2003, clarifies that destruction of most *unoccupied* bird nests is permissible under the MBTA; exceptions include nests of federally listed threatened or endangered migratory birds, bald eagles, and golden eagles. Take under the MBTA does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof. The USFWS has statutory authority and responsibility for enforcing the MBTA (USFWS, 2022c).

3.1.4 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. §§ 4321) requires federal agencies carrying out, funding, or permitting projects, or implementing any other major federal action that significantly adversely affects the quality of the human environment to prepare a detailed environmental impact analysis for the major Federal action. The analysis, known as the Environmental Impact Statement or an Environmental Assessment, must address the adverse environmental impacts of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, alternatives to the proposed action, the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. The Council on Environmental Quality (CEQ) has promulgated regulations for implementing NEPA’s requirements. (40 C.F.R. §§ 1502 et seq.) Pursuant to state and federal law, NEPA evaluations may be prepared in combination with, or may rely upon environmental analyses prepared under the California Environmental Quality Act 40 C.F.R. §§ 1506.2, 1506.4.

3.1.5 Prevention and Control of Invasive Species - Executive Order 13112

Executive Order 13112 (February 3, 1999) directs all federal agencies to work cooperatively to prevent and control the introduction of invasive non-native species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. Executive Order 11312 established a national Invasive Species Council made up of federal agencies and departments and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The Invasive Species Council and Advisory Committee oversee and facilitate implementation of the Executive Order, including preparation of a National Invasive Species Management Plan.

3.2 State Statutes and Regulations

3.2.1 California Environmental Quality Act (CEQA)

The California Environmental Quality Act of 1970 (Title 14, California Code of Regulations, §§ 15002-15387) (CEQA) is California’s broadest environmental law (AEP, 2022). CEQA applies to certain activities of state and local public agencies. It requires lead agencies - that is, those making land use decisions - as well as any other responsible state agencies issuing discretionary permits, to evaluate and disclose the significance of all potential environmental impacts of a project. The lead agency is also responsible for identifying, negotiating and implementing feasible impact avoidance, minimization, or mitigation measures that reduce and compensate for significant environmental

impacts with the goal of reducing those impacts to less than significant levels. Lead agencies determine significance on a project-by-project basis because they must consider all potential risk, including cumulative impacts, within a local and regional context, as well as evaluate unique factors particular to the planning area when exercising their discretion to approve or disapprove a project.

The CEQA Guidelines specify that a project has a significant impact to the environment if, among other things, it has the potential to “substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or an animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species....” [CEQA Guidelines § 15065(a)(1)] (AEP, 2022).

The purpose of CEQA is to:

- Disclose to the public the significant environmental impacts of a proposed discretionary project, through the preparation of an Initial Study, Negative Declaration, or Environmental Impact Report.
- Prevent or minimize damage to the environment through development of project alternatives, mitigation measures, and mitigation monitoring.
- Disclose to the public the agency decision making process utilized to approve discretionary projects through findings and statements of overriding consideration.
- Enhance public participation in the environmental review process through scoping meetings, public notice, public review, hearings, and the judicial process.
- Improve interagency coordination through early consultations, scoping meetings, notices of preparation, and State Clearinghouse review.

3.2.2 California Endangered Species Act (CESA)

The California Endangered Species Act (CESA) (California Fish and Game Code §§ 2050-2089) was enacted in 1984 to parallel the federal ESA and allows the Fish and Game Commission to designate species, including plants, as “threatened” or “endangered” CESA states that all native species of fishes, amphibians, reptiles, birds, mammals, and plants, and their habitat, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. Unlike the ESA, CESA does not include listing provisions for invertebrate species.

CESA makes it illegal to import, export, take, possess, purchase, sell, or attempt to do any of those actions to species that are designated as threatened, endangered, or candidates for listing, unless permitted by CDFW. Section 2080 of the California Fish and Game Code prohibits take of any species that the Commission determines to be an endangered species or a threatened species. “Take” is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

Under Section 2081 of CESA, CDFW may permit take or possession of threatened, endangered, or candidate species for scientific, educational, or management purposes, and may also permit take of these species that is incidental to otherwise lawful activities if certain conditions are met. Some of

the conditions for issuance of permits allowing incidental take are that the adverse effects of the take must be minimized and fully mitigated, adequate funding must be ensured for implementation of identified mitigation, and that the activity shall not jeopardize the continued existence of the listed species. CESA emphasizes early consultation to avoid potential impacts to candidate and listed endangered and threatened species, and to develop appropriate mitigation to offset project caused losses of listed species populations and their essential habitat.

3.2.3 Fully Protected Species - California Fish and Game Code § 3511, § 4700, § 5050 and § 5515

The classification of fully protected was the State of California's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for birds (§ 3511), mammals (§ 4700), amphibians and reptiles (§ 5050), and fish (§ 5515). Fully protected animal species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except for collecting these species for scientific research and relocation of the species for certain purposes. "Take" is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Under Section 2835 of the Fish and Game Code, CDFW may only issue permits allowing incidental take of fully protected species if a NCCP is prepared that provides for the protection of that species in accordance with the requirements and standards applicable to NCCPs (Fish and Game Code Sections 2800-2835). Alternatively, avoidance measures sufficient to prevent incidental take of fully protected species must be incorporated into project design, and construction plans and operations.

3.2.4 Bird Nests and Eggs - California Fish and Game Code § 3503

California Fish and Game Code § 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered take. Avoidance measures sufficient to prevent incidental take of bird nests and eggs protected by this statute must be incorporated into project design, and construction plans and operations.

Birds of Prey and their Eggs – California Fish and Game Code § 3503.5

The word "raptor" is the term used for a group of birds consisting of hawks, falcons, kites, eagles, vultures and owls. Raptors, also referred to as "birds of prey," are a valuable resource to the State of California. More than 30 species of raptors inhabit California at some point in their life cycle. California Fish and Game Code § 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (raptors) or to take, possess, or destroy the nest or eggs of any such birds except as otherwise provided by this code or any regulation adopted pursuant thereto. The order Falconiformes is comprised of four families with around 311 species. These are the birds of prey (falcons, hawks, eagles, vultures, and ospreys). The order Strigiformes, comprised solely of owls, contains two families and over 130 species. All raptors and their nests are protected under § 3503.5. Avoidance measures sufficient to prevent incidental take of these species, their eggs and their nests protected by this statute must be incorporated into project design, and construction plans and operations.

Migratory Birds – California Fish and Game Code § 3513

California Fish and Game Code § 3513 protects California’s migratory birds by making it unlawful to take or possess any migratory non-game bird as designated by the MBTA, except as authorized in regulations adopted by the federal government under provisions of the MBTA. Except as permitted by USFWS, avoidance measures sufficient to prevent incidental take of these species, their eggs and their nests protected by this statute must be incorporated into project design, and construction plans and operations

3.2.5 Native Plant Protection Act (NPPA) – California Fish and Game Code §§ 1900-1913

The Native Plant Protection Act (NPPA), enacted in 1977, allows the Fish and Game Commission to designate native plants as state “endangered” or “rare,” mirroring the designations created for animal species by the CESA of 1970. The NPPA, administered by CDFW, requires all state agencies to utilize their authority to preserve, protect and enhance endangered or rare native plants of California. Section 1908 of the NPPA prohibits the take, possession, propagation, import, export, or sale of any native plant that the Fish and Game Commission determines to be an endangered or rare native plant, except when the take is incidental to agricultural and nursery operations, emergencies, or the possession or sale of real property on which the plant is growing.

CDFW may authorize the take, possession, import, or export of some plants that are protected by the NPPA. It may also authorize take and possession for scientific, educational or management purposes, or authorize take that is incidental to otherwise lawful activities if certain conditions are met. CDFW issues most of these permits to individuals to identify, document and voucher listed plant species, typically during botanical surveys, and may also issue permits to individuals or organizations for other scientific, educational or management purposes, most typically research or recovery actions for state-listed plant species. Section 1913(c) further provides that where the owner of land has been notified by CDFW that native plant listed as rare or endangered is growing on such land, the owner shall notify CDFW at least 10 days in advance of changing the land use to allow for salvage of the listed plant(s) subject to the notification. The failure by CDFW to salvage such plant within 10 days of notification of change in land use shall entitle the owner of the land to proceed with the change.

3.2.6 Construction General Permit; Order 2009-0009-DWQ

If a project will disturb one or more acres of soil during construction, project owners are required by the California State Water Resources Control Board (SWRCB) to obtain coverage under a General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009 0009 DWQ, as authorized by § 402 CWA, [NPDES permit]). The Construction General Permit requires potential dischargers of pollutants into waters of the U.S. to prepare a site-specific Stormwater Pollution Prevention Plan (SWPPP), which establishes enforceable limits on discharges, requires effluent monitoring, designates reporting requirements, and requires construction best management practices (BMPs) to reduce or eliminate point and non-point source discharges of pollutants. Additionally, BMPs must be maintained, inspected before and after each precipitation event, and repaired or replaced as necessary. The SWRCB authorizes Construction General Permits.

For projects that would disturb less than one acre of soil, applicants for grading permits pursuant to the proposed MCTA would be required to comply with the Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County (except those discharges originating from the City of Long Beach MS4), Order No. R4-

2012-0175 as amended by State Water Board Order WQ 2015-0075 and Los Angeles Water Board Order R4-2012-0175-A01 NPDES Permit No. CAS004001 (referred to as the MS4 Permit), to which the City of San Dimas is a Permittee. The MS4 Permit applies to the discharge of pollutants from anthropogenic sources into waters of the U.S. through stormwater and urban runoff conveyance systems, including flood control facilities (e.g., storm drains)

Section IV(D)(8)(d)(1) of the MS4 applies to construction sites of less than one acre, and requires the implementation of an effective combination of erosion and sediment control BMPs to prevent erosion and sediment loss. Sections IV(D)(8)(e) and IV(D)(8)(f) of the MS4 require *operators of public and private construction sites within its jurisdiction to select, install, implement, and maintain BMPs that comply with its erosion and sediment control ordinance*, and state that *the requirements contained in this part apply to all activities involving soil disturbance with the exception of agricultural activities. Activities covered by this permit include but are not limited to grading, vegetation clearing, soil compaction, paving, re-paving and linear underground/overhead projects*. Grading projects of less than one acre would, with compliance with the Los Angeles County MS4 Permit, minimize or avoid potential violations of water quality standards or waste discharge requirements, and would not substantially degrade surface or groundwater quality.

Applicants for grading permits pursuant to the proposed MCTA would be required to comply with § IV(D)(8)(d) of the MS4 Permit, which requires construction best management practices (BMPs) to reduce or eliminate point and non-point source discharges of pollutants, including sediment.

3.2.7 Porter-Cologne Water Quality Control Act

Porter-Cologne defines water quality objectives as the allowable “limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisances within a specific area.” Thus, water quality objectives are intended to protect the public health and welfare, and to maintain or enhance water quality in relation to the existing and/or potential beneficial uses of the water. Water quality objectives apply to both waters of the U.S. and waters of the State. In the State of California, Porter-Cologne is administered in concurrence with the § 401 CWA WQC. As with § 401 CWA, this project is within the jurisdiction of the Los Angeles RWQCB.

3.2.8 State Water Resources Control Board Resolution No. 2019-0015

The California Code of Regulations, Title 23, Section 3831(w) states that “[a]ll waters of the United States are also ‘waters of the state.’” This regulation has remained in effect despite Supreme Court decisions such as *Rapanos* and *SWANCC*, which added limitations to what could be considered a water of the U.S. Because the interpretation of waters of the U.S. in place at the time § 3831(w) was adopted was broader than any post-*Rapanos* or post-*SWANCC* regulatory definitions that incorporated more limitations into the scope of federal jurisdiction, it is consistent with the Water Boards’ intent to include both historic and current definitions of waters of the U.S. into the SWRCBs wetland jurisdictional framework.

As set forth in Resolution No. 2009-0026, although the state of California has historically relied primarily on requirements in the Clean Water Act to protect wetlands, U.S. Supreme Court rulings reducing the jurisdiction of the Clean Water Act over wetland areas by limiting the definition of “waters of the United States” necessitated the use of California’s independent authorities under Porter-Cologne to protect these vital resources.

The inclusion of both current and historic definitions of “waters of the U.S.” ensures some regulatory stability in an area that has otherwise been in flux. The status of a water of the U. S. may only be used to establish that a wetland or water qualifies as a water of the State; it cannot be used to exclude a wetland or water from qualifying as a water of the State. In other words, wetlands that are categorically excluded from qualifying as a water of the U.S. may nevertheless qualify as waters of the State under another jurisdictional category. Examples of waters of the State include (but are not limited to) ephemeral streams and isolated wetlands.

On April 2, 2019, the SWRCB adopted **Resolution No. 2019-0015**, *Amendment to the Water Quality Control Plan for Ocean Waters of California and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California to Establish a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Procedures). for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California (SWRCB, 2019). As they apply to this project, the Procedures provide the SWRCB and its nine RWQCBs to approve a project only if the applicant has demonstrated the following:

- A sequence of actions has been taken to first avoid, then to minimize, and lastly, compensate for adverse impacts that cannot be practicably avoided or minimized to waters of the state;
- The potential impacts will not contribute to a net loss of the overall abundance, diversity, and condition of aquatic resources in a watershed (or multiple watersheds when compensatory mitigation is permitted in another watershed);
- The discharge of dredged or fill material will not violate water quality standards and will be consistent with all applicable water quality control plans and policies for water quality control; and
- The discharge of dredged or fill material will not cause or contribute to significant degradation of the waters of the state.

On January 26, 2021, the Superior Court in *San Joaquin Tributaries Authority v. California State Water Resources Control Board* issued a judgment upholding the adoption of the Procedures as part of the (1) California Ocean Plan and (2) Inland Surface Waters and Enclosed Bays and Estuaries Water Quality Control Plan (ISWEBE Plan) for “waters of the United States” as defined by the Clean Water Act.

On April 6, 2021, the SWRCB issued **Resolution No. 2021-0012** confirming that the “State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State” (1) are in effect as state policy for water quality control for all waters of the State and (2) shall be applied via the inland surface waters and enclosed bays and estuaries plan to only waters of the United States. (SWRCB, 2021)

The SWRCB and its nine RWQCBs have the authority to regulate the discharge of dredged or fill material under § 401 CWA and Porter-Cologne. Dischargers that obtain a federal permit or license that authorizes impacts to waters of the U.S. (i.e., waters that are within federal jurisdiction), such as § 404 CWA and § 10 of the Safe Rivers and Harbors Act, must obtain certification from the SWRCB or a RWQCB to ensure that the discharge does not violate state water quality standards or any other appropriate requirement of State law. When a discharge is proposed to waters outside of federal jurisdiction, the SWRCB and the RWQCBs regulate the discharge under Porter-Cologne through the

issuance of Waste Discharge Requirements (WDRs). CWA § 401 WQCs, WDRs, and waivers of WDRs are referred to as orders or permits.

This project is within the jurisdiction of the Los Angeles RWQCB.

3.2.9 Basin Plans

The SWRCB requires its nine RWQCBs to develop water quality control plans (Basin Plans) designed to preserve and enhance water quality and protect the beneficial uses of all Regional waters. Specifically, Basin Plans designate beneficial uses for surface waters and groundwater, set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State antidegradation policy, and describe implementation programs to protect all waters in the Regions. In addition, Basin Plans incorporate by reference all applicable State and Regional Board plans and policies, and other pertinent water quality policies and regulations. This Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties applies to this project.

3.2.10 Lake or Streambed Alteration Agreement

Sections 1600-1617 FGC of the FGC protect the natural flow and the bed, channel, and bank of any river, stream, or lake designated by the CDFW which is at any time an existing fish or wildlife resource, or a waterbody from which these resources derive benefit. General project plans must be submitted to CDFW in sufficient detail to indicate the nature of the project proposed for construction, if the project would:

- Divert, obstruct, or change a streambed;
- Use material from the streambeds;
- Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a stream.

The project is within the jurisdiction of the South Coast Region of CDFW.

3.2.11 Natural Community Conservation Planning Act of 2003 (NCCP Act)

The California Natural Community Conservation Planning Act (NCCP Act) was enacted to encourage broad-based planning to provide for effective protection and conservation of the State's wildlife resources while continuing to allow appropriate development and growth (California Fish and Game Code §§ 2800 to 2835). NCCPs may be implemented, which identify measures necessary to conserve and manage natural biological diversity within the planning area, while allowing compatible and appropriate economic development, growth, and other human uses. An approved NCCP enables the California Department of Fish and Wildlife to authorize take of species consistent with the NCCP Act and California Fish and Game Code § 2835.

3.3 Regional and Local Ordinances, Plans and Policies

3.3.1 Significant Ecological Areas

Then Los Angeles County Significant Ecological Area (SEA) Program was originally established as a part of the 1980 County General Plan, to help conserve the genetic and physical diversity within Los Angeles County by designating biological resource areas capable of sustaining themselves into the

future. The General Plan 2035 (“General Plan”) updated the SEA boundary map, goals and policies in 2015.

SEAs are places where the County deems it important to facilitate a balance between development and biological resource conservation. Where occurring within SEAs, development activities are carefully guided and reviewed with a key focus on site design as a means for conserving fragile resources such as streams, woodlands, and threatened or endangered species and their habitats.

The SEA Ordinance (Title 22 Planning and Zoning Code) implements the goals and policies of the General Plan by establishing permitting requirements, design standards, and review processes for development within SEAs. The goal of the SEA Ordinance is to guide development to the least impactful areas on a property in order to avoid adverse impacts to biological resources (LACRP 2019, pp. 6-7).

3.3.2 Chapter 18.162 Tree Preservation

Chapter 18.162 Tree Preservation Ordinance (hereafter, Tree Preservation Ordinance) of the San Dimas Municipal Code states the goal of protecting and preserving mature significant trees, as well as “other trees which are determined to be desirable”. The Tree Preservation Ordinance defines a mature significant tree as follows:

“any tree within the city of an oak genus which measures eight inches or more in trunk diameter, and/or any other species of tree that measures ten inches or more in trunk diameter, and/or any multi-trunk tree(s) having a total circumference of thirty-eight inches or more; the multi-trunk tree shall include at least one trunk with a diameter of a minimum of four inches”.

The Tree Preservation Ordinance requires that the trunk diameter must be measured at a point thirty-six inches above the ground at the base of the tree. The ordinance also requires that no significant trees shall be removed or relocated on an undeveloped property without first submitting an arborist report and obtaining a tree removal permit from the city’s Development Services, Planning Division.

Removal or relocation of mature significant trees must be approved by the director of development services or the development plan review board. Section 18.162.020 defines removal to include:

- *Any act which will cause a mature significant tree to die, including but not limited to acts which inflict damage upon the root system or other parts of the tree by fire, cutting, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk.*

This approval is subject to conditions as deemed necessary to implement this chapter’s provisions. Section 18.162.060 Conditions Imposed of the Tree Preservation Ordinance establishes the following as conditions of approval for tree relocation or removal:

- *Tree relocation and/or two for one replacement with minimum fifteen-gallon box tree(s), or other replacement of equivalent value and size, within the subject property. The two for one replacement ratio may be reduced as determined by the final decision making body, if a minimum of one of the following additional findings are made: (1) The reduced replacement requirement is consistent with the purposes of this chapter, (2) the tree(s) in question are located where the impact of the tree removal on the community is limited (such as trees in a*

generally flat portion of the rear yard of a single-family house that are deemed to have less public benefit);

- *When on-site features, project constraints, and/or other considerations exist which prevent reasonable on-site relocation, relocation to an approved off-site location shall be permitted;*
- *If said conditions are imposed, the owner will be responsible for all replacement and relocated trees for a minimum period of two years. If during this time the tree(s) is (are) declared unhealthy by a certified arborist as set forth in Section 18.162.090, the diseased trees shall be removed and replaced at the cost of the applicant, as set forth in Section 18.162.100*
- *A maintenance agreement shall be submitted by the applicant and established for each replaced and relocated tree. The maintenance agreement and maintenance responsibility shall be transferred with the sale of the property if title to the property is transferred within the specified maintenance period. (Ord. 1165 § 4, 2006)”*

In addition, the Tree Preservation Ordinance states in Section 18.162.080 states that *All trees should be protected*, but provides a list of exceptions to the Ordinance.

4.0 STUDY METHODS

This Section describes the study methods used by biologists for evaluating the biological resources within the BSA and the project vicinity.

4.1 Literature Review and Findings

Prior to field surveys, biologists conducted a literature review to identify habitat, special-status plant and wildlife species, potential jurisdictional areas (i.e., waters of the U.S. and State), critical habitat, and wildlife movement corridors potentially associated with the BSA. Biologists reviewed relevant literature, databases, agency web sites, reports and management plans, Geographic Information System (GIS) data, maps, and aerial imagery obtained from public domain sources. The review also helped to determine which biological surveys may be required prior to site construction and development.

4.1.1 Topography and Physical Features

To gain a perspective of the topographic and physical features associated with the BSA and project vicinity, biologists reviewed maps such as the USGS 7.5-Minute Topographic Map *San Dimas Quadrangle* and current aerial imagery (Google Earth Pro, 2022). Information obtained from this review included onsite and offsite locations of city and county boundaries and jurisdictions; valleys, hills, and mountain ranges; park boundaries; natural and man-made drainages, potential wetlands, and open waters (lakes, ponds, etc.); plant community boundaries; land use such as developed land and natural open space; important landmarks; roads, highways, paths, and trails; and potential wildlife movement corridors.

4.1.2 Soils

The Web Soil Survey, operated by the United States Department of Agriculture's (USDA's) Natural Resources Conservation Service (NRCS), was used to create a custom soil resource report for a description of the soils associated with the BSA (Soil Survey Staff, 2022). The Web Soil Survey provides soil data and information produced by the National Cooperative Soil Survey.

The NRCS soil survey for *Los Angeles County, California, Southeastern Part* has mapped three soil unit types within the BSA (see **Appendix A**, Figure 6, *USDA Soils*), which are presented in **Section 5.1.3**.

4.1.3 Sensitive Vegetation Communities and Special-Status Plant and Wildlife Species

The methods described below were used to research and derive a comprehensive project-specific list of sensitive habitats, and special-status plants and wildlife to target during the field surveys. The literature review and query of the databases for reported locations of special-status species and habitat helped to identify the known locations of these resources in the project region and assisted in identifying the potential for onsite occurrence of such species.

- CDFW's California Natural Diversity Database (CNDDB) was used to identify sensitive vegetation communities and special-status plant and wildlife species that may exist within the BSA and within a ten-mile radius of the site (CNDDB, 2022a).
- The USFWS' Information, Planning, and Conservation (IPaC) system was used to identify federal threatened and endangered plant and wildlife species and other natural resources of concern that may exist within the BSA (USFWS, 2022d).

- Previous consultant studies and reports near the BSA and project vicinity were reviewed to gain a sense of the existing conditions at the time the studies were conducted.

Although the inventory list of special-status plant and wildlife species was not exhaustive of all species that might be of concern for the property, it provided a wide range of species that are representative of the habitat in the area. Special-status plant species that have been recorded within two miles of the BSA are shown in **Figure 7, CNDDDB Known Occurrences Plant Species and Habitats** (see **Appendix A**).

Sensitive Vegetation Communities

Sensitive vegetation communities (also called sensitive natural communities or sensitive habitat) are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental impacts of projects (CDFW, 2018). Sensitive habitats are often threatened with local extirpation and are therefore considered as valuable biological resources. The most current version of CDFW's *California Natural Community List* indicates which natural communities are sensitive given the current state of the California classification (CDFW, 2022a). The *California Natural Community List, Preliminary Descriptions of the Terrestrial Natural Communities of California*. State of California (Holland, 1986) and *A Manual of California Vegetation, Second Edition* (Sawyer et al., 2009) were referenced for ranking the conservation status of vegetation communities within the BSA. The *California Natural Community List* includes alliance rankings according to their degree of imperilment. NatureServe is a non-profit conservation organization that provides scientific information about rare and endangered species and threatened ecosystems. NatureServe rankings are included as pertinent to sensitive natural communities, discussed in **Section 5.2**. For this BRE, vegetation communities are considered "sensitive" if they meet any of the following criteria:

- Recognized and considered sensitive by CDFW, USFWS, and/or special interest groups such as the CNPS.
- Habitat is under the jurisdiction of the USACE pursuant to Section 404 of the CWA and/or is under the jurisdiction of the CDFW pursuant to §§ 1600-1612 of the California Fish and Game Code.
- Known or believed to be of high priority for inventory in the CNDDDB.
- Considered regionally rare.
- Has undergone a large-scale reduction due to increased encroachment and development.
- Supports special-status plant and/or wildlife species.
- Functions as an important corridor for wildlife movement.

Based on a review of the CNDDDB list generated for this project (CNDDDB, 2022a), six sensitive habitats have been recorded within ten miles of the BSA (**Table 4.1-2, CNDDDB Sensitive Habitat within Ten Miles of the BSA**).

TABLE 4.1-2
CNDDDB SENSITIVE HABITAT RECORDED WITHIN TEN MILES OF THE BSA

Holland Natural Community	MCV Common Alliance Name
Riversidian alluvial fan sage scrub	California buckwheat - white sage scrub or Scale broom scrub
Southern sycamore-alder riparian woodland (62400)	California sycamore - coast live oak riparian woodlands
California walnut woodland (71210)	California walnut groves
Southern coast live oak riparian forest (61310)	Southern Coast live oak riparian forest
Walnut forest (81600)	California walnut groves
Canyon live oak forest (81320)	Canyon live oak forest and woodland

Special-Status Plants

Plant species that are designated federally or state listed endangered, threatened, candidate, or state rare under the ESA, CESA, and/or the NPPA are referred to as “listed species”. Special-status plant species that have no designated status under the ESA, CESA, and/or the NPPA, but are designated as sensitive or locally important by federal agencies, state agencies, or nonprofit resource organizations such as the CNPS, are referred to as “sensitive” in this BRE.

Twenty-three special-status plant species were identified based on a literature review and query from publicly available databases (USFWS, 2022d and 2022e, CNDDDB, 2022a, CNPS, 2022a) for reported occurrences within a ten-mile radius of the BSA. (see **Appendix A**, Figure 7, *CNDDDB Known Occurrences Plant Species and Habitats*). Each special-status plant species was assessed for its potential to occur within the BSA by comparing its habitat, elevation range and distribution obtained from the literature review, the CNPS website (CNPS, 2022a) and other databases with the location and elevation range of the BSA. A species was determined to have “no potential to occur” or as “not expected to occur” within the BSA if the BSA is outside the species’ known distribution and/or the species’ known elevation range, and/or if there is lack of suitable habitat conditions within the BSA to support the species.

Special-status plant species that were determined to have no potential to occur or are not expected to occur within the BSA were eliminated from further evaluation. The analysis of the occurrence potential of special-status plant species, including those determined to have no potential to occur or not expected to occur in the BSA, can be found in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

Twelve special-status plant species were determined to have at least a low potential to occur in the BSA. The special-status plant species and sensitive natural communities that have been recorded within two miles of the BSA are shown on **Figure 7**, *CNDDDB Known Occurrences: Plant Species and Habitats* (**Appendix A**).

Special-Status Wildlife

Wildlife species that are designated federally or state listed endangered, threatened, candidate, or state rare under the ESA, CESA, and/or the NPPA are referred to as “listed species”. Special-status

wildlife species that have no designated status under the ESA, the CESA, and/or the NPPA, but are designated as sensitive or locally important by federal agencies, state agencies, local agencies and nonprofit resource organizations such as the CNPS are referred to as “sensitive” in this BRE.

Forty-seven special-status wildlife species were identified based on a literature review and query from publicly available databases (CNDDDB, 2022a; USFWS, 2022d, e) for reported occurrences within a ten-mile radius of the BSA. These species were identified by one or more of the following means: reported in the search, recognized as occurring based on previous surveys or knowledge of the area, or observed during the habitat assessment survey. Five listed and 20 sensitive wildlife species were determined to have at least a low potential to occur in the BSA. Three special-status species were observed in the BSA and were therefore determined to be present. These species are monarch butterfly, Nuttall’s woodpecker, and Cooper’s hawk. Special-status wildlife species that have been recorded within two miles of the BSA are found in **Appendix A**, Figure 8, *CNDDDB Known Occurrences Wildlife Species and Habitats*.

Each special-status wildlife species was assessed for its potential to occur within the BSA by comparing its habitat range and distribution (if known) with the location and elevation range of the BSA. A species was determined to have no potential to occur or is not expected to occur within the BSA if the BSA is outside the species’ known geographic range and/or the species’ known elevation range. Through this analysis, 10 of the special-status wildlife species were determined to have no potential to occur or are not expected to occur within the BSA and were eliminated from further evaluation. It is anticipated that the project will have no impacts to these species and they are listed but not discussed further in this BRE. All wildlife species analyzed through the literature study, including those species that were determined to have no potential to occur or are not expected to occur, are discussed in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

4.1.4 Protected Trees

Prior to field surveys, UltraSystems biologists reviewed the following federal, state, regional and local regulatory agencies to determine which habitat and tree species are protected:

- The State and Federally Listed Endangered, Threatened, and Rare Plants of California (CNDDDB, 2022b) which lists species that are protected by state and/or federal acts such as CESA and ESA.
- The CNPS Inventory of Rare and Endangered Plants (CNPS, 2022a)
- City of San Dimas Tree Preservation Ordinance (City of San Dimas, 2019)

Of the abovementioned regulatory agencies, the City tree preservation ordinance (City of San Dimas, 2019) establishes the most specific protections and mitigation requirements for various tree species that occur on development sites. As described in **Section 3.3.2** of this BRE, the tree preservation ordinance defines the types of protected trees and the DSH requirements for each type of protected tree.

4.1.5 Waters of the U.S. and State (including Wetlands)

Aerial imagery was reviewed to identify natural and man-made drainages, open water (lakes, ponds, etc.), and other features that may be subject to federal or state jurisdictional authority within the BSA. The USGS 7.5-Minute Topographic Map *San Dimas* Quadrangle was reviewed to identify potential presence or absence of onsite and offsite watercourses, and topographic features that may be indicative of water features. Topographic maps do not show all drainages that may exist.

The National Wetlands Inventory (NWI) database and maps developed by the USFWS were used as preliminary indicators of potential wetland areas based on changes in vegetation patterns as observed from satellite imagery. The NWI data were viewed in GIS platforms (Google Earth Pro, 2022), including the USFWS Wetlands Mapper (USFWS, 2022f) to identify potentially jurisdictional features within the planning area as indicated from topographic changes or visible stream patterns. The digital wetland data for the project vicinity was later verified during biological surveys.

The USGS National Hydrography Dataset (NHD) was also used to identify hydrologic features such as rivers, streams, canals, lakes, and ponds. (USGS, 2022).

Additionally, the watershed boundary data set containing the most current 10-digit and 12-digit HUCs was obtained in geodatabase form from the USGS to aid with assessing USACE jurisdiction of waters draining the BSA.

The following were also reviewed and consulted:

- *Corps of Engineers Wetlands Delineation Manual (i.e., 1987 Manual)*;
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (Arid West Supplement; USACE, 2008)*;
- *The National Wetland Plant List. version 3.4* (USACE, 2018);
- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley, 2008); and
- *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar, 2010).

The USACE published the 1987 Manual for the identification and delineation of wetlands which have since been superseded and presented in regional supplements. In 2008, the USACE published the Arid West Supplement, which is a supplement to the 1987 Manual and describes wetland indicators, delineation guidance, and other information that is specific to the arid west region (USACE, 2008).

4.1.6 Critical Habitat

When a species is listed as federal endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. Under the ESA, the Secretary of the Department of the Interior is required to designate "critical habitat" for each species it lists under the ESA. Federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitat. Section 3 of the ESA defines critical habitat for a threatened or endangered species as [ESA § 3(5)(A)]:

- The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of the ESA, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and

- Specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Designated critical habitat is described in 50 CFR Parts 17 and 226. Critical habitat may include areas that are not currently occupied by the species, but that will be needed for its recovery. In addition, the USFWS normally excludes developed areas within mapped critical habitat boundaries as critical habitat. The USFWS' Critical Habitat Portal was reviewed to identify federal threatened and endangered species designated final and proposed critical habitat designations within ten miles of the BSA (USFWS, 2022d).

4.1.7 Wildlife Corridors

A wildlife corridor is a connection of habitat, generally native vegetation, which joins two or more larger areas of similar habitat that are otherwise separated by natural barriers, changes in vegetation composition, or land permanently altered for human activities; and infrastructure, including roads, railroads, residential development, or fencing. When native vegetation is cleared, fragmented patches of open space or isolated “islands” of wildlife habitat are created. Fragmentation and habitat loss are the two main contributors to continuing biodiversity decline. The main goal of natural corridors is to facilitate movement of individuals, through dispersal, seasonal migration, and movement for foraging, breeding, cover, etc. Corridors allow for physical and genetic exchange between isolated wildlife populations and are critical for the maintenance of ecological processes, including allowing for the movement of animals and the continuation of viable populations and higher species diversity.

Habitat within the corridor generally contains biological and physical features that are needed to temporarily support wildlife and allow avian and ground-dwelling wildlife to safely move through it. Wildlife corridors may either be contiguous strips of vegetation and habitat, such as ridgelines or riverbeds, or intermittent patches of habitat or physical features spaced closely enough to allow safe travel. Corridors can be natural, such as a riparian corridor, or man-made, such as culverts, tunnels, drainage pipes, walls, underpasses, overpasses, or streets. Man-made corridors are often referred to as “wildlife crossings” and they allow wildlife to pass over, under, or through physical barriers that otherwise hinder movement. Wildlife corridors also vary greatly in size, shape, and composition.

In general, the wider and more safeguarded a wildlife corridor is from adjacent human activities, noise, traffic, and light, the better it functions for the movement of wildlife. To determine the potential for the BSA to contain wildlife corridors, biologists used the BIOS Habitat Connectivity Viewer to search for CDFW Essential Connectivity Areas, Natural Landscape Blocks, and Interstate Connections within the BSA and vicinity (CDFW, 2022b). In addition to reviewing the BIOS Habitat Connectivity Viewer, biologists reviewed the *San Dimas* Quadrangle Map and viewed aerial imagery to search for physical features that might serve as wildlife corridors. Biologists also used GIS software to determine the BSA's location in relation to areas that could serve as wildlife corridors. Finally, the literature review also included maps and reports on wildlife home ranges and migration and dispersal patterns (CDFW, 2014).

4.1.8 Significant Ecological Areas (SEAs)

The Los Angeles County SEA Program consists of the following components: the SEA Goals and Policies found in the Conservation and Natural Resources Element of the Los Angeles County General Plan 2035; the Significant Ecological Areas and Coastal Resource Areas Policy Map (“SEA Boundary

Map”) also found in the Los Angeles County General Plan 2035; and the SEA Ordinance of the County Zoning Code.

Areas of the County designated as SEAs satisfy at least one of the following six SEA Selection Criteria:

- A. *Habitat of core populations of endangered or threatened plant or animal species.*
- B. *On a regional basis, biotic communities, vegetative associations, and habitat of plant or animal species that are either unique or are restricted in distribution.*
- C. *Within the County, biotic communities, vegetative associations, and habitat of plant or animal species that are either unique or are restricted in distribution*
- D. *Habitat that at some point in the life cycle of a species or group of species, serves as concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or in the County.*
- E. *Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations or represent unusual variation in a population or community.*
- F. *Areas that would provide for the preservation of relatively undisturbed examples of the original natural biotic communities in the County*

Appendix E of the Los Angeles County General Plan includes detailed descriptions of each SEA, including boundaries, representative resources, wildlife movement opportunities, and designation criteria analysis. The SEA designation does not identify every individual biotic resource, and SEAs are not preserves or conservation areas; rather, SEAs are areas in which planning decisions are made with extra sensitivity toward biological resources and ecosystem functions (LACRP, 2019, pp. 6-7)

4.2 Field Survey Methods

This Section describes the field survey methods used by UltraSystems biologists within the BSA during the 2022 field surveys. Biologists visited the BSA to conduct the following biological surveys:

- Habitat assessment and plant community and land cover type mapping;
- General plant surveys;
- General wildlife surveys;
- Burrowing owl (*Athene cunicularia*; BUOW) habitat assessment
- Wildlife movement evaluation;
- Jurisdictional assessment (waters of the U.S. and State).

The purpose of the field work was to evaluate the initial results of the literature review and to collect additional data on existing site conditions. The general biological surveys covered accessible areas of the BSA, including areas that will be impacted by the project. The surveys were conducted during the daytime on foot by walking slowly across each habitat type, where accessible. For the BUOW habitat assessment survey, biologists only covered those specific habitat areas that are known to provide suitable habitat for the BUOW. Biologists used binoculars from strategic vantage points whenever direct access was not possible, due to private property with no access rights, chain-linked fences, and locked gates. Observations were also made with aerial imagery for inaccessible areas.

Field surveys were conducted as described in **Table 4.2-1**.

Table 4.2-1
FIELD SURVEY INFORMATION

Survey Date	Survey Time	Temp. °F	Conditions	Biologist(s)	Survey Conducted
June 30, 2022	10:00 a.m. – 2:30 p.m.	79-83°F	0% cc 0% precip. 0-3 mph wind	MT	Reconnaissance Survey
July 1, 2022	7:45 a.m. – 5:15 p.m.	74-91°F	0% cc 0% precip. 0-1 mph wind	MT & JM	Reconnaissance Survey
July 19, 2022	8:00 a.m.- 12:00 p.m.	71-89°F	0% cc 0% precip. 0 mph wind	MT & JM	Spot check areas for mapping (no field form)
August 4, 2022	7:30 a.m. – 2:00 p.m.	70-93°F	50-70% cc 0% precip. 0 mph wind	MT/ES	Reconnaissance Survey
August 5, 2022	7:30 a.m. – 3:00 p.m.	71-94°F	0% cc 0% precip. 0 mph wind	MT/ES	Reconnaissance Survey
Notes					

MT = Michelle Tollett; JM = Joyce Mak; ES = Erik Segura – cc = cloud cover; precip = precipitation

Biologists used pertinent regional flora and fauna field guides, topographic, and aerial maps during field surveys to help direct them in the field, to assist in identifying habitat and physical features, and to identify and record special-status species. In addition, biologists used Global Positioning System (GPS) units and other GIS and survey-related techniques, hardware and software to collect data and populate attributes required by the relevant agencies. Digital color photographs were taken during the field surveys to record site conditions at the time of the field surveys. The methods for each type of biological surveys are described in the following sections.

4.2.1 Habitat Assessment and Land Cover Type Mapping

The general habitat assessment and vegetation mapping survey was conducted by UltraSystems biologists (see **Table 4.2-1**). Areas within the BSA were surveyed using a meandering search pattern pedestrian and binocular survey within the BSA. Offsite areas During the survey, plant and wildlife species, vegetation communities, and land cover types were identified.

Biologists characterized the existing habitat and searched for the presence of sensitive vegetation communities. The purpose of the habitat assessment was to ascertain existing site conditions and identify habitat areas that could be suitable for special-status plant and wildlife species.

Descriptions of vegetation communities, land cover types and habitat within the biological survey areas were based on the dominant perennial plant species or physical features. Generally, classifications of habitat types or vegetation communities were based on *A Manual of California Vegetation, Second Edition* (Sawyer et al., 2009) with modifications to better represent existing site conditions. Each habitat type identified in Sawyer et al. (2009) was cross-referenced with the following resources and classification systems so that a more accurate characterization of the existing habitat types and vegetation communities could be identified: *Preliminary Descriptions of the Terrestrial Communities of California* (Holland, 1986), and the CDFW's *California Natural Community List* (CDFW, 2020).

Vegetation communities observed by the biologists were identified and mapped in the field by marking their limits on an orthorectified aerial image or delineated using a GSP unit. Boundaries of private property (i.e., project sites) that would potentially be impacted by grading under the proposed MCTA were given particular attention.

In addition to the vegetation communities, topography, soil characteristics, substrates, and disturbed and developed areas were components of the habitat assessment in order to determine suitability for special-status plants and wildlife. Following the field mapping, UltraSystems' GIS staff downloaded the data from the GPS units and/or digitized the boundaries from aerial maps into an ArcGIS file. Once the boundaries were in ArcGIS, the acreage of each land cover feature present within the BSA was calculated.

4.2.2 General Plant Surveys

Prior to the start of field surveys, biologists researched information on the blooming periods and habitat preferences for the special-status plants determined to have potential to occur within the BSA based on known distribution and elevation extent within the species range. Biologists then surveyed the BSA to identify habitat, vegetation, and for the potential presence of special-status plant species, focusing on areas that appeared to provide suitable habitat for special-status plant species. Plant species were identified in the field and also in the office, when necessary, using plant field guides and taxonomical guides, such as *The Jepson Manual: Vascular Plants of California*, second edition (Baldwin et al., 2012). All identifiable plant species encountered during the field surveys were recorded in field notes.

The biologists paid special attention to areas that appeared to provide suitable habitat for special-status species. Special focus was given to potential jurisdictional sites. Plant species were identified using plant field and taxonomical guides, such as *The Jepson Manual: Vascular Plants of California*, second edition (Baldwin et al., 2012). Plant species that would be encountered during the field surveys would be identified, recorded in field notes, counted (if population was small) or estimated (if population was large), and mapped on an aerial map and/or with a GPS unit. Diagnostic photographs would also be taken of special-status plants where they occurred, as well as representative habitat.

Survey tasks included completion of a list of taxa identified throughout the BSA and subsequent addition of new taxa as they were discovered. Unknown species were identified at a later date using dichotomous keys, high quality photos, and other proprietary identification aids. A complete list of all species documented onsite is in **Appendix D, Plant and Wildlife Species Recorded During Field Surveys**.

After the field surveys and mapping of the land cover types were complete, an additional evaluation was conducted in the office for each special-status wildlife species in the wildlife inventory. The evaluation considered whether the BSA contained suitable habitat to support those special-status wildlife species. A species was determined to have no potential to occur or is not expected to occur within the BSA if suitable and adequate biological and physical features that are needed to support the wildlife species are absent from the BSA. Special-status wildlife species determined to have no potential to occur or are not expected to occur within the BSA and therefore will not be affected by the project are listed in **Section 5.4.2, Listed Endangered, Threatened, and Candidate Wildlife**, and **Section 5.4.3, Sensitive Wildlife**, but are otherwise eliminated from further evaluation and are not discussed further in this BRE. The potential to occur analysis can be found in **Appendix B, Special-Status Species Occurrence Potential Determination**.

The literature review, habitat assessment, and general plant surveys concluded that the BSA contains suitable habitat, soils, and/or other factors to support several of the special-status species in the plant inventory. It was determined that 14 of the special-status species in the plant inventory have at least a low potential to occur within the BSA; these species are presented in **Appendix B, Special-Status Species Occurrence Potential Determination**.

4.2.3 General Wildlife Surveys

Prior to conducting field surveys, biologists researched information on the natural history and habitat preferences for the special-status wildlife determined to have potential to occur within the BSA based on known distribution and recorded observations. The BSA is within the general distributional range of several special-status vertebrate species.

Biologists surveyed the BSA for common wildlife and the presence of special-status wildlife species. The purposes of the wildlife surveys were to note those species observed, ascertain general site conditions, and identify areas with habitat that would be suitable for special-status wildlife species.

Wildlife species encountered visually or audibly during the field surveys were identified and recorded in field notes. Biologists also recorded signs of wildlife, including animal tracks, burrows, dens, nests, nest sites, scat, or remains. They also surveyed areas that would potentially serve as roosting habitat and/or hibernacula for bat species.

After the field surveys and mapping of the land cover types were complete, an additional evaluation was conducted in the office for each special-status wildlife species in the wildlife inventory. The evaluation considered whether the BSA contained suitable habitat to support those special-status wildlife species. A species was determined to have “no potential to occur” within the BSA if suitable and adequate biological and physical features that are needed to support the wildlife species are absent from the BSA. Special-status wildlife species determined to have no potential to occur within the BSA, and therefore will not be affected by the project, are listed in **Section 5.4.2, Listed Endangered, Threatened, and Candidate Wildlife**, and **Section 5.4.3, Sensitive Wildlife**, but are otherwise eliminated from further evaluation and are not discussed further in this BRE. The potential

to occur analysis can be found in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

4.2.4 Waters of the U.S. and State (including Wetlands)

Under existing conditions, stormwater generated on the developed portions of the southern half of the BSA enters the municipal storm drain system on the north and south corners of Calle Cristina at the intersection of Calle Francesca and subsequently into the municipal storm drainage system (which is comprised of a combination of standard culverts and storm drains, and open ditches). Stormwater generated on the undeveloped areas of the BSA sheet flows down slopes and either into the small canyons, where it ponds and infiltrates, or directly into open ditches that direct stormwater into the storm drain system. Ultimately, stormwater generated on the BSA is discharged into Walnut Creek (see **Section 5.5**).

4.2.5 Wildlife Movement Evaluation

Biologists conducted an evaluation of potential wildlife movement within the BSA and vicinity through a literature review, field surveys, and by examining aerial imagery and maps. While in the field, biologists searched for potential natural and man-made travel routes that wildlife could use to traverse the site. Biologists assumed wildlife species would use these linear features for travel as well as natural areas. Biologists also searched for natural and man-made barriers to wildlife movement, such as permanent structures, or densely commercialized or industrialized areas that could interfere with the movement of wildlife.

5.0 RESULTS

This section describes the results of the literature review and the conditions existing within the BSA at the time the biological field surveys were conducted.

5.1 Environmental Setting

The BSA is located in a setting that contains primarily developed (residential/suburban) and landscaped areas. Much of the land surrounding the BSA has been developed and landscaped.

The topography of the BSA can be characterized as an area of ridges and small vegetated canyons. Most of the ridges are developed with single-family residences on large parcels; these parcels slope toward the canyons and tend to be well-vegetated beyond their landscaped backyards.

The BSA is not located within or adjacent to a flood hazard zone designated by the Federal Emergency Management Agency (see **Section 4.10**).

5.1.1 Land Use

Between 1948 and prior to residential development in the 1980s, the BSA consisted of open space supporting trees and grasslands, interspersed by small canyons (NETROnline, 2022).

5.1.2 Local Climate

The City of San Dimas has a mild, semi-arid climate with Mediterranean characteristics. Most precipitation falls between November and March. Semi-arid climates tend to support short or scrubby vegetation, with semi-arid areas usually dominated by either grasses or shrubs. The nearest climate data station to the BSA is operated by the California Irrigation Management System (CIMIS) and is located at Cal Poly Pomona (CIMIS Station 078), approximately two miles southeast of the BSA; this station is at an elevation of 730 feet, which is similar to the elevation of the BSA.

CIMIS Station 078 has been in operation since March 14, 1989. Between January 1, 1990 and December 31, 2021, this station recorded an average annual precipitation of 15.3 inches; average maximum air temperature for the period of record was 76.1 °F, and average minimum temperature was 50.5 °F (CIMIS, 2022).

5.1.3 Soils

The USDA NRCS Web Soil Survey (Soil Survey Staff, 2022) has mapped three soil units within the BSA. These soil units are summarized in Table 5.1-1, Summary of Mapped Soil Units (see **Appendix A**, Figure 6, *USDA Soils* and **Appendix C**, *Soils Report*). None of the soil map units are listed as hydric soils on the Soil Data Access (SDA) Hydric Soils List (USDA-NRCS, 2022a).

Table 5.1-1
SUMMARY OF MAPPED SOIL UNITS

Name	Symbol	pH	Drainage Class	Hydrologic Soil Group Rating	Acres in BSA
Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	1007	7.9	No data	B	16.9
Zaca-Apollo, warm complex, 20 to 55 percent slopes	1141	7.9	Well-drained	C	180.0
Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	1232	7.8	Somewhat poorly drained	C	52.4

SOURCE: Soil Survey Staff 2022

NOTES: Drainage Class: *Well-drained* soils are soils from which water is removed from the soil readily but not rapidly. Water is available to plant throughout most of the growing season in humid regions, and wetness does not inhibit growth for significant periods during most growing seasons. *Somewhat poorly drained* soils are soils in which water is removed so slowly that the soil is wet at a shallow depth for significant periods during the growing season.

Hydrologic Soil Group Rating: *Group B Soils* are soils which have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission. *Group C Soils* are soils which have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

The BSA is dominated by *Zaca-Apollo, warm complex, 20 to 55 percent slopes*. This soil unit is primarily clay derived from colluvium and/or residuum weathered from sandstone and siltstone (Soil Survey Staff, 2022; USDA, 2011; USDA, 1995). This soil unit is found primarily on hillslopes and is well-drained with a slow water infiltration rate.

5.2 Land Cover Types

Eleven land cover types were observed and mapped within the BSA, and are presented with corresponding acreages in **Table 5.2-1**. Refer to **Appendix A**, Figures 9a through 9e, *Land Cover Types Mapbook*, for the location and extent of each land cover type within the BSA. Photographs of different land cover types onsite are located in **Appendix E**, *Representative Site Photographs*. Classifications of the plant communities are based on Holland's *Preliminary Descriptions of the Terrestrial Communities of California* (Holland, 1986) and *A Manual of California Vegetation Second Edition* (Sawyer et al., 2009).

Table 5.2-1
ACREAGE OF MAPPED LAND COVER TYPES WITHIN THE BSA

Mapped Land Cover	MCV2 Alliance Name ¹	Holland Classification ²	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/20% Zones (acres)	Total Impact Area (acres)
California buckwheat scrub	<i>Eriogonum fasciculatum</i> Shrubland Alliance	southern coastal bluff scrub (31200)	2.85	0.83	<0.01	0.54	1.37
California buckwheat scrub (disturbed)		disturbed southern coastal bluff scrub (31200)	1.54	-	-	-	-
California sagebrush - black sage scrub	<i>Artemisia californica</i> - <i>Salvia mellifera</i> Shrubland Alliance	Diegan coastal sage scrub, Riversidian upland sage scrub	4.86	0.98	<0.01	0.61	1.59

Mapped Land Cover	MCV2 Alliance Name ¹	Holland Classification ²	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/20% Zones (acres)	Total Impact Area (acres)
California walnut groves	<i>Juglans californica</i> . Forest and Woodland Alliance	California walnut woodland (71200)	31.01	3.71	0.53	5.06	9.30
California walnut groves (disturbed)			4.10	0.95	0.02	0.08	1.05
Coast live oak woodland and forest (disturbed)	<i>Quercus agrifolia</i> Forest & Woodland Alliance	coast live oak woodland (71160)	3.54	0.53	0.05	0.98	1.56
Coast prickly pear scrub	<i>Opuntia littoralis</i> - <i>Opuntia oricola</i> - <i>Cylindropuntia prolifera</i> Shrubland Alliance	southern coastal bluff scrub (31200)	3.85	<0.01	<0.01	0.33	0.33
Developed/Ornamental	n/a	n/a	25.28	14.28	0.70	4.67	19.64

Mapped Land Cover	MCV2 Alliance Name ¹	Holland Classification ²	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/ 20% Zones (acres)	Total Impact Area (acres)
Pepper tree groves	<i>Schinus [molle, terebinthifolius]</i> - <i>Myoporum laetum</i> Forest & Woodland Semi-Natural Alliance	southern riparian forest (31200)	0.81	0.08	<0.01	0.07	0.15
Upland mustards or star-thistle fields	<i>Brassica nigra</i> - <i>Centaurea (solstitialis, melitensis)</i> Herbaceous Semi-Natural Alliance	non-native grassland (42200)	10.89	0.74	0.11	0.83	0.94
Upland mustards or star-thistle fields (mowed)		non-native grassland (42200)	16.71	4.87	0.72	3.76	9.35
TOTAL			105.43	26.97	2.12	16.93	45.27

Mapped Land Cover	MCV2 Alliance Name ¹	Holland Classification ²	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/20% Zones (acres)	Total Impact Area (acres)
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MCV2 Alliance Name: naming conventions based on natural community descriptions in *Manual of California Vegetation Second Edition* (Sawyer et al. 2009) California's standard vegetation classification for biological consulting firms, planners, and state and federal agencies, including the California Department of Fish and Game, United States Forest Service, National Park Service, and United States Geological Survey

Holland Classification: naming conventions based on natural community descriptions in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986). as the classification represented is no longer supported by the State of California. It has been replaced by the *National Vegetation Classification System* (Ecological Society of America and NatureServe) and its California expression, *The Manual of California Vegetation, Second Edition* (Sawyer, Keeler-Wolf and Evens 2009) under Section 1940 of the Fish and Game Code. The MCV2 should be used when describing existing conditions in environmental documents, assessing impacts, and mapping vegetation.

Some of the vegetation communities and disturbed features identified and mapped within the BSA during the literature review and field surveys are not considered sensitive because they meet the criteria listed in **Section 4.1.3.1** of this BRE. Four sensitive land cover types/vegetation communities were identified within the BSA.

Characteristics of each plant community and disturbed features are described in the following sections. Plant species associated with onsite vegetation communities are also described.

5.2.1 California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance)

Approximately 2.85 acres of California buckwheat scrub was mapped within the BSA. California buckwheat scrub (*Eriogonum fasciculatum* shrubland alliance) occurs on upland slopes, arroyos experiencing intermittent flooding, channels and washes. This alliance occurs on coarse, well drained soils that are moderately acidic to slightly saline (CNPS, 2022b). California buckwheat is the dominant species of this mapped land cover. This observed scrub community is best characterized as Diegan coastal sage scrub described in the Preliminary Descriptions of the Terrestrial Communities of California (Holland 1986). in the A Manual of California Vegetation Second Edition (Sawyer et al., 2009) this species assemblage meets the membership rules for the *Eriogonum fasciculatum* shrubland alliance (California buckwheat scrub).

Sawyer et al. describes California buckwheat scrub as a community that is a nearly pure stand of California buckwheat. Weeds and other coastal sage scrub shrubs occur, but in low densities. The shrub canopy is continuous to intermittent. The herbaceous layer is variable. This community is usually one of the first of the coastal scrubs to establish in mechanically disturbed areas, such as road cuts or slope failures, and it persists in areas with light to moderate grazing.

California buckwheat scrub has been designated by NatureServe as a secure (G5 and S5) natural community. Secure communities are common, widespread, and abundant in the state.

This community is considered low priority for inventory by CDFW and is not considered sensitive (CDFW, 2022a; CNPS, 2022b, NatureServe, 2022).

However, California buckwheat scrub is considered a sensitive and protected vegetation community when found to support special status (listed) species, such as the California gnatcatcher (CDFW, 2022a; CNPS, 2022b).

5.2.2 California Buckwheat Scrub, Disturbed (*Eriogonum fasciculatum* Shrubland Alliance)

There are approximately 1.54 acres of disturbed California buckwheat scrub in the BSA. This mapped land cover is as described above. However, this land cover exists in a disturbed state because it contains areas that have been altered due to human activities resulting in significant soil compaction and reduction in habitat quality.

Onsite areas given the designation of “disturbed” indicate that more than 20 percent of the given polygon consists of non-native or invasive species, but did not meet the criteria to meet the membership rules for other non-native vegetation communities, such as upland mustards/star thistle fields. In its disturbed state, this vegetation community is considered of moderate to low habitat quality.

This community is considered low priority for inventory by CDFW and is not considered sensitive (CDFW, 2022a; CNPS, 2022b).

However, California buckwheat scrub is considered a sensitive and protected vegetation community when found to support special-status (listed) species, such as the California gnatcatcher (CDFW, 2022a; CNPS, 2022b).

5.2.3 California Sagebrush – Black Sage Scrub (*Artemisia californica* - *Salvia mellifera* Shrubland Alliance)

Approximately 4.86 acres of California sagebrush – black sage scrub was identified in the BSA. California sagebrush – black sage scrub is characterized by the co-dominance of both California sagebrush and black sage with a 30 to 60 percent relative cover in the shrub canopy. This community is typically found on steep east to-southwest-facing slopes in soils that are usually colluvial (CNPS, 2022b). At the project site, the understory ground cover is dominated by leaf litter, with low cover of non-native grass and forb species near the canopy's drip line.

This community is categorized as apparently (S4 and G4), which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

This community is not considered sensitive by CDFW (CDFW, 2022a; CNPS, 2022b).

However, California sagebrush – black sage scrub is considered a sensitive and protected natural community when found to support special status (listed) species, such as the California gnatcatcher (CDFW, 2022a; CNPS, 2022b; NatureServe, 2022).

5.2.4 California Walnut Groves (*Juglans californica* Forest & Woodland Alliance)

Approximately 31.01 acres of California walnut groves was identified within the BSA. Mature California black walnut trees are the dominant and most prevalent tree species in the BSA, in some areas reaching 100 percent cover. California walnut trees occur primarily in slope depressions and swales on southern facing slopes and throughout northern facing slopes. California walnut groves are characterized by the dominance of California black walnut in densities of greater than 50 percent of relative cover in the tree canopy layer or 30 percent relative cover if codominant with coast live oak (CNPS, 2022b). The canopy in this vegetation community varies from open to continuous and the shrub layer consists of sparsely distributed herbs and grasses. California black walnut can reach a height of up to 30 feet and stands occur in association with annual grassland, mesic chaparral, coastal sage scrub, oak woodland, and riparian vegetation (CNPS, 2022b).

This community is categorized by NatureServe as vulnerable (G3 and S3.2), which are natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors. considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

5.2.5 California Walnut Groves, Disturbed (*Juglans californica* Forest & Woodland Alliance)

Approximately 4.10 acres of disturbed California walnut groves was identified in the BSA. This mapped land cover is as described above. However, this land cover exists in a disturbed state because it contains areas that have been altered by human activities resulting in significant soil compaction and reduction in habitat quality. California black walnut is the dominant canopy species of this mapped land cover. The canopy in this vegetation community varies from open to continuous and the shrub layer consists of sparsely distributed herbs and grasses. California black walnut can reach

a height of up to 30 feet and stands occur in association with annual grassland, mesic chaparral, coastal sage scrub, oak woodland, and riparian vegetation (CNPS, 2022b).

Onsite areas given the designation of “disturbed” indicate that more than 20 percent of the given polygon consists of non-native or invasive species, but did not meet the criteria to meet the membership rules for other non-native vegetation communities, such as upland mustards/star thistle fields. In its disturbed state, this vegetation community is considered of moderate to low habitat quality. Although if found to support listed species, would be protected as sensitive, with compensatory mitigation likely assigned a reduced ratio.

This community is categorized by NatureServe as vulnerable (G3 and S3.2), which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (NatureServe, 2022). This community is considered sensitive by CDFW (CDFW, 2022a).

5.2.6 Coast Live Oak Woodland and Forest, disturbed (*Quercus agrifolia* Forest & Woodland Alliance)

Approximately 3.54 acres of coast live oak woodland was identified in the BSA. Coast live oak woodland is characterized by the dominance of coast live oak in densities of greater than 50 percent of relative cover in the tree canopy layer (CNPS, 2022b). The understory in this vegetation community is typically sparse to intermittent and the herbaceous layer consists of sparsely distributed herbs, due to the natural mulch dropped by the oak trees that can inhibit germination of plant seedlings. Coast live oaks can reach a canopy height of 30 meters, but usually vary from nine to 22 meters (Sawyer et al., 2009; Barbour and Minnich, 2000). Canopy coverage varies between continuous to open. Shrub cover is occasional or common with the ground layer varying from grassy to absent (Sawyer et al. 2009). Woodlands may intergrade with grasslands such that shrub cover becomes diminished and herbaceous cover can reach 80 percent (Holland and Keil, 1995; Barbour and Minnich, 2000; CNPS, 2022b).

This community is considered vulnerable (G3 and S3) which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; this community considered sensitive (CDFW, 2022a; NatureServe, 2022).

5.2.7 Coast Prickly Pear Scrub (*Opuntia littoralis* - *Opuntia oricola* - *Cylindropuntia prolifera* Shrubland Alliance)

Approximately 3.85 acres of coast prickly pear scrub was identified in the BSA. Coast prickly pear scrub is characterized by the dominance of coastal prickly pear in densities greater than 50 percent of relative cover in the shrub canopy layer or greater than 30 percent if sage scrub species, such as California buckwheat, are co-dominant. The canopy is intermittent or continuous; the herbaceous layer is open to continuous and diverse. This community is typically found on south-facing slopes and headlands in shallow loam and clay soils that may be rocky (CNPS, 2022b). Coast prickly pear is the dominant species of this mapped land cover. This community is categorized as vulnerable (S3 and G4), which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

This vegetation community is considered sensitive by CDFW. (CDFW, 2022a; NatureServe, 2022).

5.2.8 Developed/Ornamental

Approximately 25.28 acres of the developed/ornamental land cover type occurs in the BSA. includes areas that often support man-made structures such as houses, sidewalks, buildings, parks, water tanks, flood control channels and transportation infrastructure (streets, bridges and culverts), as well as turf lawns and other landscaped areas containing non-native, ornamental plant species. Within the BSA, the Developed/Ornamental land cover type comprises single-family residential homes and associated paved surfaces such as roadways and driveways, utility structures, and landscaped gardens and yards with ornamental trees and plants.

This land cover type is not considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

5.2.9 Pepper tree groves (*Schinus [molle, terebinthifolius]* - *Myoporum laetum* Forest & Woodland Semi-Natural Alliance)

Approximately 0.81 acre of Pepper tree or Myoporum groves (*Schinus [molle, terebinthifolius]* - *Myoporum laetum* Forest & Woodland Semi-Natural Alliance (Pepper tree groves) occurs on the project site. This semi-natural alliance is characterized by the dominance of *Myoporum laetum*, *Schinus molle* or *Schinus terebinthifolius* in the tree canopy; shrubs can occur infrequently or commonly (CNPS, 2022b). In the BSA, this vegetation community is dominated by the non-native Peruvian pepper tree, which is currently assigned a limited rating on the California Invasive Plant Inventory (Cal IPC, 2006). See Section 5.3.2 for defined California Invasive Plant Council (Cal-IPC) ratings and criteria for the rating system.

This vegetation community is not considered sensitive by CDFW (CDFW, 2022a).

5.2.10 Upland Mustards or Star-Thistle Fields (*Brassica nigra* - *Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance)

Approximately 10.89 acres of upland mustards or star-thistle fields (upland mustard fields) were identified in the BSA in senesced, post-fruiting, “mature” condition. Upland mustard fields are characterized by the dominance of black mustard, short-podded mustard, or other mustards occurring with non-native plants in densities greater than 80 percent of relative cover in the herbaceous layer; cover is open to continuous. This community is typically found on fallow fields, rangelands, grasslands, roadsides, levee slopes, disturbed coastal scrub, riparian areas, cleared roadsides, waste places in clay to sandy loam soils (CNPS, 2022b).

This vegetation community is not considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

5.2.11 Upland Mustards or Star-Thistle Fields, Mowed (*Brassica nigra* - *Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance)

Approximately 16.71 acres of upland mustards or star-thistle fields (Upland mustard fields) were identified in the BSA in a manicured “mowed” condition. Mowed areas are generally associated with fire clearance (fuel modification) requirements within 200 feet of dwelling structures. Upland mustard fields are characterized by the dominance of black mustard, short-podded mustard, or other mustards occurring with non-native plants in densities greater than 80 percent of relative cover in the herbaceous layer; cover is open to continuous. This community is typically found on fallow fields, rangelands, grasslands, roadsides, levee slopes, disturbed coastal scrub, riparian areas, cleared roadsides, waste places in clay to sandy loam soils (CNPS, 2022b).

This vegetation community is not considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

See **Appendix A**, Figure 9, *Land Cover Overview Map*; Figures 9a through 9e, *Land Cover Mapbook*; and **Appendix E**, *Representative Site Photographs*).

5.3 Plants

This section describes the plants detected during the field surveys and the special-status plants that have a potential to occur within the BSA as identified by the literature review and field surveys.

5.3.1 Plant Species Recorded During the Field Surveys

Approximately 53 plant species from 29 distinct plant families were observed within the BSA during the field survey. The dominant tree species are coast live oak and California black walnut, with occasional stands of Peruvian pepper trees. A list of plant species recorded within the BSA during the field surveys is provided in **Appendix D**, *Plant and Wildlife Species Observed During the Field Surveys*.

5.3.2 Non-Native Plants

Cal-IPC is a nonprofit organization that is dedicated to protecting California's lands and waters from ecologically-damaging invasive plants through science, education and policy. It maintains an inventory that categorizes non-native invasive plants that threaten the state's wildlands.

Non-native vegetation with a Cal-IPC high rating has severe ecological effects on physical processes, plant and animal communities, and vegetation structure. These exotic species' reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically (Cal-IPC, 2022).

Non-native vegetation with a Cal-IPC moderate rating has substantial and apparent (but generally not severe) ecological effects on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Non-native vegetation species with a Cal-IPC limited rating are invasive, but their ecological effects are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic (Cal-IPC, 2022).

Fifteen of the recorded plant species are non-native. The non-native plant species listed below are assigned a Cal-IPC rating (Cal-IPC, 2022). They include the following listed below in **Table 5.3-1**, *Recorded Invasive Plant Species with a Cal-IPC Rating*.

Table 5.3-1
RECORDED INVASIVE PLANT SPECIES WITH A CAL-IPC RATING

Scientific Name (=Synonym)	Common Name (=Synonym)	Cal-IPC Rating
<i>Silybum marianum</i>	milk thistle	limited
<i>Eucalyptus</i> spp.	eucalyptus	limited

Scientific Name (=Synonym)	Common Name (=Synonym)	Cal-IPC Rating
<i>Salsola tragus</i>	Russian thistle	limited
<i>Marrubium vulgare</i>	horehound	limited
<i>Ricinus communis</i>	castor bean	limited
<i>Schinus molle</i>	Peruvian pepper tree	limited
<i>Bromus diandrus</i>	ripgut grass	moderate
<i>Ailanthus altissima</i>	tree of heaven	moderate
<i>Brassica nigra</i>	black mustard	moderate
<i>Nicotiana glauca</i>	tree tobacco	moderate
<i>Bromus diandrus</i>	ripgut grass	moderate
<i>Ailanthus altissima</i>	tree of heaven	moderate
<i>Atriplex semibaccata</i>	Australian saltbush	moderate
<i>Tamarix ramosissima</i>	saltcedar	high
<i>Bromus rubens</i>	red brome	high

No federally listed noxious weeds were observed onsite during the field surveys, per the USDA Animal and Plant Health Inspection Service (APHIS) Federal Noxious Weed List (USDA, 2010).

5.3.3 Listed Endangered, Threatened, Candidate, and State Rare Plants

No federal or state listed plant species were observed within the BSA during the surveys (see **Appendix D, Plant and Wildlife Species Recorded During the Field Surveys**).

As discussed in **Section 4.1.3**, a literature review and query from publicly available databases (USFWS, 2022d; CNDDB, 2022a) for recorded observations of listed and sensitive species within a ten-mile radius of the BSA, determined that two listed plant species were determined to have a moderate potential to occur. These species are listed in **Appendix B, Special-Status Species Occurrence Potential Determination**.

Moderate Potential to Occur in the BSA

The BSA contains coastal sage scrub, coast live oak woodlands, California walnut groves, and other native vegetation. The soils in the BSA are clay and sandy-loam. These characteristics of the BSA result in the provision of suitable habitat for two listed plant species, which were determined to have a moderate potential to occur within the BSA (see **Appendix B, Special-Status Species Occurrence Potential Determination**, for the descriptions of the status rankings and for further discussion of these species):

- thread-leaved brodiaea (*Brodiaea filifolia*) FT, SE, CRPR: 1B.1.
- Nevin's barberry (*Berberis nevinii*) FE, SE, CRPR: 1B.1

5.3.4 Sensitive Plants

No sensitive plant species were observed within the BSA during the general field surveys (**Appendix D, Plant and Wildlife Species Observed During the Field Surveys**).

As discussed in **Section 4.1.3**, 12 sensitive plant species were determined to have at least a low potential to occur in the BSA; the majority were determined to have a moderate potential to occur in the BSA. These species are listed in **Appendix B, Special-Status Species Occurrence Potential Determination**.

Moderate Potential to Occur in the BSA

The following nine sensitive species that were determined to have a moderate potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B, Special-Status Species Occurrence Potential Determination**, for the descriptions of the status rankings and for further discussion of these species).

- white rabbit-tobacco (*Pseudognaphalium leucocephalum*) CRPR: 2B.2
- California satintail (*Imperata brevifolia*) CRPR: 2B.1
- Plummer's mariposa lily (*Calochortus plummerae*) CRPR: 4.2
- slender mariposa lily (*Calochortus clavatus* var. *gracilis*) CRPR: 1B.2
- intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) CRPR: 1B.2
- Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*)
- mesa horkelia (*Horkelia cuneata* var. *puberula*) CRPR: 1B.1
- Coulter's saltbush (*Atriplex coulteri*) CRPR: 1B.2
- many-stemmed dudleya (*Dudleya multicaulis*) CRPR: 1B.2

Low Potential to Occur in the BSA

The following three sensitive species that were determined to have a low potential to occur as determined by the results of the literature study and field survey. These plant species are listed below with their respective protection statuses determined by state (see **Appendix B, Special-Status Species Occurrence Potential Determination**, for the descriptions of the status rankings and for further discussion of these species).

- Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*) CRPR: 2B.2
- Greata's asper (*Symphyotrichum greatae* [= *Aster greatae*]) CRPR 1B.3
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*) CRPR: 1B.2

5.4 Wildlife

This Section describes the wildlife observed and/or detected during the field surveys and the special-status wildlife that have a potential to occur within the BSA as determined by the literature review and field surveys. In this BRE, wildlife nomenclature and taxonomic sequence are based on the following:

- Amphibians and reptiles: CDFW's Complete List of Amphibian, Reptile, Bird and Mammal Species in California (CDFW, 2016).
- Birds: American Ornithologists' Union (AOU) Check-list of North American Birds, 7th edition (AOU, 1998 and supplements).

- Mammals: *Mammal Species of the World* (Wilson and Reeder, 2005).

5.4.1 Wildlife Species Recorded During the Field Surveys

The BSA supports an assortment of wildlife and provides foraging, nesting, breeding, and cover habitat to reptiles, birds (year-round residents, seasonal residents, migrants), and mammals. During the field surveys, 17 bird species, seven mammal species, and one invertebrate species were observed within the BSA (see **Appendix D**, *Plant and Wildlife Species Observed During the Field Surveys*).

Wildlife survey limitations include:

- The biological field surveys were conducted during the daytime to maximize the detection of most wildlife. Birds represent the largest component of the fauna observed because most birds are active in the daytime. In contrast, daytime surveys usually result in few observations of mammals, many of which may only be active at night. Many mammal species may also have been unnoticed due to their subterranean habitat.
- Many species of reptiles, and mammals are secretive in their habits and are difficult for biologists to observe in a walking survey.
- Many wildlife species are wide-ranging and/or they only occur on a seasonal basis; therefore, they may not have been present within the BSA at the time of the surveys.
- Many species are nocturnal, move about a territory, may have become dormant for the season, or are less active during inclement or hot weather.
- Additional wildlife species that likely use the BSA were not observed or indirectly detected during the field surveys due to their scarcity or the need for special survey methods.

Vegetation communities form the basis for wildlife habitat and provide the primary plant productivity upon which wildlife depends, along with nesting and denning sites, escape and movement cover, and protection from adverse weather. Some species are habitat specific for all their life history requirements, while many wildlife species move freely between vegetation communities to obtain all their life history needs. In general, more complex natural communities with more vegetation layers and more plant species provide higher value wildlife habitat than less complex vegetation communities. More complex communities have more niches for wildlife and usually support more animal species than less complex communities. Although simple communities may support few wildlife species, they may provide habitat for great numbers of those few species.

Birds

A variety of bird species are expected to be residents in the survey area, using the habitat throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) and western bluebird (*Sialia mexicana*) are expected to occur in the BSA during the winter season and will then migrate north in the spring to breed during the summer.

Native bird species observed in the survey area include cliff swallow (*Petrochelidon pyrrhonota*), spotted towhee (*Pipilo maculatus*), lesser goldfinch (*Spinus psaltria*), American goldfinch, bushtit (*Psaltriparus minimus*), Nuttall's woodpecker (*Dryobates nuttallii*), Cooper's hawk (*Accipiter*

cooperii), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and Anna's hummingbird (*Calypte anna*).

The abovementioned species are common in southern California and are not listed as threatened or endangered; however, Nuttall's woodpecker is a Bird of Conservation Concern and Cooper's hawk is on the CDFW Watch List (season of concern: nesting). For a list of special-status birds that were determined to have a potential to occur in the BSA, refer to **Appendix B, Special-Status Species and Potential Occurrence Determination**.

Mammals

As with other taxonomic groups, the vegetation types present in the BSA offers habitat for a variety of mammals. Seven mammal species, including coyote (*Canis latrans*) and dusky-footed woodrat (*Neotoma fuscipes*) were observed during the field survey. These species are common in southern California and are not listed as threatened or endangered, and are not rare. A list of wildlife species that were observed during the surveys is located in **Appendix D, Plant and Wildlife Species Observed During Field Surveys**.

Bats occur throughout most of southern California and may use any portion of the survey area as foraging habitat. The oak woodland vegetation and the structures present in the survey area provides potential roosting habitat for bats; however, no bats or signs thereof were observed during the surveys. For a list of special-status mammals that were determined to have a potential to occur in the BSA, refer to **Appendix B, Special-Status Species and Potential Occurrence Determination**.

5.4.2 Listed Endangered, Threatened, and Candidate Wildlife

One wildlife species that is a candidate for federal listing (overwintering population) was observed within the BSA during the field surveys. This species, monarch butterfly (*Danaus plexippus* pop. 1), is further discussed below. The literature review and field surveys concluded that the majority of the listed species in the wildlife inventory do not have more than a low potential to occur within the BSA due to a lack of suitable biological and physical features that are adequately needed to support them.

As discussed in **Section 4.1.3**, seven listed wildlife species were determined to have at least a low potential to occur in the BSA. One listed species in the wildlife inventory, monarch butterfly, was observed during the field survey. All species evaluated in the literature study, including those determined to have no potential or are not expected to occur, are listed in **Appendix B, Special-Status Species Occurrence Potential Determination**.

Present in the BSA

Monarch butterfly

Monarch butterfly was observed in the BSA during the field survey. Monarch butterflies are found across North America in areas of suitable feeding, breeding, and overwintering habitat. The two populations, referred to as the eastern and the western populations, are distinguished by separation by the Rocky Mountains.

Monarch presence in a given area within their range depends on the time of year. They are one of few migratory insects, traveling long distances between summer breeding habitat and winter habitat where they spend several months inactive. In the summer they range as far north as southern Canada.

In the fall the eastern population migrates to the cool, high mountains of central Mexico and the western population migrates to coastal California, where they spend the entire winter.

Butterflies have different diets during their larval caterpillar phase than they do as adults. Monarch caterpillars feed exclusively on the leaves of milkweed, wildflowers in the genus *Asclepias*. North America has several dozen native milkweed species with which monarchs coevolved and upon which they rely to complete their life cycle.

Milkweed produces toxins to deter animals from eating them, but monarchs have evolved immunity to these toxins. Monarch caterpillars store these toxins in their body as they feed, causing them to taste bad, which serves as a deterrent to predators. The toxins remain in their system even after metamorphosis, protecting them as adult butterflies (National Wildlife Federation, 2022).

The overwintering population of this butterfly is designated as federal candidate for listing. Candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them for listing as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by higher priority listing actions to address species in greater need. A proposed regulation has not yet been published in the Federal Register for these species.

Moderate Potential to Occur in the BSA

The BSA contains coastal sage scrub, coast live oak woodlands, California walnut groves, and other native vegetation with riparian areas, and soils in the BSA are comprised of clay and sandy-loam. These characteristics of the BSA result in the provision of suitable habitat for several listed wildlife species.

The following three listed species that were determined to have a moderate potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- coastal California gnatcatcher (*Polioptila californica californica*) FT, SSC
- least Bell's vireo (*Vireo bellii pusillus*) FE, SE, Season of concern: nesting
- Southwestern willow flycatcher (*Empidonax traillii extimus*) FE, SE

Coastal California gnatcatcher

The coastal California gnatcatcher (*Polioptila californica*; gnatcatcher) is found on the coastal slopes of southern California, from southern Ventura southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties into Baja California, Mexico. Within its range, the distribution of gnatcatcher is further defined by relatively narrow elevation limits. In general, inland populations of the gnatcatcher can be found below the 1,640-foot elevation, and coastal populations tend to be found below an elevation of 820 feet (CDFW, 2014).

The BSA contains suitable coastal sage scrub habitat to support this species.

Least Bell's vireo

Least Bell's vireo is a small, olive-grey migratory songbird, and is a summer resident of riparian areas in southern California. The species' breeding distribution is currently restricted to eight California counties: Kern, San Diego, San Bernardino, Riverside, Ventura, Los Angeles, Santa Barbara, and Imperial. Preferred habitat for this species is dense willow-dominated riparian habitat with a well-developed understory. The understory shrub thickets provide nesting habitat. Willows are most commonly used. High and low shrub layers are used as foraging substrate. Other plant species used for nesting and foraging include California wild rose and coast live oak.

The BSA contains potentially suitable nesting habitat (coast live oak) required for this species.

Southwestern willow flycatcher

The breeding range of the southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL) includes southern California, Arizona, New Mexico, southwestern Colorado, and extreme southern portions of Nevada and Utah. Southwestern willow flycatcher breed and forage in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes (e.g., reservoirs). SWFL suitable habitat contains: surface water, saturated soil, or herbaceous wetland plants present during the early summer months; woody riparian vegetation is present and covers a minimum aerial extent of 20 percent over a 0.5-acre section of floodplain or adjacent streamside terrace; dense clumps or stands of woody vegetation are present. SWFLs also nests in thickets dominated by the non-native tamarisk and Russian olive and in habitats where native and non-native trees and shrubs are present in essentially even mixtures.

The BSA contains potentially suitable nesting habitat for SWFL (woody vegetation, even mixtures of native and non-native trees and shrubs; the BSA may also contain saturated soils in the bottom of canyons within the BSA).

Low Potential to Occur in the BSA

The following three listed species that were determined to have a low potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- arroyo toad (*Anaxyrus californicus*) FE, SSC
- Swainson's hawk (*Buteo swainsoni*) ST, BCC, Season of concern: nesting

5.4.3 Sensitive Wildlife

Two sensitive wildlife species, Cooper's hawk and Nuttall's woodpecker, were observed within the BSA during the field surveys. The literature review and field surveys concluded that the majority of the sensitive species in the wildlife inventory have at least a low potential to occur within the BSA due to the presence of suitable biological and physical features that are adequately needed to support them (see **Appendix D**, *Plant and Wildlife Species Observed During the Field Surveys*).

As discussed in **Section 4.1.3**, 20 sensitive wildlife species were determined to have at least a low potential to occur. Two of the species in the wildlife inventory, Nuttall's woodpecker and Cooper's

hawk, were observed during the field survey. These species are further discussed below. All species evaluated in the literature study, including those determined to have no potential or are not expected to occur, are listed in **Appendix B, *Special-Status Species Inventory and Potential Occurrence Determination***.

Present in the BSA

Nuttall's woodpecker

Nuttall's woodpecker is a common, permanent resident of low-elevation riparian deciduous and oak habitats, typically occurring in the Central Valley, Transverse and Peninsular Ranges, in the Coast Ranges north to Sonoma County and rarely to Humboldt County, and in lower portions of the Cascade Range and Sierra Nevada. This woodpecker primarily forages in oak and riparian deciduous habitats while pecking, probing, and drilling for sap. Approximately 80 percent of the diet of this species is comprised of adult and larval insects, mostly beetles. Berries, poison-oak seeds, nuts, other fruits are also occasionally consumed. Breeding season occurs from late March through early July with peak activity occurring from April to early June (Bent, 1939; CDFW, 2022b; 2014; Miller and Bock, 1972).

This species is currently designated by USFWS as a bird of conservation concern (BCC). BCC species are those listed in the USFWS' 2008 Birds of Conservation Concern report (USFWS, 2008). The report identifies species, subspecies, and populations of all migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that, without additional conservation actions, are likely to become candidates for listing under the ESA. While the bird species included in the report is priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing.

Cooper's hawk

Cooper's hawks are medium-sized hawks of the woodlands. These raptors are commonly sighted in parks, neighborhoods, over fields, and even along busy streets if there are large trees nearby for perching and adequate prey species such as other birds and small mammals. They prefer to breed in more densely wooded areas than occur in the BSA, such as woodland openings and edges of riparian and oak habitat (CDFW, 2014; Cornell Lab of Ornithology, 2022). Cooper's hawks build nests in pines, oaks, Douglas-firs, beeches, spruces, and other trees. Males typically build the nest over a period of about two weeks, with just the slightest help from the female. Nests are piles of sticks roughly 27 inches in diameter and 6-17 inches high with a cup-shaped depression in the middle, 8 inches across and 4 inches deep. The cup is lined with bark flakes and, sometimes, green twigs. (Cornell Lab of Ornithology, 2022)

Cooper's hawk is included on the CDFW Watch List (CNDDDB, 2022b). The CDFW Watch List includes birds identified in the California Bird Species of Special Concern (Shuford and Gardali, 2008) report and have or have had one of the following statuses: they are not on the current CDFW species of special concern list, but were on previous lists and they have not been state-listed under CESA; they were previously state or federally listed and now are on neither list; or, they are on the list of fully protected species. The report identifies species, subspecies, and populations of all migratory and non-migratory bird species (beyond those already designated as federal threatened or endangered) that, without additional conservation actions, are likely to become candidates for listing under the ESA.

Moderate Potential to Occur in the BSA

The BSA contains coastal sage scrub, coast live oak woodlands, California walnut groves, and other native vegetation. In addition, the sloping topography of the BSA may enable to formation of ephemeral water sources, especially near the drainages. Topography of the BSA also creates favorable conditions for many sensitive species that utilize sloping surfaces. The soils in the BSA are clay and sandy-loam. Lastly, the region of the BSA has a mild, semi-arid climate with Mediterranean characteristics. These characteristics of the BSA result in the provision of suitable habitat for a diverse array of sensitive wildlife species.

The following 15 sensitive species that were determined to have a moderate potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- pallid bat (*Antrozous pallidus*) SSC
- Crotch's bumble bee (*Bombus crotchii*) SSC
- merlin (*Falco columbarius*) WL
- western spadefoot (*Spea hammondi*) SSC
- yellow warbler (*Setophaga petechia*) SSC, BCC
- large-blotched ensatina (*Ensatina eschscholtzii klauberi*) SSC
-
- coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) BCC
- two-striped garter snake (*Thamnophis hammondi*) SSC
- Blainville's horned lizard (*Phrynosoma blainvillii*) SSC
- California glossy snake (*Arizona elegans occidentalis*) SSC
- hoary bat (*Lasiurus cinereus*) WBWG:M
- western mastiff bat (*Eumops perotis californicus*) SSC, WBWG:H
- southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) WL
- mountain lion (*Puma concolor*) California Fish and Game Code §§ 4800 – 4810
- white-tailed kite (*Elanus leucurus*) fully protected

Low Potential to Occur in the BSA

The following 12 sensitive species that were determined to have a low potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- golden eagle (*Aquila chrysaetos*) fully protected, WL, BCC, CDF:S, Season of Concern: nesting and wintering
- red-diamond rattlesnake (*Crotalus ruber*) SSC
- southern California legless lizard (*Anniella stebbinsi*) SSC
- burrowing owl (*Athene cunicularia*) BCC
- California spotted owl (*Strix occidentalis occidentalis*) SSC, BCC
- western yellow bat (*Lasiurus xanthinus*) SSC, WBWG:H
- big free-tailed bat (*Nyctinomops macrotis*) SSC, WBWG:MH

- long-eared owl (*Asio otus*) SSC, Season of concern: nesting

5.5 Waters of the U.S. and State (including Wetlands)

UltraSystems biologists reviewed the aerial imagery to identify natural and man-made drainages (rivers, streams, creeks), open water (lakes, ponds, etc.), and other features that may be subject to federal or state jurisdictional authority within watersheds within the BSA (see **Appendix A**, Figure 11, *USGS Surface Waters and Watersheds*). They also reviewed USGS 7.5-Minute Topographic Map for the *San Dimas Quadrangle* to identify potential presence or absence of onsite waterways. Based on these reviews, the biologists several potential waters of the U.S. and/or State within the BSA.

The BSA contains several NWI-mapped features including freshwater forested/shrub wetlands, riverine areas, and forested/shrub riparian areas (see **Appendix A**, Figure 12a through 12e, *Biological Constraints Mapbook*).

During the survey, evidence of hydrologic features such as streams, wetlands, and ponds were evaluated. During the biological surveys, UltraSystems biologists observed hydrologic features including vegetated riverine wetlands (e.g., riparian areas).

5.6 Critical Habitat

The BSA is located less than 1.5 miles from designated critical habitat for the coastal California gnatcatcher within and surrounding Frank G. Bonelli Regional Park (**Appendix A**, Figure 13, *USFWS Critical Habitat*). Additionally, the BSA is less than one mile north of designated critical habitat for coastal California gnatcatcher which is mapped along the south-facing slopes of the San Jose Hills from northwest of the I-10/SR-57 Interchange to Highway 39 (Azusa Avenue) in West Covina.

5.7 Wildlife Corridors

A wildlife corridor is a connection of habitat, generally native vegetation, which joins two or more larger areas of similar habitat that are otherwise separated by natural barriers, changes in vegetation composition, or land permanently altered for human activities (e.g., parks, cemeteries); and by infrastructure, including roads, railroads, residential development, or fencing. When native vegetation is cleared, fragmented patches of open space or isolated “islands” of wildlife habitat are created. Fragmentation and habitat loss are the two main contributors to continuing biodiversity decline. The main goal of corridors is to facilitate movement of individuals, through dispersal, seasonal migration, and movement for foraging, breeding, cover, etc. Corridors allow for physical and genetic exchange between isolated wildlife populations and are critical for the maintenance of ecological processes, including allowing for the movement of animals and the continuation of viable populations and higher species diversity.

Wildlife corridors may either be contiguous strips of vegetation and habitat, such as ridgelines or riverbeds, or intermittent patches of habitat or physical features spaced closely enough to allow safe travel. Corridors can be natural, such as a riparian corridor, or man-made, such as culverts, tunnels, drainage pipes, walls, underpasses, overpasses, or streets. Man-made corridors are often referred to as “wildlife crossings” and they allow wildlife to pass over, under, or through physical barriers that otherwise hinder movement. Wildlife corridors also vary greatly in size, shape, and composition.

The BSA does not overlap with CDFW Essential Connectivity Areas, Natural Landscape Blocks, or other wildlife corridors. The nearest Small Natural Area is Via Verde Park, less than 0.75-mile east of

the BSA; the nearest Natural Landscape Block is approximately 1.5- mile east of the BSA at Frank G. Bonelli Regional Park (CDFW, 2022c; see **Appendix A**, Figure 14, *Wildlife Corridors*). The Angeles National Forest, approximately five miles north of the BSA, is the nearest Essential Connectivity Area (Google Earth Pro, 2022; CDFW, 2022c).

Due to the urbanization of the region, movement of some mammals that require larger dispersal distances would likely be deterred. Species that are less restricted in movement and/or are well-adapted to urbanized areas such as raccoon, skunk, coyote, and mountain lion (*Puma concolor*) likely move through areas of the BSA. The project area and a portion of the BSA support habitat, including movement habitat, for species on a local scale (habitat for reptiles, bird, and mammal species), and likely facilitates wildlife movement for some larger wildlife species on a regional scale.

Predators (e.g., coyotes) and smaller mammals (e.g., raccoons [*Procyon lotor*] and striped skunks [*Mephitis mephitis*]) are known to use medium- to low-density residential neighborhoods, golf courses, and washes for hunting and foraging, using washes (natural and channelized), culverts, underpasses, and city streets for travelling, often but not necessarily limited to overnight hours when human activity decreases (Baker and Timm, 1998; Grubbs and Krausman, 2009; Ng et. al., 2004). Urban areas provide a unique ecosystem with ecological opportunity in the form of anthropogenic food sources such as discarded human food, pet food, human-associated fruits, and domestic animals (Larson et. al., 2020). Observations recorded during the biological surveys, including the coyote observed on the BSA, and examination of aerial imagery indicate that the BSA acts as a hunting, foraging, and movement area, and the BSA and surrounding areas are suitable wildlife movement corridors.

5.8 Significant Ecological Areas: East San Gabriel Significant Ecological Area

The East San Gabriel Valley SEA is located in the easternmost portion of the San Gabriel Valley, which includes the San Jose Hills (see **Appendix A**, Figure 15, *Significant Ecological Areas [SEAs]*). For the purpose of delineating an area-wide ecological unit with interacting component habitat areas, this SEA includes incorporated as well as unincorporated lands. The area represents several ridgelines and hilltops and a major drainage at the eastern end of the San Jose Hills which have been surrounded by urban development over the past four decades. The largest component of this SEA is Frank G. Bonelli Regional County Park (Bonelli Park) and a portion of Walnut Creek Park, both of which are unincorporated. Other component parts are South Hills Park and surrounding undeveloped land in the City of Glendora, Buzzard Peak and undeveloped hillsides to the southwest within the cities of West Covina and Walnut, undeveloped slopes to the west of Bonelli Park and Interstate 210 (I-210) in the City of San Dimas, and Elephant Hill and an adjoining ridgeline in the City of Pomona (PCR 2006, p. 1).

Generally, the topography within this SEA consists of moderate to steep hillsides with north, south, east and west slope aspects. Ridgelines vary in width from narrow to broad with well-defined drainages in between. One major drainage, Walnut Creek, and a man-made reservoir, Puddingstone Reservoir, are found within this SEA. Elevations range from a low of approximately 560 feet above Mean Sea Level (MSL) in the Walnut Creek drainage to a high of approximately 1,375 feet above MSL at Buzzard Peak.

The biological communities found in this SEA vary according to physical habitat conditions (i.e., slope exposure, soil type and depth, and the availability of water) and the area's history of grazing practices. Elevation plays almost no role in defining habitat types. Many slopes support oak and walnut woodland which often intergrade with prevalent stands of mixed chaparral. Coastal sage

scrub is also found on slopes with shallower, drier soils. Drainages are typically vegetated with oak riparian woodlands and forests, with stands of western sycamore and willow woodland (PCR 2006, pp. 1-2).

Wildlife populations within the East San Gabriel Valley SEA are generally expected to reflect lower diversity and abundance. This is due to the influences of surrounding development and location of recreational uses over relatively large areas of the SEA components which tends to compromise habitat quality and value (PCR 2006, p. 4).

A high diversity of birds is documented within this SEA including a population of coastal California gnatcatcher, a federally threatened species. For numerous upland, raptorial, and water associated birds the East San Gabriel Valley SEA provides a mosaic of habitats. Between woodland, shrubland, grassland and wetlands, diverse populations of birds are able to meet nesting, foraging, and migratory requirements (PCR 2006, p. 4).

Mammal populations also reflect the suburban environs imparting this SEA. Small mammals are expected to be uneven in their diversity with more adaptive, introduced European species in greater numbers compared to others species. Medium sized mammal populations are expected to exhibit the same characteristics. Large mammals are largely absent on a resident basis (PCR 2006, p. 4). Sensitive wildlife species occurring or potentially occurring within the SEA are discussed in **Section 4.1.3**.

6.0 POTENTIAL IMPACTS OF THE PROJECT

6.1 Limitations of Survey Data and Analyses

This BRE documents the methods and results of the literature review, field surveys, and resulting impact analyses based on the existing project plans, project description, and other relevant data furnished by the City for the project.

Therefore, this BRE provides a summary of existing conditions, based on the best available data at the time of preparation. The limitations of survey data and analyses are provided below.

1. This BRE incorporated findings from the original EIR documents (Takata Associates, 1991; The Planning Center, 1983; and UltraSystems, 1977) to inform our understanding of the existing biological resources at the time of the initial development of the project area. For example, the locations of the pre-project vegetation communities, protected trees, special-status species, wetlands and waters, and wildlife corridors, may not be adequately summarized in the historic documents. Erroneous or inadequate information within the baseline documents may affect findings within this BRE.
2. This BRE documents the initial reconnaissance-level evaluation of biological resources within the project area based on aerial photography, visual estimates of vegetation community boundaries, percent cover of dominant, co-dominant, and sub-dominant species, and photo documentation collected during field surveys.
3. The reconnaissance surveys (UltraSystems, 2022) were performed for the sole purpose of the MCTA 20-0005 project and do not absolve individual landowners from performing project-specific surveys during the engineering design phase.

For parcels supporting protected biological resources, focused surveys are required to meet local, regional, state, and federal regulations to accurately determine the resources within the MCTA-approved areas.

Landowners should be aware that biological resource surveys are generally valid for a duration of up to one to three years, dependent upon the survey focus. Due to the uncertainty and temporal variation of individual parcel design, planning, and development phases, additional reconnaissance surveys may be combined with the initial focused biological surveys to meet the regulatory framework at the time any individual project is proposed. Surveys would be performed for sensitive habitats, protected plants and wildlife species, wildlife corridors, proposed and designated land management areas, changes to species listing statuses, and jurisdictional areas (waters of the U.S., waters of the State).

Focused survey requirements vary season-to-season as determined by the species protocols. Seasonally dependent surveys must occur within the required season; therefore, surveys may need to be performed up to one year (sometimes two) prior to expected construction. For example, if surveys must occur during the spring and summer, then the landowner must plan the project accordingly to coordinate mitigation with final grading permits. No focused protocol surveys were performed for this MCTA 20-0005 project.

4. Mitigation measures for avoidance, minimization, and compensatory mitigation are based on conditions at the time of survey. Potential impacts to protected resources will be refined

during future focused protocol surveys, when required. Additional mitigation may be necessary and should be employed based on the focused survey findings and regulatory context at the time of the proposed development.

5. Time of year, drought conditions, temperature, and individual surveyor observations may affect survey findings, although the margin for error is expected to be negligible during this reconnaissance-level survey.
6. The drainages displayed in Appendix A, Figures 12-12e Biological Constraints were derived from the NWI dataset, NHD datasets, USGS topographic maps, and field observations during the reconnaissance level surveys. Actual limits of jurisdictional areas require additional habitat assessments and may trigger formal jurisdictional delineations for parcels with wetlands and waters during the planning and design phase. Overlays provided are for informational purposes only until delimited at a future date.

6.2 Impact Types

This section discusses potential significant effects, or impacts, if any, to the environmental baseline and sensitive biological resources that could result from implementation of activities by individual property owners pursuant to the proposed MCTA. Individual properties were numbered 1 through 36 for reference, and potential impacts were determined with regard to each lot (see **Table 6.2-1** and **Appendix A**, Figure 16, *Residential Lots and Associated Assessor's Parcel Numbers [APNs]*). With regard to potential or expected impacts and their related mitigation measures, MCTA-related activities will also be referred to as "projects" in Section 6.0, Section 7.0, and Section 8.0.

Table 6.2-1
RESIDENTIAL LOTS AND ASSOCIATED ASSESSOR'S PARCEL NUMBERS (APNs)

Lot Number	APN	Lot Number	APN
1	8448-038-031	19	8448-038-045
2	8448-038-032	20	8448-038-046
3	8448-038-033	21	8448-038-047
4	8448-038-034	22	8448-008-045
5	8448-038-035	23	8448-008-046
6	8448-038-036	24	8448-008-047
7	8448-038-037	25	8448-008-048
8	8448-038-038	26	8448-008-055
9	8448-038-039	27	8448-038-048
10	8448-038-040	28	8448-038-049
11	8448-008-041	29	8448-038-050
12	8448-038-041	30	8448-038-051
13	8448-038-042	31	8448-038-052
14	8448-038-043	32	8448-038-053
15	8448-038-044	33	8448-038-054
16	8448-008-042	34	8448-038-055
17	8448-008-043	35	8448-038-056
18	8448-008-044	36	8448-038-057

Impact analysis is an important step in the CEQA process. Biological resources may be either “directly” or “indirectly” impacted by a project (defined by CEQA Guidelines § 15358). Direct and indirect impacts may be either “permanent” or “temporary” in nature. These impact categories are defined below.

- **Direct impact:** Direct impacts are those that may cause an immediate effect on the species or its habitat and occur at the same time and place. Any loss, alteration, disturbance or destruction of biological resources that could result from project-related activities is a direct impact. Examples include vegetation clearing and loss of habitat, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species.
- **Indirect impact:** As a result of project-related activities, biological resources may also be affected in a manner that is not direct. Indirect impacts are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. Indirect impacts can affect biological resources within a project site, adjacent to a project site, or away from a project site. Examples of indirect impacts include increased human activity, elevated noise, light, and dust levels, decreased water quality, soil compaction, erosion created by the removal of vegetation, and the introduction of invasive plants and unnatural predators. Indirect impacts may be both short term and long-term in their extent. Indirect impacts are also referred to as “edge effects.”
- **Permanent impacts (long term):** All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources. Permanent impacts cannot be mitigated in-place.
- **Temporary impacts (short term):** Impacts considered to have reversible impacts to biological resources can be viewed as temporary. Examples include short-term increased vehicle traffic and noise and the generation of fugitive dust during construction; or removing vegetation and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Temporary impacts can be reversed with the implementation of in-place mitigation measures.

6.3 Thresholds of Significance

This section describes the significance criteria used for determining impacts to biological resources. As mentioned in the CEQA Guidelines (§ 15064.7[a]), each public agency is encouraged to develop and publish thresholds of significance (significance criteria) that it uses to determine the significance of environmental impacts. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental impact, non-compliance with which means the impact will normally be determined to be significant by the agency and compliance with which means the impact normally will be determined to be less than significant.

Significance criteria serve as benchmarks for determining if a project would result in a significant adverse environmental impact when evaluated against the baseline. CEQA Guidelines § 15065(a) states that a project may have a “significant impact” on the environment if the project has the potential to:

- Substantially degrade the quality of the environment,
- Substantially reduce the habitat of a fish or wildlife species,
- Cause a fish or wildlife population to drop below self-sustaining levels,
- Threaten to eliminate a plant or animal community, or
- Substantially reduce the number or restrict the range of an endangered, rare or threatened species.

The Environmental Checklist Form in Appendix G of the CEQA Statute and Guidelines (2014) was reviewed in order to determine the level of significance of project related impacts to biological resources. Under CEQA Guidelines impacts to biological resources are considered potentially “significant” if one or more of the following thresholds are exceeded with construction and operation of the project.

- | | |
|---------------------|---|
| Threshold 1: | The project 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 CDFW and USFWS. |
| Threshold 2: | The project 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 CDFW and USFWS. |
| Threshold 3: | The project 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. |
| Threshold 4: | The project 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. |
| Threshold 5: | The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. |
| Threshold 6: | The project would conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP. |

Significant impacts can be reduced to less than significant levels by incorporating off-setting mitigation measures, including BMPs, avoidance and protection measures, and/or mitigation measures. Less than significant impacts are those in which impacts would potentially occur, but are not expected to be substantial. Impacts to biological resources that are considered less than significant include impacts to biological resources which are reasonably widespread or that exist in a degraded or disturbed state, rendering them less valuable as habitat to support wildlife diversity or special-status species, or impacts that do not meet or exceed the significance thresholds defined above. These less than significant impacts do not require mitigation measures, although conservation measure may be applied to further minimize (or avoid) potential impacts.

6.4 Potential Impacts to Vegetation Communities (Land Cover Types)

6.4.1 Direct Impacts

Direct impacts to vegetation communities have immediate consequences, such as the changes that occur when land is cleared for permanent development and vegetation communities are altered or removed during project activities. Direct permanent impacts include all areas within the limits of activities on project sites. **Appendix F, *Lot-Specific Impacts*** provides the approximate acreages of each plant community and non-vegetated feature that is anticipated to be directly impacted by project activities. Calculations were based on existing APNs (not including conservation easements) in conjunction with vegetation mapping from field surveys and aerial imagery (see **Appendix A, Figure 10, *Land Cover Types Impact Areas Overview*** and Figures 10a through 10e, *Land Cover Impacts*).

A species may have other sensitive designations in addition to their federal or state listing. Coast live oak woodland and forest, and California walnut groves found on a project site are considered as locally and regional rare, unique and/or uncommon; and/or regionally rare vegetation communities; that is, communities that are rare or uncommon in a local or regional context and, as such, would meet the CEQA definition of a rare species (CEQA § 15380). The loss of onsite populations of coast live oak woodland and forest and California walnut groves would be potentially significant from a project and cumulative perspective under CEQA.

Development of project sites will result in direct impacts (permanent loss of vegetation) to vegetation communities and habitat. Coast live oak woodland and forest is ranked by the State of California as Vulnerable (state rank of S3), and California walnut groves are considered Vulnerable: Extremely Threatened (S3.1); therefore, these vegetation communities are considered special-status. Direct impacts to coast live oak woodlands and California walnut groves would be considered significant because these habitats are considered special-status. vegetation communities.

6.4.2 Indirect Impacts

Indirect impacts to vegetation communities result in secondary consequences and are likely to be temporary. Indirect impacts could occur to vegetation communities within areas located adjacent to project sites. Examples of indirect, temporary impacts include the effects of fugitive dust and mud splatter created by construction activities. Construction-generated fugitive dust and mud splatter can adversely affect vegetation communities by settling on plant surfaces and inhibiting metabolic processes such as photosynthesis and respiration. Construction-related erosion, runoff, siltation, sedimentation, soil compaction, and alteration of drainage patterns could affect vegetation communities by altering conditions within the BSA such that they become unsuitable for survival of these communities.

Implementation of a project could result in indirect impacts to the coast live oak woodland and forest and California walnut groves communities onsite through alteration of drainage patterns which alter the quantity of available water (via stormwater) to these communities; loss of vertical and horizontal structural complexity; and loss of understory species diversity. Indirect impacts to coast live oak woodland and forest and to California walnut groves meet or exceed significance thresholds and are considered significant.

6.4.3 Mitigation Measures

Implementation of a project pursuant to the proposed MCTA could result in direct and indirect impacts to sensitive vegetation communities (see **Table 7.0-1**). These impacts to sensitive vegetation communities would be significant; therefore, mitigation measures are required.

Implementation of **BIO-1, *Vegetation Community Replacement Plan***, would require projects to avoid areas of protected sensitive vegetation communities, including California walnut groves, coast live oak woodland and forest, coast prickly pear scrub, California sagebrush-black sage scrub, and/or California buckwheat scrub. If these communities cannot be avoided, then, mitigation measure **BIO-1** would require projects to provide compensatory mitigation for impacted vegetation communities in the form of mitigation bank credits or the payment of in-lieu fees to a mitigation bank (see **Section 7.1**).

In addition to protecting sensitive vegetation communities designated by CDFW, mitigation measure **BIO-1** may also serve to satisfy the requirements of the City of San Dimas tree protection ordinances (§§ 16.42.020, 16.42.090, 18.162.060, 18.162.070, and 18.162.100) as mandated by the City's required tree removal permit for Mature Significant Trees (see **Section 6.9** and **Section 7.18**).

Mitigation measure **BIO-2**, *Project Limits and Designated Areas*, will specify the limits of ground and vegetation disturbance or removal, and ensure that project-related work limits are delineated and clearly visible to work crews; work crews will be restricted to working within these limits, as described in **Section 7.2**.

Mitigation Measure **BIO-3**, *General Vegetation and Wildlife Avoidance*, will require that removal of native vegetation shall be avoided or minimized to the maximum extent possible. Temporarily impacted areas shall be returned to pre-existing contours and revegetated with appropriate native species.

6.4.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.*

Less than Significant Impact with Mitigation Incorporated.

Direct and indirect impacts to sensitive vegetation communities designated by CDFW would occur as a result of project activities pursuant to the proposed MCTA 20-0005. Implementation of mitigation measures **BIO-1**, **BIO-2**, and **BIO-3** would minimize or avoid potential impacts to special-status vegetation communities, such as California walnut groves, coast live oak woodland and forest, coast prickly pear scrub, California sagebrush-black sage scrub, and/or California buckwheat scrub within the property of an applicant, requiring compensatory mitigation, delineating work areas, and restoring temporarily impacted areas as described in **Section 7.1**, **Section 7.2**, and **Section 7.3**.

Projects would have substantial adverse effects to sensitive natural communities; (see **Appendix F**, *Lot-Specific Impacts*) however, with implementation of mitigation measure **BIO-1**, **BIO-2**, and **BIO-3**, potential impacts would be less than significant.

6.5 Potential Impacts to Special-Status Plants

California black walnut (*Juglans californica*) is present in the BSA; impacts to this species as a vegetation community are described in **Section 6.2**. No additional listed or sensitive plants were observed within the BSA during the field surveys. However, the literature review and field surveys concluded that the majority of the plant species in the plant inventory have a moderate potential to occur within the BSA (see **Appendix F**, *Lot-Specific Impacts*) due to the presence of suitable habitat, soils, and/or other factors to support them.

6.5.1 Direct Impacts

Direct impacts to special-status plant species may occur as a result of the proposed MCTA due to the moderate potential for most of the special-status plant species in the plant inventory to occur in the BSA. Special-status plant species occurring in areas adjacent to the BSA, including on conservation easements, could be indirectly impacted as a result of the project, in the same manner as direct and

indirect impacts to vegetation communities. Without appropriate avoidance and minimization measures for special-status plants, potential significant impacts associated with subsequent construction include loss of habitat, loss or reduction of productivity, and direct mortality. Therefore, mitigation is required.

6.5.2 Indirect Impacts

Indirect impacts that could occur as a result of the project activities include effects of fugitive dust and mud splatter created by construction activities. Construction-generated fugitive dust and mud splatter can adversely affect vegetation by settling on plant surfaces and inhibiting metabolic processes such as photosynthesis and respiration. Construction-related erosion, runoff, siltation, sedimentation, soil compaction, and alteration of drainage patterns could affect vegetation communities by altering conditions within the BSA such that they become unsuitable for survival of these plants.

Implementation of a project could result in indirect impacts to plant species that were determined to have a moderate potential to occur on the project site through alteration of drainage patterns which alter the quantity of available water (via stormwater) to these plant species.

6.5.3 Mitigation Measures

Implementation of projects pursuant to the proposed MCTA may result in direct and indirect impacts to special-status plants (see **Appendix F, Lot-Specific Impacts**); therefore, mitigation measures are required (see **Table 7.0-1**).

Mitigation measure **BIO-4, Focused Botanical Surveys**, will require a qualified biologist to conduct focused botanical surveys for special-status plants that are likely to occur based on habitat, soils, elevation, climate, and other conditions, as described in **Section 7.4**. The focused plant surveys will be conducted in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CNPS, 2018) and the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS, 2000), and conducted in the field at appropriate times of the year to coincide with the growing season and different blooming periods and when optimum conditions for identification (generally blooms, fruits, and leaves) are present. Biologists will pay special attention to those habitat areas that appear to provide suitable habitat for special-status species.

Following completion of the focused botanical surveys, a focused botanical survey report will be prepared in accordance with agency guidelines. The report will: 1) summarize information regarding the habitat of the survey area and the habitat's suitability for special-status plants; 2) assess the potential presence of special-status plants onsite; 3) analyze the potential impacts to special-status plants from project development; and 4) recommend, as appropriate, BMPs, avoidance and protection measures, and mitigation measures to reduce or avoid potential impacts to special-status plants (see **Section 7.4**).

Mitigation measures **BIO-1, BIO-2, BIO-3, and BIO-4** will also minimize or avoid impacts to special-status plant species, as described in **Section 7.1, Section 7.2, Section 7.3, and 7.4**.

6.5.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to have a substantial adverse effect, either directly or through habitat modifications, to any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.*

Less than Significant Impact with Mitigation Incorporated

The BSA contains at least one sensitive plant species, California black walnut. Conditions on the project site may support additional special-status plant species; therefore, the project is anticipated to have direct impacts to listed or sensitive plants. The project is also anticipated to have indirect impacts to special-status plant species through loss of habitat, loss or reduction of productivity, and other future habitat modifications. Implementation of mitigation measures **BIO-1**, **BIO-2**, **BIO-3**, and **BIO-4** would minimize or avoid significant impacts to special-status plant species to less than significant.

6.6 Potential Impacts to Special-Status Wildlife

One listed wildlife species, monarch butterfly, was observed within the BSA during the general biological surveys. However, the BSA has the potential to support additional listed wildlife species, including (but not limited to) coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, Swainson's hawk, and arroyo toad.

Two sensitive wildlife species, Nuttall's woodpecker and Cooper's hawk, were observed within the BSA during the biological surveys. Habitat in the BSA may support additional sensitive species, including (but not limited to) least Bell's vireo (LBV), southwestern willow flycatcher (SWFL), California gnatcatcher (CAGN), cactus wren, golden eagle, red-diamond rattlesnake, southern California legless lizard, burrowing owl, California spotted owl, long-eared owl, western yellow bat, big free-tailed bat, and mountain lion.

6.6.1 Direct Impacts

Potential direct impacts to common and special-status wildlife occupying the BSA could occur from project-related mortality, injury, or harassment of individuals as a result of permanent development of project sites, and from the removal and direct loss of breeding, foraging, and/or sheltering habitat. Direct permanent impacts include all areas within the limits of grading in project sites.

- Ground-disturbing and habitat-altering activities could result in significant impacts to common and special-status ground-dwelling animals or nesting birds. Examples include grading, clearing, disking, grubbing, excavation, trenching, paving, mowing, heavy equipment compacting, driving over habitat to access the construction work sites, tree removal and other vegetation management activities, and use of herbicides and pesticides.
- Direct impacts to less mobile fossorial (burrowing) animals that are underground during most of the day or year (e.g., small mammals or lizards) or have a life stage in the soil or on plants could occur from encounters with vehicles or heavy equipment as many of these animals do not run away from construction vehicles/equipment and would most likely be killed. These species could be expected to experience direct mortality, injury, harassment, and displacement from increased human activity and vehicle/equipment travel if they are

present onsite within the project footprint at the time of construction. Individual losses are more likely, especially during clearing activities. The loss of these animals could also affect other common and special-status wildlife that depend on them as prey.

- The BSA also supports large trees and other physical features that could potentially provide foraging, nesting, and cover habitat to support a diverse assortment of special-status bird species (year-round residents, seasonal residents, and migrants). It is unlawful to take special-status birds, and their nests, eggs, and young. Activities which are most likely to result in take of migratory birds during the breeding bird season when eggs or young are likely to be present include, but are not limited to clearing or grubbing of bird nesting habitat, tree removal, or structure demolition. The project has a potential to directly take individual breeding birds, their nests, young, or eggs.
- Large trees and buildings in the BSA also provide suitable foraging and nesting habitat for special-status bat species. Clearing or grubbing of bat nesting habitat, including tree removal, is likely to impact special-status bats.

6.6.2 Indirect Impacts

Indirect impacts could occur within areas located adjacent to project sites, including within conservation easements. Indirect impacts are more subtle than direct impacts. Indirect impacts may either be short-term (related to construction) or long-term, affecting populations and habitat quality over an extended period of time long after construction activities have been completed. Examples of indirect impacts include the following:

- The permanent loss of habitat and physical features that would occur from clearing and grading could indirectly impact wildlife species through the loss of foraging, roosting, denning, and/or breeding habitat available. Habitat loss could displace species from existing territories and reduce the home range of those species and impact nearby populations of similar species. Displaced species would then have to compete for and/or find new territories and compete for food with resident species. This could result in delayed nest building, fewer nest attempts, reduced clutch size, and an overall reduction in reproductive output.
- Ground-disturbing and construction activities could result in temporary increased ambient noise levels, vibration, lighting and/or human intrusion in and near habitat. This could disrupt natural foraging, roosting, denning, and/or breeding behavior of wildlife species. Wildlife species stressed by these factors may disperse from habitat in a project site and project vicinity. In addition, increased noise levels could interfere with territorial and mating vocalizations, thereby interfering with wildlife reproduction.
- Ground-disturbing and construction activities could increase fugitive dust, pollution, runoff, siltation, sedimentation, and erosion. This could result in degradation and alteration of habitat and soils. Consequently, the ability of onsite and adjacent vegetation communities to support wildlife populations may decrease.
- Use of artificial lighting could disrupt natural foraging and breeding behaviors and/or alter wildlife movement patterns and migratory routes of nocturnally active species such as mammals and snakes. Most animals would attempt to avoid moving in or near the lighting; however, some animals such as insects, migratory birds, and bats might be attracted to the lighting, increasing construction-related mortalities. Artificial lighting could also indirectly

affect wildlife by increasing detection by predators. The new development could also provide an increase in artificial lighting and glare which could disrupt nocturnal wildlife behavior.

- An increase and continuation of human activities within and adjacent to a project site could lead to mortality, injury, or harassment of wildlife species by providing anthropogenic food sources in the form of trash and litter or water which attracts predators such as the common raven (*Corvus corax*), northern raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and coyote.

6.6.3 Mitigation Measures

Special-status wildlife species were observed during the surveys, and the BSA contains habitat that could support additional special-status species. A negative survey finding does not preclude the occupation by special-status species of any location within the BSA. Mitigation measures will be implemented to minimize and avoid impacts to special-status wildlife species (see **Table 7.0-1**).

Prior to project approval, applicants will implement the following mitigation measures: **BIO-2** and **BIO-3**, described in **Sections 7.2** and **7.3**; **BIO-5**, *Habitat Assessment for Least Bell's Vireo and Southwestern Willow Flycatcher* and **BIO-6**, *Focused Coastal California Gnatcatcher Surveys*, to determine the presence and location of these species if they are occupying a project site. The applicant's qualified (permitted) biologist will conduct these surveys in accordance with the methodology set forth in **Section 7.5** and **Section 7.6** (or in accordance with current protocol or guidelines) and submit survey reports to the USFWS and to CDFW. If special-status bird species are present on a project site, the qualified biologist will consult with USFWS and CDFW to determine appropriate avoidance and mitigation measures to minimize impacts to these species.

Applicants will also implement mitigation measure **BIO-7**, *Focused Cactus Wren Surveys* prior to grading plan approval, to assess the presence of and use by cactus wren, as described in **Section 7.7**. If avoidance of occupied habitat is not possible, then payment into a mitigation bank or onsite restoration will occur (See **BIO-1**).

Because the BSA supports hunting and foraging habitat for mountain lions, applicants will implement mitigation measure **BIO-8**, *Preconstruction Mountain Lion Avoidance (Natal Dens)* prior to grading plan approval, to survey areas that may provide habitat for mountain lions to determine presence/absence and potential for natal dens and avoidance of impacts to mountain lions as described in **Section 7.8**.

Implementation of mitigation measure **BIO-9**, *Preconstruction Wildlife Surveys*, will ensure that sensitive wildlife species are cleared from a project site to the greatest practicable extent, thus minimizing direct impacts to sensitive wildlife species (see **Section 7.9**); **BIO-10**, *14-Day Preconstruction Burrowing Owl Surveys*, will be implemented no more than 14 days prior to initiation of ground-disturbing activities will minimize or avoid potential impacts to burrowing owl, as detailed in **Section 7.10**; mitigation measure **BIO-11**, *Preconstruction Bat Surveys*, requires that a bat survey be conducted by a qualified biologist within 30 days prior to vegetation removal to minimize or avoid impacts to bats and bat maternity roosts (see **Section 7.11**). Mitigation Measure **BIO-12**, *Preconstruction Breeding Bird Surveys*, requires that a qualified biologist conduct preconstruction surveys for breeding birds (including hawks) and their nests, as described in **Section 7.12**.

Mitigation measure **BIO-13**, *Worker Environmental Awareness Program*, requires all contractors, subcontractors, etc., working on a project site to attend a the WEAP prior to performing any work on

project site, as described in **Section 7.13**. The WEAP is intended to inform workers of the special-status plant and wildlife species known to occur on a project site, what species may occur, and steps to take if special-status species are observed by workers. Mitigation measure **BIO-14**, *Biological Monitor*, requires the presence of a qualified biological monitor on a project site, as described in **Section 7.14**. The biological monitor will ensure the implementation of mitigation measures **BIO-15**, *Wildlife Entrapment Avoidance*; and **BIO-16**, *Construction Best Management Practices*. These mitigation measures are intended to minimize or avoid direct and indirect impacts to wildlife through avoiding inadvertent entrapment of wildlife on a project site, and the maintenance of a clean project site to avoid attracting wildlife by littering and degradation of water quality, and accidental release of hazardous materials as described in **Sections 7.15** and **7.16**.

The biological monitor will also ensure the implementation of mitigation measures **BIO-2** and **BIO-3**.

6.6.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to 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 CDFW or USFWS.*

Less than Significant Impact with Mitigation Incorporated

The BSA contains at least three special-status wildlife species: monarch butterfly, Nuttall's woodpecker and Cooper's hawk. Conditions within the BSA may support additional special-status wildlife species; therefore, the project is anticipated to have direct impacts to listed or sensitive wildlife. The project is also anticipated to have indirect impacts to special-status wildlife species through increased ambient noise, human activities, lighting, etc. (see **Section 6.4.2**). Implementation of mitigation measures **BIO-2**, through **BIO-16** would minimize or avoid significant direct and indirect impacts to special-status wildlife species to less than significant (see **Table 7.0-1**).

6.7 Potential Impacts to Breeding Birds

The BSA supports large trees, shrubs, cacti, and other physical features that could provide foraging, nesting, and cover habitat to support a diverse assortment of bird species (year-round residents, seasonal residents, and migrants). Many bird species that could potentially breed within the BSA are protected by the MBTA and by Fish and Game Code § 3503, § 3503.5, and § 3513. The statutes make it unlawful to take native breeding birds, and their nests, eggs, and young. Project activities which are most likely to result in take of migratory birds during the breeding bird season when eggs or young are likely to be present include, but are not limited to, clearing or grubbing of bird nesting habitat, tree removal, grading, or structure construction. Projects have the potential to directly and indirectly impact individual breeding birds, their nests, young, or eggs.

6.7.1 Direct Impacts

Activities which are most likely to result in take of migratory birds during the breeding bird season when eggs or young are likely to be present include, but are not limited to clearing or grubbing of bird nesting habitat, structure demolition, tree removal, and vegetation trimming or clearing. The project has a potential to directly impact (take) individual breeding birds, their nests, young, or eggs; therefore, mitigation is required.

6.7.2 Indirect Impacts

Indirect impacts to breeding birds could occur from increased noise, vibration, lighting dust, and human activity during project implementation, which could adversely affect the breeding behavior of some birds and lead to the loss (take) of eggs and chicks, or nest abandonment. The project has a low potential to indirectly impact individual breeding birds, their nests, young, or eggs; therefore, mitigation is required.

6.7.3 Mitigation Measures

Prior to the onset of project-related activities, a qualified biologist will conduct preconstruction breeding bird surveys as described in mitigation measure **BIO-12** (see **Table 7.0-1**). Implementation of mitigation measure **BIO-12** will minimize or avoid potential impacts to breed birds, their nests, young, or eggs.

6.7.4 Impact Determination

Less than Significant Impact with Mitigation Incorporated

Project activities are expected to result in impacts to bird species that breed and nest on or adjacent to a project site. Direct and indirect impacts to breeding birds, their nests, young, or eggs would potentially occur as a result of the project. With the reduction of suitable breeding and nesting habitat and other project-related impacts; potential impacts to breeding birds, their nests, young, or eggs would potentially be significant. Implementing the recommended mitigation measure **BIO-12**, as described in **Section 7.12**, will minimize or avoid significant impacts to breeding birds, their nests, young, or eggs to less than significant levels.

6.8 Potential Impacts to Waters of the U.S. and State, Including Wetlands

This section discusses potential significant effects or impacts (if any), to waters of the U.S. and State, including wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat that could result from project development. Biological resources may be either directly or indirectly impacted by a project (defined by CEQA Guidelines § 15358). Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct impact:** Direct impacts caused by the project are impacts that may cause an immediate effect to jurisdictional wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat and occur at the same time and place. Any loss, alteration, disturbance or destruction of biological resources that would result from project-related activities is a direct impact. Examples include vegetation clearing, encroaching into wetlands, diverting natural surface water flows, and the loss of habitat. Direct impacts are long-term.
- **Indirect impact:** As a result of project-related activities, jurisdictional wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat may also be affected in a manner that is not direct. Indirect impacts caused by the project occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including aquatic ecosystems. Examples of indirect impacts include increased human activity, elevated dust levels, decreased water quality, soil compaction,

erosion created by the removal of vegetation, and the introduction of invasive plants. These indirect impacts may be both short term and long-term in their extent.

- **Permanent impacts:** All impacts that result in the long-term or irreversible removal of jurisdictional resources are considered permanent. Examples include constructing a building or permanent road on an area containing jurisdictional areas.
- **Temporary impacts:** Impacts considered to have reversible effects on jurisdictional resources can be viewed as temporary. Examples include short-term increased vehicle traffic and the generation of fugitive dust during construction; or removing vegetation and either allowing the natural vegetation to recolonize or actively revegetating the impact area.

All impacts (permanent and temporary) to jurisdictional waters are considered significant due to regulation by those agencies. Impacts to waters of the U.S. and State (including wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat) are regulated by USACE, RWQCB, and CDFW, and permits would be required.

6.8.1 Direct Impacts

Direct impacts to waters of the U.S. and State (water features including, but not limited to, wetlands, ephemeral and intermittent streams, water quality, water quantity and availability, and aquatic/riparian habitat) have immediate consequences, such as the changes that occur when land is cleared and graded for permanent development and waters of the U.S. and State are altered or filled in during project construction activities. Examples of potential direct impacts which could destroy or significantly impact water features include any ground-disturbing activities, such as grading, clearing, disking, grubbing, excavation, trenching, paving, or compacting that would permanently remove or alter water features. Other examples of potential direct impacts to water features include filling, stockpiling, channelization, bank stabilization, road crossings, or other permanent drainage modification. Such impacts are considered to be significant; therefore, mitigation is required.

6.8.2 Indirect Impacts

Indirect impacts to water features, water quality, water quantity and availability, and aquatic/riparian habitat result in secondary consequences and are likely to be temporary during construction, but they could also be long-term as a result of the introduction of impervious surfaces and permanent development. Indirect impacts from project implementation could occur within areas adjacent to a project site, including conservation easements, and eventually within downstream areas. Construction-related pollution including fugitive dust, erosion, increased runoff, siltation, sedimentation, and soil compaction could adversely affect water features, water quality, water quantity and availability, and aquatic/riparian habitat. Alteration of drainage patterns could affect downstream water features, plants, and habitat by redirecting flow and runoff to new areas.

The BSA contains waters of the U.S. and State; water which drains from the site into gutters or storm drains ultimately discharge into Walnut Creek. Project implementation would have significant direct and indirect impacts to water features (including, but not limited to, wetlands, ephemeral and intermittent streams, water quality, water quantity and availability, and aquatic/riparian habitat), within the BSA and in receiving waters, such as Walnut Creek. Therefore, mitigation is required (see **Table 7.0-1**).

6.8.3 Mitigation Measures

Prior to project approval, the applicant will implement mitigation measure **BIO-17, Jurisdictional Delineation Survey and Report**. Applicants of grading permits pursuant to the proposed MCTA would be required to contract with an authorized biologist to conduct a jurisdictional delineation assessment on their property to determine the presence and extent of potential waters of the U.S. or State (including but not limited to wetlands, ephemeral and intermittent drainages, and associated vegetation communities) that would be subject to the jurisdictional authority of the United States Army Corps of Engineers (USACE), the California State Water Resources Control Board (SWRCB, as represented by the Los Angeles RWQCB), and CDFW. If the assessment determines that the subject property may contain waters of the U.S. or State, a jurisdictional delineation survey is required.

If waters of the U.S. and/or State are present on project site, this mitigation measure would require a survey and delineation of potential waters of the U.S. and State on a project site and adjacent conservation easement on the property of the applicant; following the survey, the qualified biologist will prepare a jurisdictional delineation report as detailed in **Section 7.17**. The report will include a list of permits/authorizations/agreements required by the applicant from each agency. The report will also recommend impact avoidance and/or minimization measures and best management practices, and compensatory mitigation, as applicable.

6.8.4 Impact Determination

Less than Significant with Mitigation Incorporated

Significance threshold: *impacts would be considered significant if the project 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.*

The literature search and field surveys determined that the BSA contains waters of the U.S. and State, including riverine and riparian areas. The City of San Dimas, pursuant to Section VI(D)(8) of the MS4 permit, will require the implementation of an effective combination of erosion and sediment control BMPs to prevent erosion and sediment loss, and impacts to water quality including those resulting from the discharge of construction wastes within the planning area and to receiving waters (e.g., Walnut Creek).

With regard to the significance criterion for jurisdictional areas, the project is anticipated to result in substantial adverse effect to waters under the jurisdiction of USACE, CDFW, RWQCB; however, implementation of mitigation measure **BIO-17**, as described in **Section 7.17**, will minimize or avoid impacts to waters of the U.S. and State (including aquatic and riparian habitat), and impacts would be less than significant.

6.9 Potential Impacts to Critical Habitat

USFWS-designated critical habitat for coastal California gnatcatcher (*Poliioptila californica californica*) is within two miles of the project site, including Frank G. Bonelli Regional Park and the San Jose Hills. However, the BSA is not located within or adjacent to this critical habitat, the nearest of which is approximately 0.65 mile south of the BSA, in the San Jose Hills south of I- 10.

6.9.1 Direct and Indirect Impacts

No direct or indirect impacts to critical habitat are anticipated as a result of construction of the project.

6.9.2 Mitigation Measures

Critical habitat is not anticipated to be significantly impacted; therefore, no mitigation measures are required.

6.9.3 Impact Determination

No Impact

Significance criterion: *impacts would be considered significant if the project were to have a substantial adverse effect on any critical habitat identified by USFWS.*

The literature review and field surveys determined that the BSA does not contain critical habitat; therefore, the project is not anticipated to have direct or indirect impacts to critical habitat. In regard to the significance criterion, the project is anticipated to have no impact to critical habitat; therefore, no mitigation is proposed.

6.10 Potential Impacts to Fish or Wildlife Movement or Native Wildlife Nursery Sites

A review of aerial imagery and observations recorded during the biological surveys, including the coyote observed on the BSA, and examination of aerial imagery indicate that all lots in the BSA acts as a hunting, foraging, and movement area, and the BSA and surrounding areas are suitable wildlife movement corridors. Additionally, the BSA supports habitat for bat maternity roosts and hibernacula.

6.10.1 Direct Impacts

The BSA contributes to regional wildlife movement east to west and south to north within the area, and supports the passage of large and small mammals as well as migrating birds and sensitive species foraging in the area. In addition, habitat in the BSA supports the natural areas and the open space in the vicinity. Direct impacts to wildlife corridors and crossings occur as a result of loss of cover and hunting or foraging habitat for wildlife species utilizing these areas.

Direct impacts to bat maternity roosts and hibernacula occurs when trees and vegetation are cleared, removing suitable habitat for maternity roosts and hibernation sites.

6.10.2 Indirect Impacts

Indirect impacts to wildlife corridors occur when vegetation removal results in fragmented patches of open space or isolated “islands” of wildlife habitat. Because wildlife corridors facilitate movement of individuals through dispersal, seasonal migration, and movement for foraging, breeding, and cover, corridors allow for physical and genetic exchange between isolated wildlife populations and are critical for the maintenance of ecological processes, including allowing for the movement of animals and the continuation of viable populations and higher species diversity.

Indirect impacts to bat maternity roosts and hibernacula occur when removal of vegetation reduces available habitat for insects, reptiles, and small mammal species which in turn reduces the available area for hunting and foraging.

Increased lighting and level of human activity would result in indirect impacts to both wildlife corridors and bat maternity roost and hibernacula.

Wildlife corridors and native wildlife nursery sites are anticipated to be impacted as a result of project activities. Because Small Natural Areas occur on all sides of the planning area and a Natural Landscape Block (i.e., Frank G. Bonelli Regional Park) is located approximately 1.5 miles east of the planning area, the loss of open space and vegetation within the planning area, combined with the loss of habitat for bat maternity roosts and hibernacula, would be a potentially significant impact; therefore, mitigation is required.

6.10.3 Mitigation Measures

To minimize or avoid impacts to wildlife corridors, bat maternity roosts, and hibernacula, mitigation measures **BIO-1**, **BIO-2**, **BIO-3**, **BIO-11**, and **BIO-16** will be implemented (see **Table 7.0-1**) as described in Section 7.0 to minimize or avoid removal of native vegetation and other habitat. Implementation of these mitigation measures would preserve valuable resources essential to wildlife corridors, bat maternity roosts, and hibernacula, and preserve native vegetation and habitat which supports hunting and foraging areas. Implementation of mitigation measure **BIO-11** will identify existing maternity roost or hibernacula minimize or avoid impacts to them by safely evicting non-breeding bats, establishing avoidance buffers, or replacing roosts at a suitable location.

6.10.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to interfere substantially with the movement of 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.*

Less Than Significant Impact with Mitigation Incorporated

The literature review and field surveys determined that the planning area functions as a wildlife corridor and potentially contains native wildlife nursery sites (e.g., bat maternity roosts). Implementation of mitigation measures **BIO-1**, **BIO-2**, **BIO-3**, **BIO-11**, and **BIO-16**, impacts to wildlife corridors and native wildlife nursery sites would be less than significant.

6.11 Potential Impacts to Local Policies Protecting Biological Resources

The BSA contains numerous trees that qualify for protection under the San Dimas Municipal Code Chapter 18.182 *Tree Preservation*.

The ordinance designates mature significant tree as follows:

"any tree within the city of an oak genus which measures eight inches or more in trunk diameter, and/or any other species of tree that measures ten inches or more in trunk diameter, and/or any multi-trunk tree(s) having a total circumference of thirty-eight inches or more; the multi-trunk tree shall include at least one trunk with a diameter of a minimum of four inches".

Future removal or relocation of mature significant trees must be approved by the director of development services or the development plan review board. This approval is subject to conditions as deemed necessary to implement the provisions of the ordinance. No protected tree shall be removed or otherwise destroyed unless a tree removal permit has been approved by the director.

6.11.1 Direct Impacts

The removal of the existing protected trees on a project site would cause direct impacts as a result of construction of the project. Other direct impacts to trees scheduled for preservation is that ground-disturbing construction activities such as grading, diskings, excavating, soil compaction, and operation of heavy equipment could damage lateral tree roots that extend beyond the tree protection zone. To minimize direct impacts to the root system of protected trees, fencing will be placed around the perimeter of the trees, thus protecting the majority of the trees' feeder roots.

6.11.2 Indirect Impacts

Potential indirect impacts to mature significant trees in a project site include increased dust levels. Dust generated during project activities may have indirect impacts to the preservation of protected trees. Dust can coat the leaves throughout a tree's canopy and reduce the tree's ability to conduct photosynthetic processes necessary for growth and survival.

As detailed in **Section 3.3.2**, the City of San Dimas requires a Tree Removal Permit before mature significant trees may be removed. The City defines "remove" as *any act which will cause a mature significant tree to die, including but not limited to acts which inflict damage upon the root system or other parts of the tree by fire, cutting, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk*. Project activities have the potential to impact mature significant trees that have not been approved for removal per the Tree Removal Permit.

6.11.3 Mitigation Measures

To minimize impacts to the root system or other parts of protected trees, mitigation measure **BIO-18** will be implemented (see **Table 7.0-1**); **BIO-18, Mature Significant Tree Protection Measures**, requires mitigation for trees permitted by the City for removal, as detailed in **Section 7.18**.

Mitigation measure **BIO-1** will also be implemented as described in **Section 6.2** and **Section 7.1**.

6.11.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

Less than Significant Impact with Mitigation Incorporated

Potential project impacts to protected trees that are not covered by the City of San Dimas Tree Removal Permit would be impacted during project-related activities. Implementing mitigation measures **BIO-1** and **BIO-18** will minimize the significant impacts to protected and mature significant trees to a less than significant level.

6.12 Potential Impacts to HCPs or NCCPs

The planning area is not located within an HCP or NCP boundary. Components of the East San Gabriel Significant Ecological Area are within approximately 0.5-mile of the planning area; however, the planning area does not intersect with nor is it immediately adjacent to these SEA components. No impact would occur.

6.12.1 Mitigation Measures

Impacts to HCPs, NCCPs, or the East San Gabriel SEA would not occur. Mitigation is not required.

6.12.2 Impact Determination

Significance threshold: *impacts would be considered significant if the project would conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.*

No Impact

The project would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP including the East San Gabriel SEA.

7.0 MITIGATION MEASURES

CEQA states that “mitigation measures are not required for effects which are not found to be significant” (§15126.4[a]([3])) Therefore, no mitigation measures are proposed for impacts to biological resources that are less than significant. However; if significant impacts to biological resources are identified, then possible mitigation measures are recommended to avoid, eliminate or reduce the level of the impacts to less than significant levels. There are several forms of mitigation. Under CEQA (§ 15370), “mitigation” includes all of the following:

- “Avoiding” the impact altogether by not taking a certain action or parts of an action.
- “Minimizing” impacts by limiting the degree or magnitude of the action and its implementation.
- “Rectifying” the impact by repairing, rehabilitating, or restoring the impacted environment.
- “Reducing” or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- “Compensating” for the impact by replacing or providing substitute resources or environments.

The following mitigation measures are intended to minimize or avoid direct or indirect impacts to biological resources to less than significant levels and to comply with all applicable environmental laws, ordinances, policies, regulations, and management plans. **Table 7.0-1** presents the mitigation measures that would be applicable to each lot (property) and project owner (i.e., property owner) for activities pursuant to the proposed MCTA. Residential lots and associate APNs are presented in **Table 6.2-1** and shown in **Appendix A**, Figure 16, *Residential Lots and Associated Assessor’s Parcel Numbers*.

Disclaimer Regarding MCTA Biological Analyses: The avoidance, minimization, and compensatory mitigation measures provided in Section 7.0 Mitigation Measures are intended to comprehensively address the potential impacts to biological resources within SP-11 as an entire ecological unit, and per individual parcel, based on preliminary reconnaissance surveys for the purposes of the MCTA. The MCTA considered conceptual impact areas at the time of review and were not applicable to project-specific impacts, which are unknown at this time.

The biological constraints that may require avoidance, minimization, and compensatory mitigation include sensitive vegetation communities, special-status species (e.g., plants and wildlife), seasonal species protections (e.g., reproduction and overwintering), jurisdictional wetlands and waters, riparian drainage segments, protected trees, wildlife corridors, and land management designations.

A qualified biologist will perform focused biological surveys for construction approvals, based on 65 percent to 95 percent complete professional engineering drawings at the time of proposed development of each individual parcel. The biologist conducting the focused surveys will incorporate the focused survey results and those of the reconnaissance surveys (UltraSystems, 2022) to assign the relevant mitigation for each individual project. The City will require the mitigation in the construction specifications prior to issuance of grading plans approved for each individual land owner (or project applicant). The mitigation measures contained herein are legally binding and are required if impacts to protected biological resources occur as a result of the project.

Table 7.0-1
RESIDENTIAL LOTS AND ASSOCIATED MITIGATION MEASURES

Lot No.	Vegetation Community Replacement Plan	Project Limits and Designated Areas	General Vegetation and Wildlife Avoidance	Focused Botanical Surveys	Habitat Assessment for LBV & SWFL	Focused CAGN Surveys	Focused Cactus Wren Surveys	Pre-Construction Mountain Lion Avoidance	Pre-con Wildlife Surveys	14-Day Pre-con BUOW Surveys	Pre-con Bat Surveys	Pre-con Breeding Bird Survey	Worker Environmental Awareness Program (WEAP)	Biological Monitor	Wildlife Entrapment Avoidance	Construction Best Management Practices	Jurisdictional Delineation Habitat Assessment or as-needed Survey	Significant Tree Protection Measures
	BIO-1	BIO-2	BIO-3	BIO-4	BIO-5	BIO-6	BIO-7	BIO-8	BIO-9	BIO-10	BIO-11	BIO-12	BIO-13	BIO-14	BIO-15:	BIO-16	BIO-17	BIO-18
1		X	X						X			X			X	X		X
2	P	X	P	P					X	X		X	P	P	X	X	P	P
3	X	X	X	P			P		X	X	X	X	X	X	X	X	X	X
4		X	X	P		P	P		X	X	X	X	X	X	X	X	X	X
5		X	X							X		X			X	X		
6		X	X							X		X			X	X		
7	X	X	X	P		P	P		X	X	P	X			X	X		X
8	X	X	X	X		X	X	X	X	X	P	X	X	X	X	X	X	X
9	P	X	X	P		P	P	P	P	X	P	X	P	P	X	X	P	X
10	P	X	X	P		P	P	P	P	P	P	X	P	X	X	X	X	X
11	P	X	X	P	P	P	P	P	P	X	P	X	X	X	X	X	P	P
12	X	X	X	P	P	P	P	P	X	X	P	X	X	X	X	X	P	P
13	P	X	X	P	P	P	P	X	P	X	P	X	P	X	X	X	P	P
14	P	X	X	P		P	P	P	P	X		X	P	X	X	X	P	P
15	P	X	X	P		P	P	P	P	X		X	P	X	X	X	P	P
16	P	X	X	P		P	P	P	P	X		X	P	X	X	X	P	P
17	X	X	X	X		P	P	X	X	X	X	X	X	X	X	X	P	X
18	X	X	X	X		P	P	X	X	X	X	X	X	X	X	X	P	X
19	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
20	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
21	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	P	X
22	X	X	X	X		X	X	X	X	X	P	X	X	X	X	X	P	X
23	X	X	X	X		P	P	X	X	P	P	X	P	P	X	X	P	X
24	P	X	X	P		X	X	X	X	P	P	X	P	P	X	X	X	X
25	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
26	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X
27	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
28	P	X	X	P		X	X	X	X	P	P	X	X	X	X	X	P	X
29	P	X	X	P		P	P	P	X	P	P	X	P	P	X	X	X	X
30	P	X	X	P		P	P	P	X	P		X	P	P	X	X	P	P
31	X	X	X	X		P	P	P	X	X	P	X	X	X	X	X	X	X
32	X	X	X	X		X	X	X	X	X		X	X	X	X	X	P	X
33	X	X	X	X		X	X	X	X	X		X	P	P	X	X	P	X
34	P	X	X	P		P	P	P	X	P	P	X	P	P	X	X		P
35	P	X	X	P		P	P	P	X	P	P	X	P	P	X	X	P	X
36		X	X					P	X			X	P	P	X	X	P	X

Note: X = Mitigation required for any area of the parcel, P = Mitigation required if impacts extend into the remaining parcel (extension to Conservation Easement boundary).

7.1 BIO-1: Vegetation Community Replacement Plan

Sensitive natural communities (vegetation communities) are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this BRE, sensitive natural communities are considered to include vegetation communities listed in the CNDDDB and communities (alliances and/or associations) listed in the CDFW Natural Communities List with a rarity rank of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) (CDFW, 2022). Replacement and maintenance of natural resources with ecological viability is required in the FEIR (The Planning Center, 1983), General Plan (Takata Associates, 1991), and as per CEQA § 21081.6 Findings or Negative Declarations; Reporting or Monitoring Project Changes; Effect on Environment; Conditions (CEQA § 21081.6).

As the project contains multiple areas of protected sensitive vegetation communities, including California walnut groves, coast live oak woodland and forest, coast prickly pear scrub, California sagebrush-black sage scrub, and/or California buckwheat scrub (if occupied by CAGN or other listed species), and if impacts cannot be avoided, then the following mitigation would be implemented.

Delimit Sensitive Vegetation Communities: A qualified biologist will survey the project site and field verify the mapped locations and extent of sensitive vegetation communities, per the 2022 surveys (Appendix A, BRE report; UltraSystems, 2022) If discrepancies are observed, then corrections will be made to determine the extent of impact. In inaccessible areas due to topography and/or dense vegetation, a visual estimate may be used to map the vegetation extent via binocular survey, photo documentation, drawn on aerial imagery, then digitized using GIS to estimate the number, maturity, condition, and habitat value of the sampled area. Mitigation will then be fulfilled as follows.

Compensatory mitigation is required for impacts to sensitive natural communities per § 21081.6 Findings or Negative Declarations; Reporting or Monitoring Project Changes; Effect on Environment; Conditions. Therefore, the following compensatory mitigation is provided:

Mitigation Bank. The primary, streamlined approach for compensatory mitigation is payment into a local mitigation bank. The project should ideally be within the service area for the mitigation bank providing available credits for “in kind” impacts to the aforementioned sensitive vegetation communities. The minimum compensatory mitigation ratio for sensitive vegetation communities will be 3:1. If the project applicant uses an existing mitigation bank, such as Soquel Canyon Mitigation Bank¹: (<https://landveritasmitigationbanks.com/soquel.html>) or similar, the fee fully mitigates onsite impacts and no further mitigation is necessary per **BIO-1**.

Vegetation Communities Replacement Plan (in lieu of mitigation bank). In the event impacts cannot be mitigated through an approved mitigation bank, then on-site and/or off-site replanting is required at a 3:1 ratio for the impacted vegetation. The replacement plantings will be planted to mimic the surrounding natural habitat in an effort to retain the functions and values per each tree-dominated vegetation community.

A certified arborist, qualified biologist, or licensed landscape architect will prepare a Vegetation Communities Replacement Plan (“habitat mitigation and monitoring plan”; HMMP) which shall be submitted to the City of San Dimas and CDFW (as feasible) for approval. A project-specific HMMP will

¹ The Soquel Mitigation Bank is administered by Land Veritas and provides mitigation credits for walnut woodlands, oak woodlands, and coastal sage scrub

include location and techniques for habitat restoration, revegetation. The HMMP will define the proposed mitigation site, mitigation site preparation, installation of native vegetation replacement, seed palette, irrigation schedule, maintenance, monitoring, reporting, and performance success criteria. The HMMP will recommend feasible measures for mitigating any impacts to trees, sensitive native vegetation water quality, riparian, and biological resources from project implementation. The minimum monitoring period for restoration and replanting will be 5-years.

In addition to protecting sensitive vegetation communities, **BIO-1** may also serve to satisfy a portion of the requirements of the City of San Dimas tree protection ordinances (§§16.42.020, 16.42.090, 18.162.060, 18.162.070, and 18.162.100) as mandated by the City's required tree removal permit for Mature Significant Trees (see **Section 7.18 and MM-18, below**).

7.2 BIO-2: Project Limits and Designated Areas

To avoid impacts to sensitive biological resources, the property owners will collectively implement the following measures prior to project construction and commencement of any ground-disturbing activities or vegetation removal.

- Specifications for the project boundary, limits of construction, project-related parking, storage areas, laydown sites, and equipment storage areas will be mapped and clearly marked in the field with temporary fencing, screens, silt fencing, signs, stakes, flags, rope, cord, or other appropriate markers.
- All markers will be maintained until the completion of activities in that area. Construction employees will be informed to strictly limit their activities, vehicles, equipment, and construction materials to the proposed project footprint and designated staging areas and routes of travel. The construction area(s) shall be the minimal area necessary to complete the project and shall be specified in the construction plans.
- The construction crew will inspect excavated areas daily to detect the presence of trapped wildlife. See **BIO-15 Wildlife Entrapment Avoidance** and **BIO-16 Construction Best Management Practices**, below.

7.3 BIO-3: General Vegetation and Wildlife Avoidance

The BSA contains vegetation communities that can support many special-status plant and wildlife species. The property owner will implement the following general avoidance and protection measures to protect vegetation and wildlife, to the extent practical:

- Cleared or trimmed native vegetation and woody debris will be chipped and left onsite. Cleared or trimmed non-native, invasive vegetation that are in the flowering and/or seeding/fruitlet stages, then the seed heads will be bagged tightly and disposed of will be disposed of in a legal manner at an approved disposal site (landfill) as soon as possible to prevent regrowth and the spread of weeds.
- The removal of native vegetation shall be avoided and minimized to the maximum extent practicable. Temporary impacts shall be returned to pre-existing contours and revegetated with appropriate native species.

- Vehicles and equipment will be free of caked mud or debris prior to entering a project site to avoid the introduction of new invasive weedy plant species.
- To minimize construction-related mortalities of nocturnally active species such as mammals and snakes, it is recommended that all work be conducted during daylight hours. Nighttime work (and use of artificial lighting) will not be permitted unless specifically authorized. If required, night lighting will be directed away from the preserved open space areas to protect species from direct night lighting. All unnecessary lights will be turned off at sunset to avoid attracting wildlife such as insects, migratory birds, and bats.
- If any wildlife is encountered during the course of project activities, said wildlife will be allowed to freely leave the area unharmed.
- Wildlife will not be disturbed, captured, harassed, or handled. Animal nests, burrows and dens will not be disturbed without prior survey and authorization from a qualified biologist.
- Covered trash receptacles will be placed at each designated work site and the contents will be properly disposed at least once a week. Trash removal will reduce the attractiveness of the area to opportunistic predators such as common ravens, coyotes, northern raccoons, and Virginia opossums.
- The contractors and project applicant will ensure that storm water BMPs include erosion control measures for construction-related disturbance near undeveloped land with ponded water to avoid sedimentation of breeding grounds for special-status sensitive amphibians and invertebrates, such as the spadefoot toad.
- Post-construction lighting. The MCTA will ensure that construction specifications provide provisions to reduce light pollution, including down-shielding or removal of motion sensor lighting, as this type of lighting can deter wildlife and impede movement throughout the area. Night lighting can disrupt the circadian rhythms of many wildlife species. Therefore, if night lighting is required at entry points, we recommend low level lighting. All non-essential lighting should be eliminated. The Project should avoid or limit the use of artificial light during the hours of dawn and dusk, as these intervals of time are when many wildlife species are most active.
- The contractors and project applicant will ensure that storm water BMPs include erosion control measures for construction-related disturbance near undeveloped land with ponded water to avoid sedimentation of breeding grounds for special-status sensitive amphibians and invertebrates, such as the spadefoot toad.

7.4 BIO-4: Focused Botanical Surveys

To avoid impacts to special-status plant species, a qualified biologist will survey the project site for the presence of special-status plant species that are likely to occur based on habitat, soils, elevation, climate, and other conditions of the project site. The focused plant surveys will be conducted in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CNPS, 2018) and the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS, 2000). The surveys will be conducted in the field at appropriate times of the year to coincide with the growing season and different blooming periods and when optimum conditions for identification

(generally blooms, fruits, and leaves) are present. Biologists will pay special attention to those habitat areas that appear to provide suitable habitat for special-status species.

A minimum of two surveys would be conducted during different seasons of the same year to adequately capture the floristic diversity of a site, with a focus on areas that will be directly or indirectly receiving impacts from project activities. Plant taxa that occur on site will be identified to the taxonomic level necessary to determine rarity and listing status, as feasible. Plant species will be identified by an expert botanist if a question of rarity and listing status occurs. Special-status plant species will be identified, recorded in field notes, counted or estimated, and mapped on an aerial map or with a GPS unit.

Following completion of the focused botanical surveys, a focused botanical survey report will be prepared in accordance with agency guidelines. The report will: 1) summarize information regarding the habitat of the survey area and the habitat's suitability for special-status plants; 2) assess the potential presence of special-status plants onsite; 3) analyze the potential impacts to special-status plants from project development; and 4) recommend, as appropriate, BMPs, avoidance and protection measures, and mitigation measures to reduce or avoid potential impacts to special-status plants. The report will include: 1) methods and results of the literature review and field surveys; 2) figures depicting the location of special-status plants; 3) a complete flora compendium; and 4) site photographs.

Because CDFW generally considers botanical surveys to be valid for a period of up to three years, some aspects of the proposed project may warrant periodic updated surveys for certain sensitive taxa, particularly if the project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.

7.5 BIO-5: Habitat Assessment for Least Bell's Vireo and Southwestern Willow Flycatcher

Potential indirect impacts to downstream riparian habitat may require a biologist with a valid Section 10(a)(1)(A) permit will perform a habitat assessment for the least Bell's vireo (LBV) (*Vireo bellii pusillus*) and the southwestern willow flycatcher (SWFL) (*Empidonax traillii extimus*) to determine if the downstream riparian areas may support special-status species and project activities may cause an adverse effect (direct or indirect) to said species.

If the qualified biologist determines there is potential for project activities to cause an adverse effect (direct or indirect) to special-status avian species, then the authorized biologist will conduct protocol LBV surveys in accordance with the United States Fish and Wildlife's (USFWS) LBV Survey Guidelines (dated February 1992 and revised January 19, 2001 [USFWS, 2001]) and protocol SWFL surveys in accordance with the guidelines set forth by the USFWS and the United States Geological Survey (USGS) survey protocol for the SWFL (dated July 11, 2000 [USFWS, 2000] and revised June 22, 2010 [Sogge et al., 2010]). This habitat assessment report will be submitted to USFWS and the South Coast (Region 5) CDFW office within 45 days of survey effort completion. In addition, all survey efforts completed during the calendar year should be submitted to the abovementioned agencies (USFWS, 2001a).

7.6 BIO-6: Focused Coastal California Gnatcatcher Surveys

The BSA is located in the known distributional range of the California gnatcatcher (CAGN) and contains suitable coastal sage scrub habitat (coast prickly pear scrub, California sagebrush-black sage

scrub, California buckwheat scrub) to potentially support this bird; therefore, focused surveys in accordance with the *Coastal California Gnatcatcher Presence/Absence Survey Protocol* (USFWS, 1997; survey protocol) will be required. The property owners will be responsible for retaining a qualified biologist holding a Section 10(a)(1)(A) permit issued by the USFWS to conduct focused surveys for CAGN. This authorized biologist will coordinate with the Carlsbad USFWS Office prior to survey.

A minimum of six surveys shall be conducted at least one week apart, between March 15 and June 30. A minimum of nine surveys shall be conducted at least two weeks apart between July 1 and March 14. Surveys should be conducted between the hours of 6:00 a.m. and 12:00 p.m. and shall avoid period of inclement conditions. No more than 80 acres of suitable CAGN habitat should be surveyed per biologist per day.

If avoidance of occupied habitat is not possible, then payment into a mitigation bank or onsite restoration will occur (See **BIO-1**).

A survey report should then be prepared and submitted within 45 days from survey effort completion to the Carlsbad USFWS Office and the CDFW South Coast (Region 5) Office. The survey report should include the names and permit numbers of all surveyors, survey area locations, descriptions of and mapped extent of the vegetation communities in the survey area and areas adjacent. Number age, sex, and applicable color band information for detected CAGNs should be reported by the authorized biologist.

Note: Incidental observations of raptors and sensitive avian species shall be recorded during the CAGN surveys; incidental species include *but are not limited to*: Cooper's hawk, merlin, golden eagle, burrowing owl, California spotted owl, long-eared owl, coastal cactus wren, yellow warbler, and southern California rufous-crowned sparrow.

7.7 BIO-7: Focused Cactus Wren Surveys

The BSA is located in the known distributional range of the cactus wren (*Campylorhynchus brunneicapillus*; CAWR) and contains suitable coastal sage scrub habitat (coast prickly pear scrub, California sagebrush-black sage scrub, California buckwheat scrub) to potentially support this bird; therefore, focused surveys for this species should occur within areas of suitable habitat.

Cactus wren and the CAGN (see BIO-6) occur within similar suitable habitats. Providing that the authorized biologist with a Section 10(a)(1)(A) recovery permit for CAGN has the experience and expertise to conduct the CAWR survey, surveys may be conducted concurrently. If avoidance of occupied habitat is not possible, then payment into a mitigation bank or onsite restoration will occur (See **BIO-1**).

7.8 BIO-8: Preconstruction Mountain Lion Surveys (for Natal Dens)

The project occurs within the Southern California/Central Coast Evolutionary Significant Unit (ESA) of the mountain lion, which is currently a Candidate State Threatened species. As a Candidate species, protections are given as a listed status species would be protected, which is full protections under CESA.

Protections for mountain lion wildlife corridors, and potential hunting, foraging habitat, and breeding opportunities within the area of the proposed MCTA, a qualified biologist familiar with the mountain lion species behavior and life history should conduct pre-construction surveys within the

project area and 500-foot buffer that will occur within 30 days prior to project mobilization and ground-moving activities (clear, grub, grade, excavation, etc.)

A qualified biologist familiar with the mountain lion species behavior and life history should conduct surveys in areas that may provide possible habitat for mountain lion to determine the potential presence/absence of natal dens for the species. Surveys should be conducted when the species is most likely to be detected, during crepuscular periods at dawn and dusk. Survey results including negative findings should be submitted to CDFW prior to initiation of project activities.

Should an active natal den be located within 500 feet, the applicant should cease work and inform CDFW with 24 hours. No construction activities should occur in the 500-foot buffer zone until a qualified biologist in consultation with CDFW establishes an appropriate setback from the den that would not adversely affect the successful rearing of the cubs. No construction activities or human intrusion should occur within the established setback until the cubs have been successfully reared or the cats have left the area.

If take or adverse impacts to mountain lion cannot be avoided either during project construction or over the life of the project, project proponent shall consult CDFW and must acquire a CESA Incidental Take Permit (pursuant to Fish & Game Code, §2080 et seq.).

If there are no adverse effects to the mountain lion habitat, then project activities may commence without further mitigation.

7.9 BIO-9: Preconstruction Wildlife Surveys

To comply with California Fish and Game Code §§2050-2089, §3511, §4700, §5050 and §5515, the following measures will be implemented to minimize impacts to sensitive species which include, but are not limited to: southern California legless lizard, Crotch's bumble bee, western spadefoot toad, large-blotched ensatina, coast range newt, two-striped garter snake, Blainville's horned lizard, California glossy snake, and red diamond rattlesnake. The measures below will help to minimize or avoid direct and indirect impacts caused by project implementation to sensitive species.

- The project applicant will retain a qualified biologist to conduct pre-construction wildlife surveys within the applicant's APN (aka project site) and associated conservation easements.
- The survey will be conducted at least seven days prior to the onset of scheduled activities, (e.g., staging and stockpiling, structure removal, clear and grub, grading, fill, etc.).
- Pre-construction surveys for special-status wildlife species will concentrate attention in areas with potential to detect protected species, their nests, or indicators of presence (i.e., tracks, middens, fur, pellets, claw marks, scat, burrows, and/or vocalizations); observations of special-status species and/or sign will be recorded and mapped. During the surveys, the biologist will also record incidental observations of non-special-status species and/or their sign.
- Upon completion of the pre-construction wildlife surveys, the qualified biologist will prepare a brief letter report summarizing methods, results, and recommendations for project commencement. If greater than 7 days lapse in construction-related activities occurs within the subject parcel then an additional pre-construction survey is required.

- If it is determined that a federally-listed and/or state-listed or sensitive plant/wildlife species will be directly impacted by the project, the qualified biologist will consult with the USFWS in accordance with the Endangered Species Act § 7 and the CDFW in accordance with CESA under California Fish and Game Code § 2081(b), respectively. However, if the qualified biologist conducts thorough pre-construction surveys and determines there is no threat to special-status species, then construction may commence.
- Sensitive wildlife species and/or potential nesting sites will not be disturbed, captured, handled or moved.

7.10 BIO-10: 14-Day Preconstruction Burrowing Owl Surveys

A qualified biologist will conduct a preconstruction BUOW survey (Take Avoidance Survey) in accordance with the Staff Report on Burrowing Owl Mitigation (Staff Report) (CDFG, 2012) no less than 14 days prior to initiating ground disturbance activities. The survey shall be conducted in accessible portions of the Biological Study Area (BSA), a zone 500 feet out from the project site that contain BUOW essential habitat (nesting, foraging, wintering, and dispersal habitat). The survey will be conducted from sunrise to 10:00 a.m. or from two hours before sunset until evening twilight when weather conditions are conducive to BUOW observations. The biologist shall walk belt transects spaced no more than 20 meters apart to allow 100 percent visual coverage of the survey area, and examine entrances of potential burrows and suitable man-made structures for BUOWs and signs of BUOW. The biologist shall identify, record, and map with a global positioning system (GPS) unit BUOWs and potential BUOW signs. Detailed notes, including observations of wildlife species encountered during the survey, shall be recorded in field notes. A final preconstruction BUOW survey (Take Avoidance Survey) shall be conducted within 24 hours prior to ground disturbance, following the survey methodology described above (CDFG 2012).

Following the completion of the preconstruction BUOW surveys, the biologist shall prepare and electronically submit to the applicant a report summarizing the results of the survey. The report shall be prepared in accordance with the instructions described in the Staff Report. The applicant will submit one electronic copy to the project proponent and one electronic copy of the report to the City for review and concurrence prior to conducting project activities.

- The results of the 14-day preconstruction BUOW surveys will be valid for 14 days. If construction is delayed more than 14 days, then the 14-day preconstruction BUOW surveys must be repeated. That will require a change order.
- If no BUOW or signs of BUOW are observed during the survey and concurrence is received from the City, project activities may begin and no further mitigation will be required.
- If BUOW or signs of BUOW are observed during the survey, the site will be considered occupied and the BUOW may require noise and activity shielding BMPs and/or require passively relocation. The qualified biologist will notify the City and contact CDFW to assist in the development of avoidance, minimization, and mitigation measures prior to commencing project activities. A passive relocation program (Burrowing Owl Mitigation Monitoring and Artificial Burrow and Exclusion Plan) may be necessary and will require approval by CDFW prior to commencing project activities.

7.11 BIO-11: Preconstruction Bat Surveys

The BSA provides suitable oak woodland habitat and other large trees and structures including buildings that provide roosting sites for several special-status bat species. Three sensitive bat species were determined to have a moderate potential to occur in the BSA due to presence of suitable habitat and recent occurrences data (CNDDDB, 2022a). These species are pallid bat, western mastiff bat, and big free-tailed bat.

Within 30 days prior to commencement of vegetation removal, a preconstruction bat survey shall be conducted by a qualified biologist during nighttime hours for the presence of any roosting bats.

Acoustic recognition technology shall be used for the bat survey if feasible and appropriate. If either a bat maternity roost or hibernacula (structures used by bats for hibernation) are present, a qualified biologist will develop and implement appropriate protection measures for that maternity roost or hibernacula.

If either a maternity roost or hibernacula is identified, a qualified biologist will develop and implement appropriate protection measures for that maternity roost or hibernacula. These protection measures shall include, as appropriate, safely evicting non-breeding bats, establishment of avoidance buffers, or replacement of roosts at a suitable location.

7.12 BIO-12: Preconstruction Breeding Bird Survey

To maintain compliance with the MBTA and Fish and Game Code, and to avoid impacts or take of migratory non-game breeding birds and other native birds, their nests, young, and eggs, the following measures will be implemented. Impacts to nesting birds would be a potential significant impact if protected breeding birds are present; therefore, the measures below will help to reduce direct and indirect impacts caused by construction-related activities to less than significant levels.

- If project activities cannot be avoided during February 15 through September 15, a qualified biologist will conduct a preconstruction breeding bird survey for active nests (adult birds, eggs, nestlings, fledglings, and those dependent upon the nest). The breeding bird nesting season is typically from February 15 through September 15 but can vary slightly from year to year, usually depending on weather conditions.
- The survey will be conducted between three to seven days prior to the onset of scheduled activities and will include all potential nest sites, such as open ground, trees, shrubs, grasses, burrows, and structures during the breeding season.
- The project applicant will make every effort to conduct the pre-construction survey and subsequent removal of all physical features that could potentially serve as nest sites (e.g., staging and stockpiling, structure removal, clear and grub, grading, fill, etc.) to avoid impacts to nesting birds.
- If a breeding bird territory or an active bird nest is located during the pre-construction survey and will potentially be impacted, the site will be mapped and location provided to the construction foreman, City, and project applicant. The qualified biologist will establish a buffer zone around the active nest, which will be delimited (fencing, stakes, flagging, orange snow fencing, etc.) at a minimum of 100 feet, or as the qualified biologist determines is appropriate, for the detected species. The biologist will determine the appropriate buffer size

based on the planned activities and tolerances of the nesting birds. This no-activity buffer zone will not be disturbed until a qualified biologist has determined that the nest is inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, or the young will no longer be impacted by project activities. Periodic monitoring by a biologist will be performed to determine when nesting is complete. Once the nesting cycle has finished, project activities may begin within the buffer zone.

- If listed bird species are observed within a project site during the preconstruction survey, the biologist will immediately map the area and notify the appropriate resource agency to determine suitable protection measures and/or mitigation measures and to determine if additional mitigation is necessary. Project activities may begin within the area only when concurrence is received from the appropriate resource agency.
- Birds or their active nests will not be disturbed, captured, handled or moved. Active nests cannot be removed or disturbed; however, nests can be removed or disturbed if determined inactive by a qualified biologist.

If no breeding birds or active nests are observed during the preconstruction survey or they are observed and will not be impacted, project activities may begin and no further mitigation will be required.

7.13 BIO-13: Worker Environmental Awareness Program (WEAP)

Prior to project construction activities, a qualified biologist will prepare and conduct a Worker Environmental Awareness Program (WEAP) to describe the biological constraints of the project.

- All personnel who will work within a project site will attend the WEAP prior to performing any work. The WEAP will include, but not be limited to: results of preconstruction surveys; description of sensitive biological resources potentially present within a project site; legal protections afforded the sensitive biological resources; BMPs for protecting sensitive biological resources (i.e., restrictions, avoidance, protection, and minimization measures); individual responsibilities associated with the project. The program will also include the reporting requirements if workers encounter a sensitive wildlife species (i.e., notifying the biological monitor or the construction foreman, who will then notify the biological monitor).
- A condition shall be placed on grading permits requiring a qualified biologist to conduct a training session for project personnel prior to grading.
- Training materials will be language-appropriate for all construction personnel. Upon completion of the WEAP, workers will provide their signature on a “sign-in sheet” stating that they attended the program, understand all protection measures, and will abide all the rules of the WEAP. A record of all trained personnel will be kept with the construction foreman at the project field construction office and will be made available to any resource agency personnel.
- If new construction personnel are added to the project later, the construction foreman will ensure that new personnel receive training before they start working. The biologist will provide written hard copies of the WEAP and photos of the sensitive biological resources to the construction foreman.

7.14 BIO-14: Biological Monitor

A qualified project biologist shall monitor construction activities for the duration of the project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.

If special-status wildlife species or nesting bird species are observed and determined present within a project site during the pre-construction surveys or as required by the resource agencies, then a biological monitor shall be onsite to monitor throughout earth-moving activities that result in tree or vegetation removal, to minimize the likelihood of inadvertent impacts to protected biological resources. Monitoring shall also be conducted periodically during construction activities to ensure no new nests are built during any vegetation removal or building demolition activities between February 15 through September 15. The biological monitor shall ensure that all BMPs, avoidance, protection and mitigation measures described in the relevant project permits and reports are in place and are adhered to.

The biological monitor shall have the authority to temporarily halt all construction activities and all non-emergency actions if protected biological resources are identified and would be directly affected. The monitor shall notify the project applicant, the City, and then the appropriate resource agency if the issue cannot be resolved. If necessary, the biological monitor shall relocate wildlife “out of harm’s way,” outside of the work area. Work can continue at the location if the qualified biological monitor determines that the activity will not result in adverse effects on the protected resource.

The appropriate agencies shall be notified if a dead or injured protected species is located within a project site. Written notification shall be made within 15 days of the date and time of the finding or incident (if known) and must include; location of the carcass, a photograph, cause of death (if known), and other pertinent information.

7.15 BIO-15: Wildlife Entrapment Avoidance

Project-related excavations shall be secured to prevent wildlife entry and entrapment.

- Holes and trenches shall be backfilled, securely covered, or fenced. Excavations that cannot be fully secured shall incorporate appropriate wildlife ramp(s) at a slope of no more than a 3:1 ratio (horizontal: vertical), or other means to allow trapped animals to escape.
- Biological monitors shall provide guidance to construction crews to ensure that wildlife ramps or other means are sufficient to allow trapped animals to escape.
- At the end of each work day, a biological monitor shall ensure that excavations have been secured or provided with appropriate means for wildlife escape.
- All pipes or other construction materials or supplies will be covered or capped in storage or laydown areas. No pipes or tubing will be left open either temporarily or permanently, except during use or installation.

Any construction pipe, culvert, or other hollow materials will be inspected for wildlife before it is moved, buried, or capped. This type of inspection will be conducted to preclude or minimize potential impacts to all targeted species.

7.16 BIO-16: Construction Best Management Practices

Project work crews will be directed to use BMPs where applicable. These measures will be identified prior to construction and incorporated into the construction operations.

Implementation of this mitigation measure will help to avoid, eliminate or reduce impacts to sensitive biological resources, such as special-status terrestrial wildlife species, to less than significant levels. BMPs that apply to this project construction and development are as follows:

- Water pollution and erosion control plans shall be developed and implemented in accordance with RWQCB (NPDES, § CWA, and/or SWRCB Resolution No. 2019-0015 [Waste Discharge Requirements]) requirements, as discussed in Sections 3.2.7 and 3.2.8.
- Equipment storage, fueling, and staging areas shall be located on upland sites with minimal risks of direct drainage into riparian areas or another sensitive habitat. These designated areas shall be located in such a manner as to prevent any runoff from entering sensitive habitat. Necessary precautions shall be taken to prevent the release of cement or other toxic substances into surface waters. Project-related spills of hazardous materials shall be reported to appropriate entities including but not limited to applicable jurisdictional areas per the City, USFWS, and CDFG, RWQCB and shall be cleaned up immediately and contaminated soils removed to approved disposal areas.
- The natural resource agencies shall have the right to access and inspect any sites of approved projects including any restoration/enhancement area for compliance with project approval conditions including these BMPs.

7.17 BIO-17: Jurisdictional Delineation Survey and Report

Applicants of grading permits pursuant to the proposed MCTA would be required to contract with an authorized biologist to conduct a jurisdictional delineation assessment on their property to determine the presence and extent of potential waters of the U.S. or State (including but not limited to wetlands, ephemeral and intermittent drainages, and associated vegetation communities) that would be subject to the jurisdictional authority of the United States Army Corps of Engineers (USACE), the California State Water Resources Control Board (SWRCB, as represented by the Los Angeles RWQCB), and CDFW. If the assessment determines that the subject property may contain waters of the U.S. or State, a jurisdictional delineation survey is required.

Upon completion of the survey, waters of the U.S or State, if present on the applicant's property, would be mapped and described in a jurisdictional delineation report that meets or exceeds the report standards of the USACE, Los Angeles District office. The report would include a determination of potential impacts to waters of the U.S. or State (including associated vegetation communities) that would result from the applicant's project, quantify the area (in acres and square feet) of impacts to waters under the jurisdiction of each agency, and provide a list of permits, authorizations, and agreements required by the applicant from each agency. The report would also recommend impact avoidance and/or minimization measures and best management practices, and compensatory mitigation, as applicable.

7.18 BIO-18: Mature Significant Tree Protection Measures

There are numerous trees in the project areas that are designated as “mature significant trees” as per the City’s tree preservation ordinance. Refer to Section 3.3.2 for an expanded discussion of the tree ordinance.

Prior to the issuance of a grading permit, in accordance with the tree preservation ordinance, a certified arborist will conduct a complete tree inventory of the project site and adjacent areas within the property of the applicant, including conservation easements. The tree inventory will include the location, species, estimated height, canopy dripline (estimate if inaccessible), health, and diameter(s) (see measurement requirements below). Transplantable saplings will also be noted.

Measurements. The trunk diameter must be measured at a point thirty-six inches above the ground at the base of the tree. Mature significant trees include:

- Any tree of the Genus *Quercus* (oak) measuring greater than eight inches or more in trunk diameter, and/or
- Any other species of tree that measures ten inches or more in trunk diameter, and/or
- Any multi-trunk tree(s) having a total circumference of thirty-eight inches or more; the multi-trunk tree shall include at least one trunk with a diameter of a minimum of four inches”.

The ordinance also requires that no significant trees shall be removed or relocated on an undeveloped area of a property without first submitting an arborist report and obtaining a tree removal permit from the City’s Development Services, Planning Division.

The arborist report will incorporate the aforementioned tree inventory criteria, as well as provisions for disease management using best available management practices including: (1) treated infected trees before removing them from the project site; (2) cleaning and disinfecting all pruning and power tools before and after use to prevent the introduction and/or spread of pathogens; (3) and irrigation avoidance within oak tree canopies. Recommendations for onsite and/or offsite replanting methods will be provided. It is suggested that the City require replanting efforts to mimic the surrounding landscape and avoid separate landscape tree plantings as replacement, which do not meet the definition of CEQA for appropriate mitigation to less than a significant level.

§ 18.162.060 Conditions Imposed of the Tree Preservation Ordinance:

- *Tree relocation and/or two for one replacement with minimum fifteen-gallon box tree(s), or other replacement of equivalent value and size, within the subject property. The two for one replacement ratio may be reduced as determined by the final decision-making body, if a minimum of one of the following additional findings are made: (1) The reduced replacement requirement is consistent with the purposes of this chapter; (2) the tree(s) in question are located where the impact of the tree removal on the community is limited (such as trees in a generally flat portion of the rear yard of a single-family house that are deemed to have less public benefit);*
- *When on-site features, project constraints, and/or other considerations exist which prevent reasonable on-site relocation, relocation to an approved off-site location shall be permitted;*
- *If said conditions are imposed, the owner will be responsible for all replacement and relocated trees for a minimum period of two years. If during this time the tree(s) is (are) declared*

unhealthy by a certified arborist as set forth in § 18.162.090, the diseased trees shall be removed and replaced at the cost of the applicant, as set forth in § 18.162.100

- *A maintenance agreement shall be submitted by the applicant and established for each replaced and relocated tree. The maintenance agreement and maintenance responsibility shall be transferred with the sale of the property if title to the property is transferred within the specified maintenance period. (Ord. 1165 § 4, 2006)”*

If approved by the City, compensatory mitigation may occur through a fee payment into a local mitigation bank and/or through development and implementation of an HMMP (see **BIO-1**).

Replanting may occur onsite or offsite (within the reserved open space conservation easement) as “restoration/rehabilitation” and/or “enhancement.” The conservation easement must allow for habitat restoration activities if available as an option. The replacement plantings will be planted to mimic the surrounding natural habitat in an effort to retain the functions and values per each tree-dominated vegetation community. Individual disjointed plantings will be avoided to the maximum extent feasible, in an effort to maintain or prevent net loss of the existing surrounding landscape.

Upon City approval, **BIO-1** may fully mitigate for **BIO-18**, This mitigation will satisfy the City’s Tree Preservation and Protection ordinance (Municipal Code Chapter 106.39) and will ensure equal or superior ecological viability as required in the FEIR, General Plan, and as per CEQA§ 21081.6 Findings or Negative Declarations; Reporting or Monitoring Project Changes; Effect on Environment; Conditions.

8.0 POTENTIAL FEDERAL, STATE AND LOCAL BIOLOGICAL PERMITS, AND APPROVALS

Each project pursuant to the proposed MCTA must comply with federal, state, and local environmental laws, regulations, and ordinances. Any project that proposes to fill or otherwise physically alter creeks, wetlands, or other waters requires federal, state and, in some cases, local permits before it can proceed. Both permanent and temporary impacts would require permits. Prior to project implementation and impacts (permanent or temporary) to waters of the U.S. and/or State, a project may need to submit the following federal and state notifications and potentially obtain the following federal and/or state biological permits and/or approvals, as determined by the resource agencies:

- Preconstruction Notification to the U.S. Army Corps of Engineers, Los Angeles District Office (USACE)
- Section 401 Water Quality Certification or a California Waste Discharge Requirement Permit from the Los Angeles Regional Water Quality Control Board (RWQCB)
- Lake or Streambed Alteration Agreement from the California Department of Fish and Wildlife, South Coast Region (CDFW)
- General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit) Order 2009-0009-DWQ or proof of compliance with Section IV(D)(8)(d)(1) of the MS4 Permit (Order No. R4-2012-0175 as amended by State Water Board Order WQ 2015-0075 and Los Angeles Water Board Order R4-2012-0175-A01 NPDES Permit No. CAS004001)
- Incidental Take Permit from the CDFW
- Tree Removal Permit from the City of San Dimas.

The following sections describe the process to obtain the necessary permits and approvals.

8.1 Section 404 Preconstruction Notification

Waters of the U.S. under the jurisdiction of the USACE (§ 404 CWA) occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the U.S. If a project will impact waters of the U.S., a Preconstruction Notification (PCN) must be submitted to the USACE, Los Angeles District Office. The USACE will review the PCN and determine if the project may proceed or if the project requires a permit (e.g., Nationwide Permit, § 404 permit) pursuant to § 404 of the CWA. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.2 Section 401 Water Quality Certification

Waters of the U.S. under the jurisdiction of the RWQCB occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the U.S. If a project will impact waters of the U.S., a Water Quality Certification (WQC) application must be submitted to the RWQCB. The RWQCB will review the WQC application and determine if the project may proceed or if the project requires

a WQC pursuant to § 401 of the CWA. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.3 State Water Resources Control Board Waste Discharge Requirements Permit

Waters of the State under the jurisdiction of the RWQCB occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the State. If a project will impact waters of the State, a Waste Discharge Requirements (WDR) permit application must be submitted to the RWQCB. The RWQCB will review the WDR application and determine if the project may proceed or if the project requires a WDR pursuant to State Water Resources Control Board Resolution No. 2019- 0015. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.4 Lake or Streambed Alteration Agreement

Waters of the State under the jurisdiction of CDFW occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the State under CDFW jurisdiction. If a project will impact waters of the State, a Lake or Streambed Alteration Notification must be submitted to CDFW via their Environmental Permit Information Management System (EPIMS) website. CDFW will review the Notification and determine if the project may proceed or if the project requires a Lake or Streambed Alteration Agreement (LSAA) pursuant to § 1600 et seq. of the California Fish and Game Code. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.5 Construction Stormwater Permits

To minimize or avoid erosion, sediment-laden stormwater, contaminated stormwater, or non-stormwater contaminants from entering storm drains and drainages, projects pursuant to the proposed MCTA are required to obtain a Construction General Permit (for projects that would disturb one or more acres of soil during construction) or show compliance with § IV(D)(8)(d)(1) of the MS4 Permit (for projects that would disturb less than one acre of soil during construction). These permits require the preparation of a project-specific SWPPP and implementation, management, and (if necessary) replacement of construction stormwater BMPs as directed in the SWPPP.

8.6 Incidental Take Permits

Federal or state listed endangered or threatened wildlife species may occur within the BSA; therefore, further evaluation through focused and protocol wildlife surveys (**BIO-4**, **BIO-5**, and **BIO- 6**) is required for projects pursuant to the proposed MCTA. Focused and protocol surveys are necessary to determine whether, and to what extent, a project will result in impacts to federal listed endangered or threatened species or if the project will impact state listed. If a project will impact federal and/or state listed endangered, threatened, or candidate species, an incidental take permit (ITP) pursuant to Section 10(a)(1)(B) of the FESA is required when non-federal, otherwise lawful activities, including lawful project development, will result in take of threatened or endangered wildlife. Likewise, an ITP pursuant to CESA from CDFW is required when such projects will result in impacts to state listed endangered, threatened, or candidate species. The agencies may authorize an ITP if certain conditions are met.

8.7 Compensatory Habitat Mitigation and Monitoring Plan

The USACE and State of California have set a goal to prevent further decline of wetlands through a “no net loss” approach. Projects are required to be in compliance with wetland laws and regulations and to implement the State and federal policies of no net loss of wetlands. As a result, project related impacts to jurisdictional waters and wetlands require mitigation through the creation, restoration, enhancement, and/or preservation of wetlands within a project site or offsite.

A draft Habitat Mitigation and Monitoring Plan (HMMP), if required by the regulatory agencies, will need to be prepared and submitted along with the permit packages and applications (described in the following sections) to the appropriate resource agencies. The HMMP will describe the mitigation, monitoring, and management of waters and habitat provided as mitigation, as required by all the resource agencies (USACE, RWQCB, CDFW). This may include onsite or offsite preservation, restoration, and enhancement. The objective of the compensatory mitigation is to replace functions and values lost by impacts to jurisdictional waters and sensitive habitat after avoidance and minimization has been achieved to the maximum extent practicable. The format of the plan will follow the regulation set forth in the USACE’s *Los Angeles District Mitigation Guidelines and Monitoring Requirements*, dated April 19, 2004, as amended, and the Mitigation Rule (33 CFR part 332; 73 FR 19670-19687 [April 10, 2008]). In compliance with the 2008 regulations (33 CFR 332.4[c]), the HMMP will address the following items; objectives, site selection, site protection instrument, baseline information, determination of credits, mitigation work plan, maintenance plan, performance standards, monitoring requirements, long-term management plan, adaptive management plan, and financial assurances. No work in jurisdictional areas will be authorized until the project proponent receives, in writing (by letter or email), USACE approval of the final HMMP.

Waters of the U.S. and State, including wetlands and sensitive habitats occur throughout the BSA; therefore, a compensatory HMMP may be required.

8.8 Tree Removal Permit

A tree removal permit pursuant to the City of San Dimas Municipal Code 18.162 for removal of protected mature significant trees and other trees which are determined to be desirable is required. Removal or relocation of mature significant trees and must be approved by the Director of Development Services or the Development Plan Review Board. This approval is subject to conditions as deemed necessary to implement the provisions of the ordinance. Measures applicable to the Tree Removal Permit are discussed in **BIO-1** and **BIO-18**.

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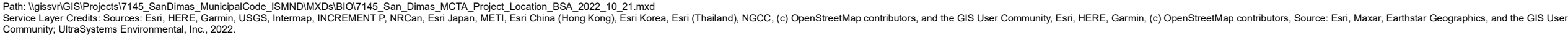
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APPENDIX A

FIGURES





Path: \\Gissrv\gis\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\7145_SanDimas_2.0_Regional_Location_2022_02_10.mxd
 Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; Los Angeles County, 2021; UltraSystems Environmental, Inc., 2022

February 10, 2022

Scale: 1:633,600



0 5 10 Miles

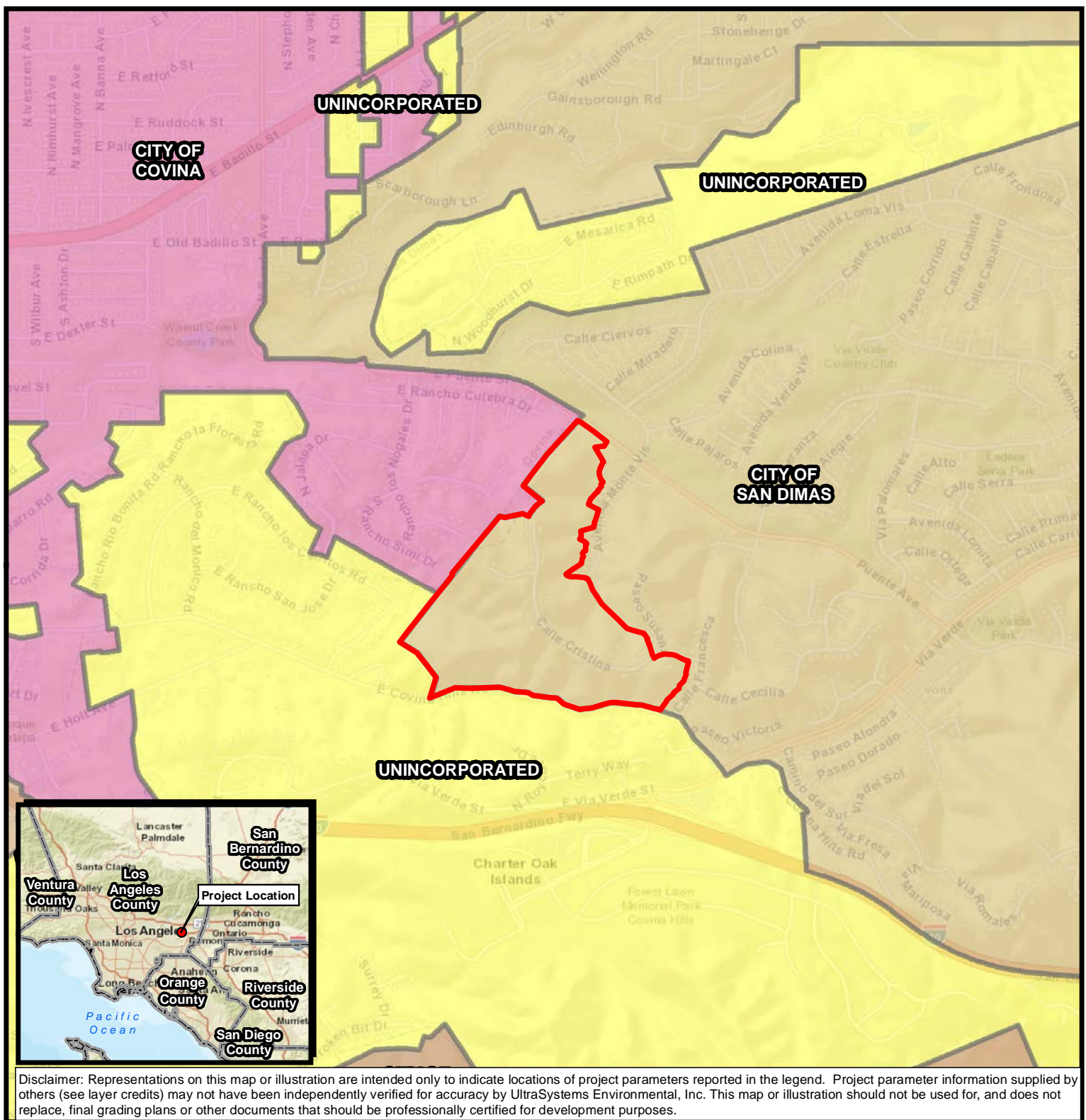
0 5.5 11 Kilometers

Legend

● Project Location

San Dimas MCTA

Regional Location
Figure 2



Path: \\Gissrv\gis\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\7145_SanDimas_3_0_Project_Vicinity_2022_02_10.mxd
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; Los Angeles County, 2020-2021; UltraSystems Environmental, Inc., 2022

February 10, 2022

Scale: 1:18,000



0 750 1,500 Feet

0 0.15 0.3 Kilometers

Legend



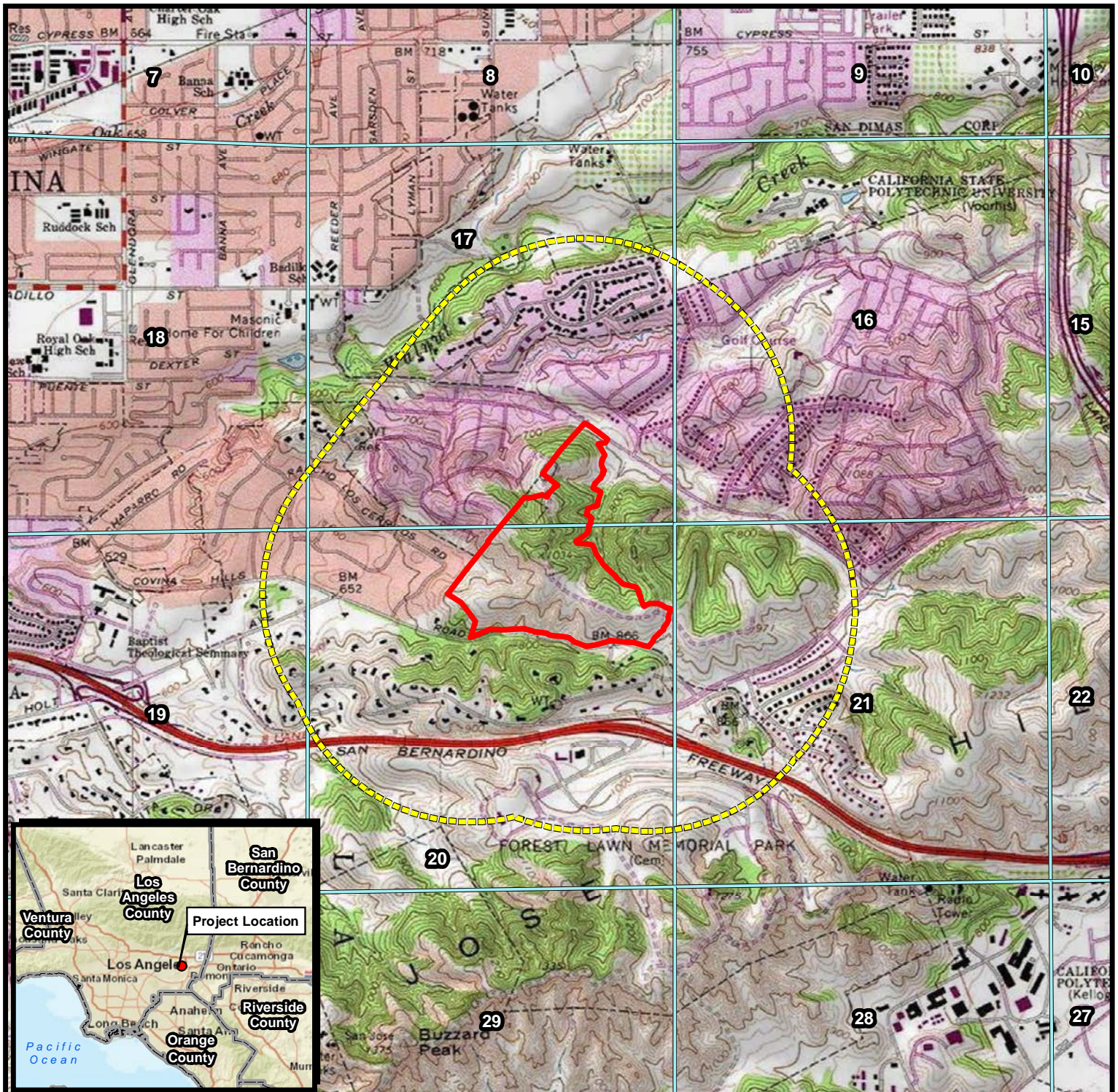
Project Boundary

San Dimas MCTA

Project Vicinity

Figure 3





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February 10, 2022

Scale: 1:24,000



0 1,000 2,000 Feet

0 250 500 Meters

Legend

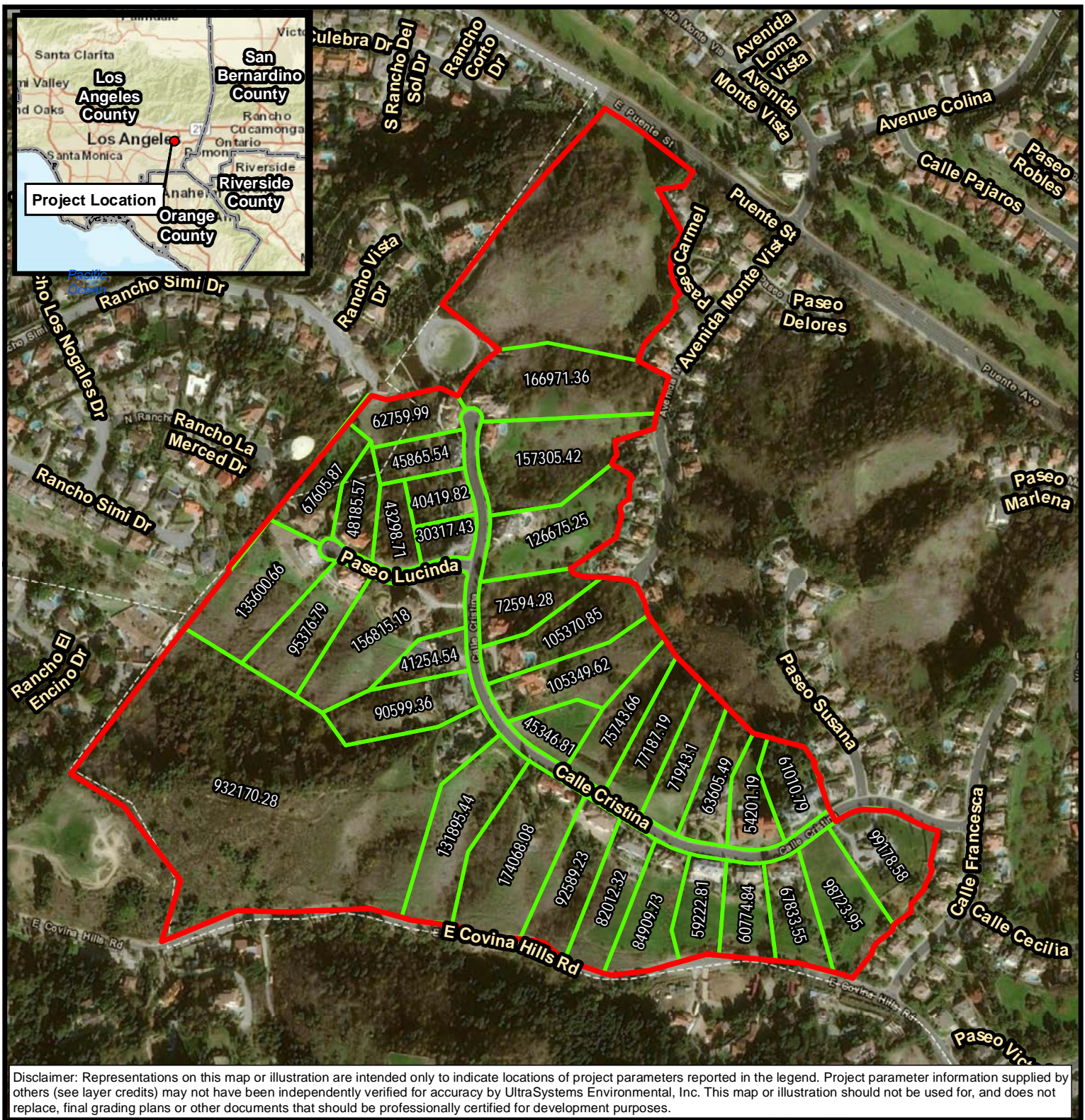
- Project Boundary
- Half-Mile Radius
- Section Boundary

San Dimas MCTA

USGS Topographic Quadrangle Map Figure 4

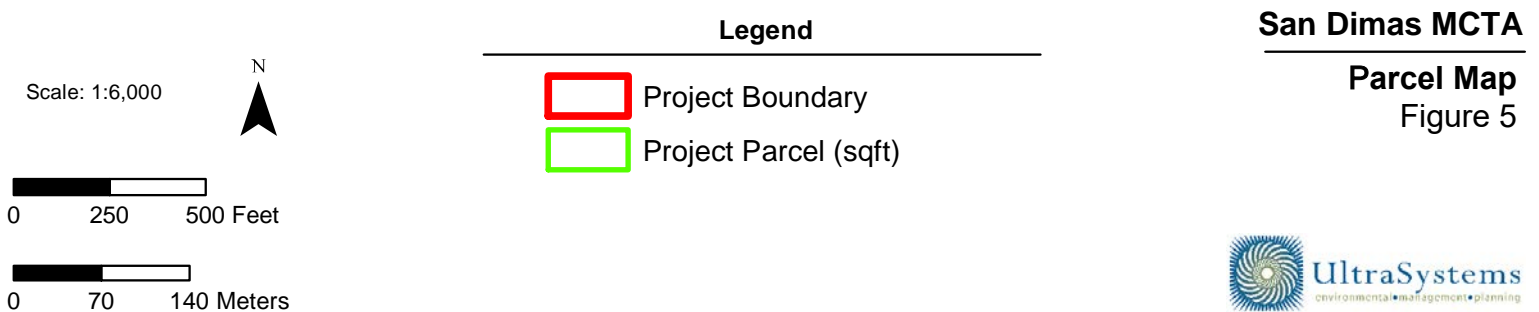
USGS Quadrangle: San Dimas
 Township: 1S Range: 9W
 Sections: 17, 20

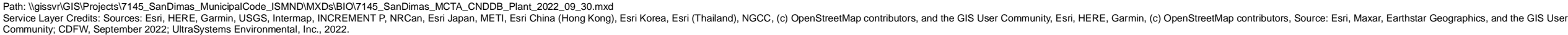


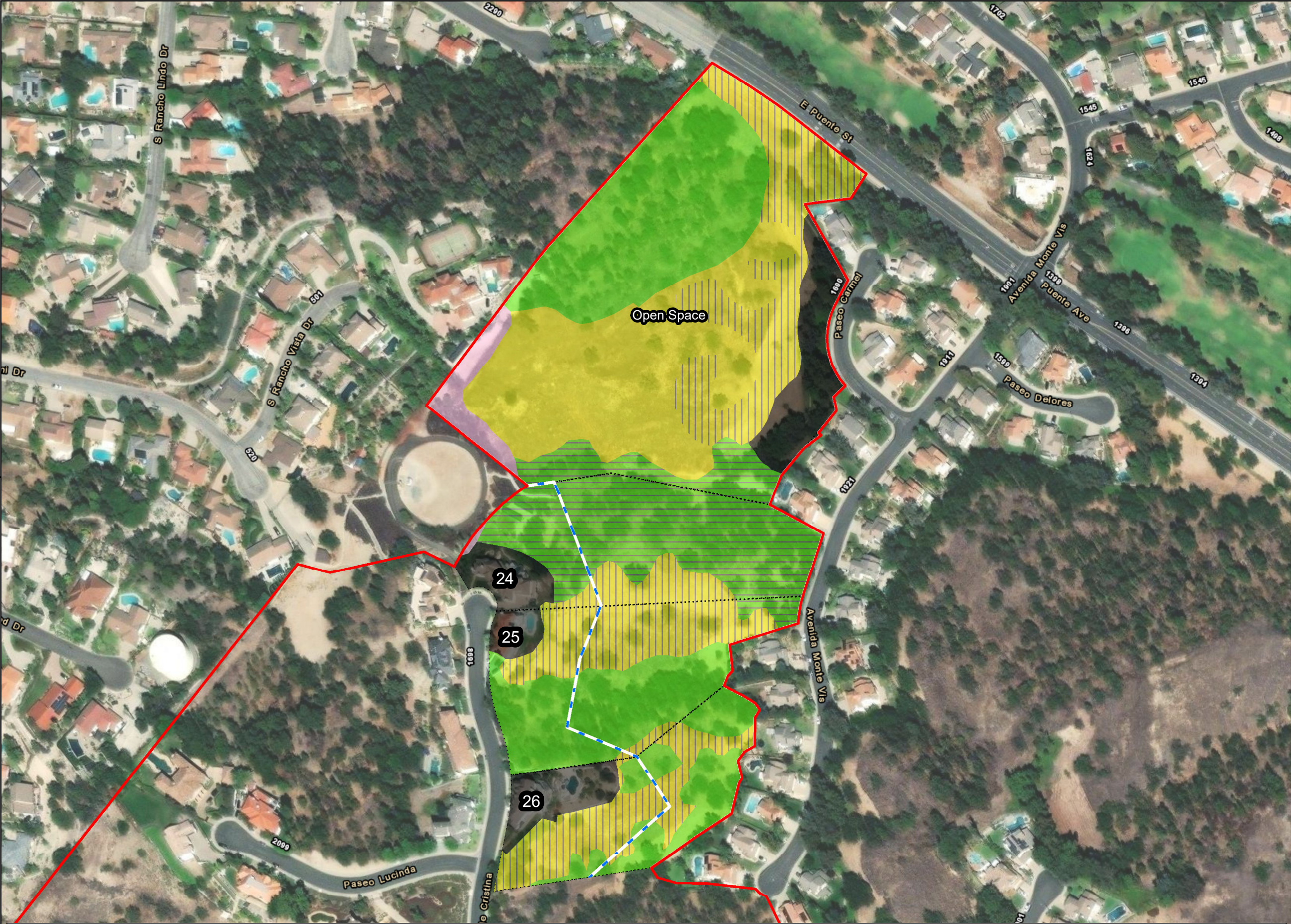


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 Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community UltraSystems Environmental, Inc., 2022

April 20, 2022





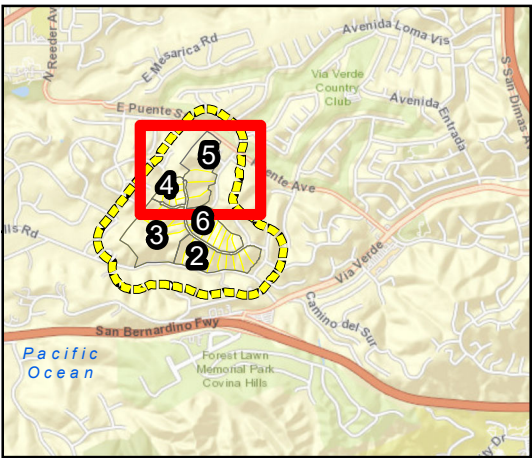


**San Dimas
MCTA 20-0005**

Legend

- 7145_OpenSpaceParcel
- Project Boundary
- Project Parcels
- Conservation Easement
- Land Cover**
 - California buckwheat scrub
 - California walnut groves
 - California walnut groves (disturbed)
 - Developed/Ornamental
 - Upland mustards or star-thistle fields
 - Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters



Land Cover
Figure 9d
Page 5 of 6



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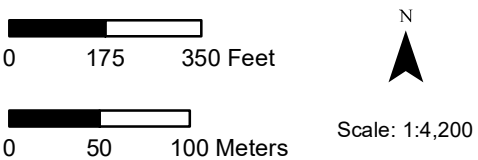


San Dimas
MCTA 20-0005

Legend

-  Project Boundary
 -  Project Parcels
 -  35% Lot Coverage (existing allowance)
 -  20ft Grading Area Extension (MCTA, 1,000cuyd)
 -  Remaining Parcel (extension to CE Boundary)
 -  Conservation Easement
- ### Land Cover
-  California buckwheat scrub
 -  California sagebrush - black sage scrub
 -  California walnut groves
 -  California walnut groves (disturbed)
 -  Coast live oak woodland and forest (disturbed)
 -  Coast prickly pear scrub
 -  Developed/Ornamental
 -  Pepper tree groves
 -  Upland mustards or star-thistle fields
 -  Upland mustards or star-thistle fields (mowed)

Key Map



Land Cover Impacts Overview Map

Figure 10
Page 1 of 6



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San Dimas
MCTA 20-0005

Legend

Project Boundary

Project Parcels

35% Lot Coverage (existing allowance)

20ft Grading Area Extension (MCTA, 1,000cuyd)

Remaining Parcel (extension to CE Boundary)

Conservation Easement

Land Cover

California buckwheat scrub

California sagebrush - black sage scrub

California walnut groves

Coast prickly pear scrub

Developed/Ornamental

Upland mustards or star-thistle fields

Upland mustards or star-thistle fields (mowed)

Key Map

0100200 Feet

02550 Meters


N

Scale: 1:2,400

Land Cover Impacts

Figure 10b

Page 3 of 6

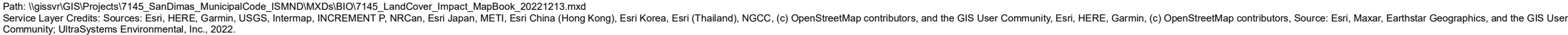


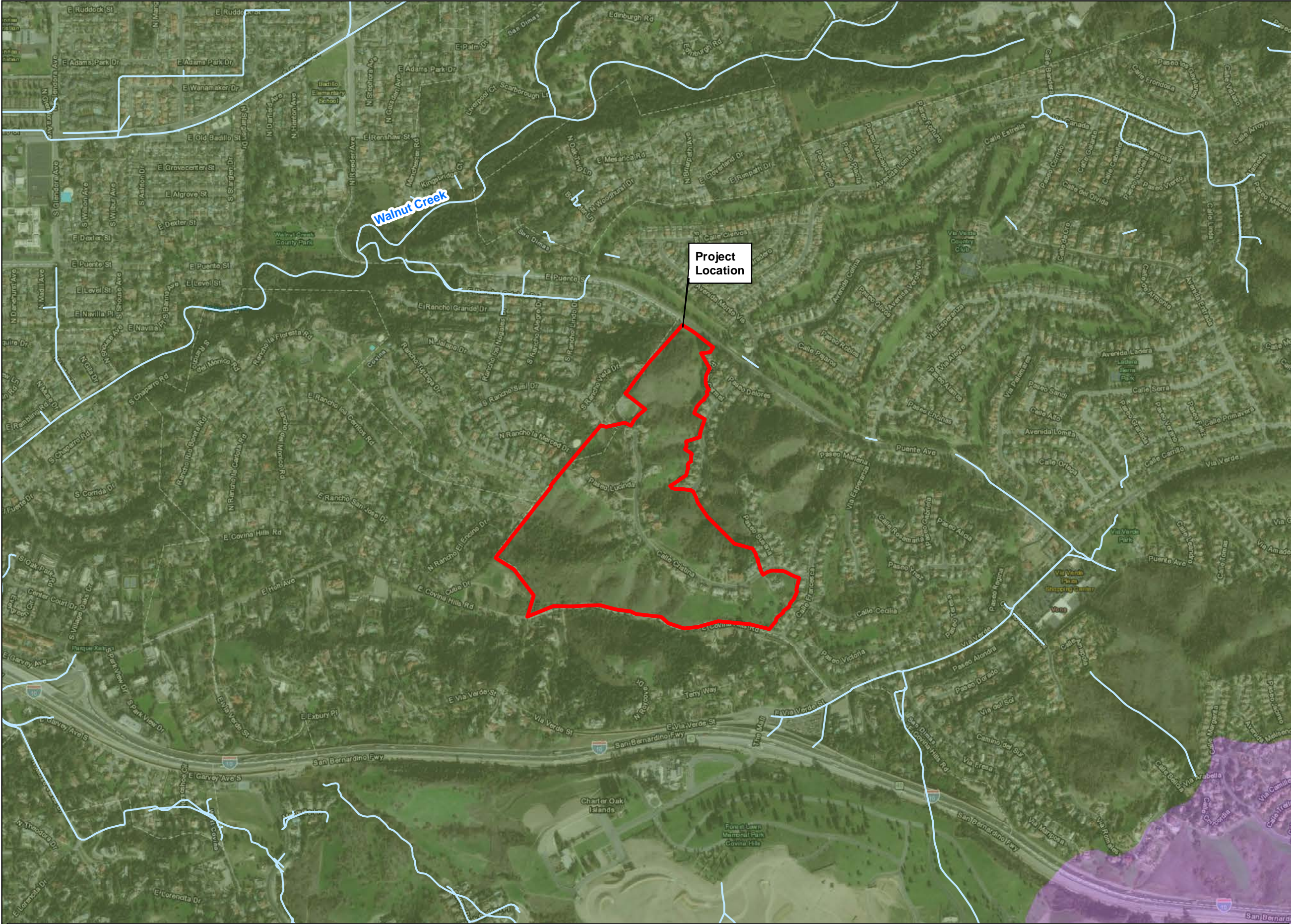
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Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_LandCover_Impact_MapBook_20221213.mxd
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; UltraSystems Environmental, Inc., 2022.

December 13, 2022



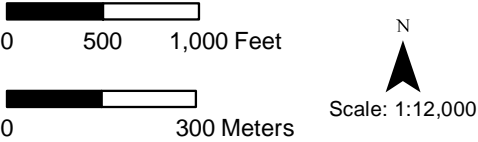


San Dimas
MCTA

Legend

- Project Boundary
- USGS Stream
- HUC12, Name**
 - 180701060402, Big Dalton Wash
 - 180701060501, Upper San Jose Creek
- USGS Waterbody

Key Map

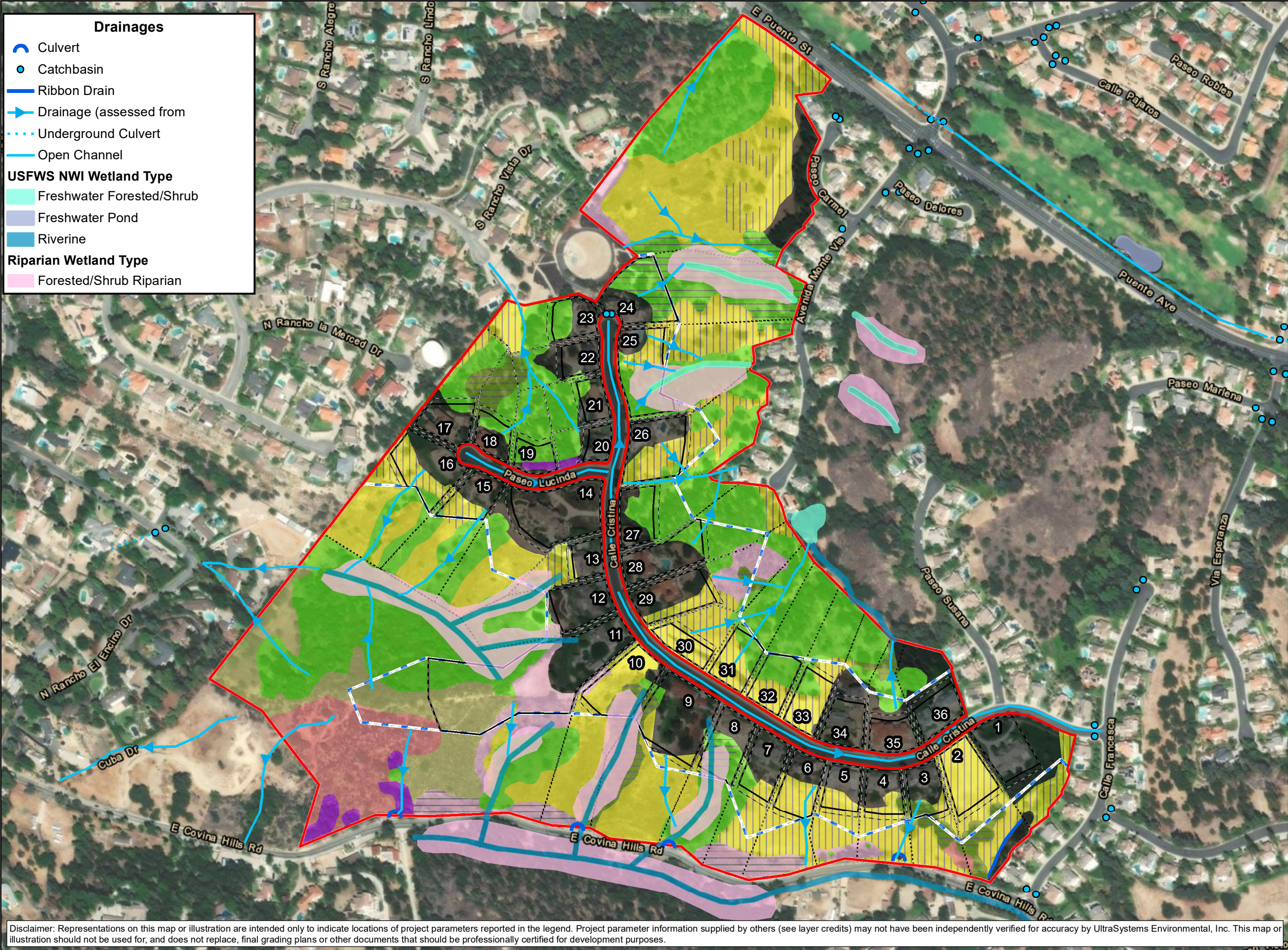


USGS Surface Waters
and Watersheds

Figure 11



Path: \\Gissvr\gis\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\7145_SanDimas_MCTA_4_10_Surface_Waters_11x17_2022_03_07.mxd
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Drainages

Culvert

Catchbasin

Ribbon Drain

Drainage (assessed from)

Underground Culvert

Open Channel

USFWS NWI Wetland Type

Freshwater Forested/Shrub

Freshwater Pond

Riverine

Riparian Wetland Type

Forested/Shrub Riparian

San Dimas
MCTA 20-0005

Legend

Project Boundary

Project Parcels

35% Lot Coverage (existing allowance)

20ft Grading Area Extension (MCTA, 1,000cuyd)

Remaining Parcel (extension to CE Boundary)

Conservation Easement

Land Cover

California buckwheat scrub

California buckwheat scrub (disturbed)

California sagebrush - black sage scrub

California walnut groves

California walnut groves (disturbed)

Coast live oak woodland and forest (disturbed)

Coast prickly pear scrub

Developed/Ornamental

Pepper tree groves

Upland mustards or star-thistle fields

Upland mustards or star-thistle fields (mowed)

Key Map

0 175 350 Feet

N

0 50 100 Meters

Scale: 1:4,200

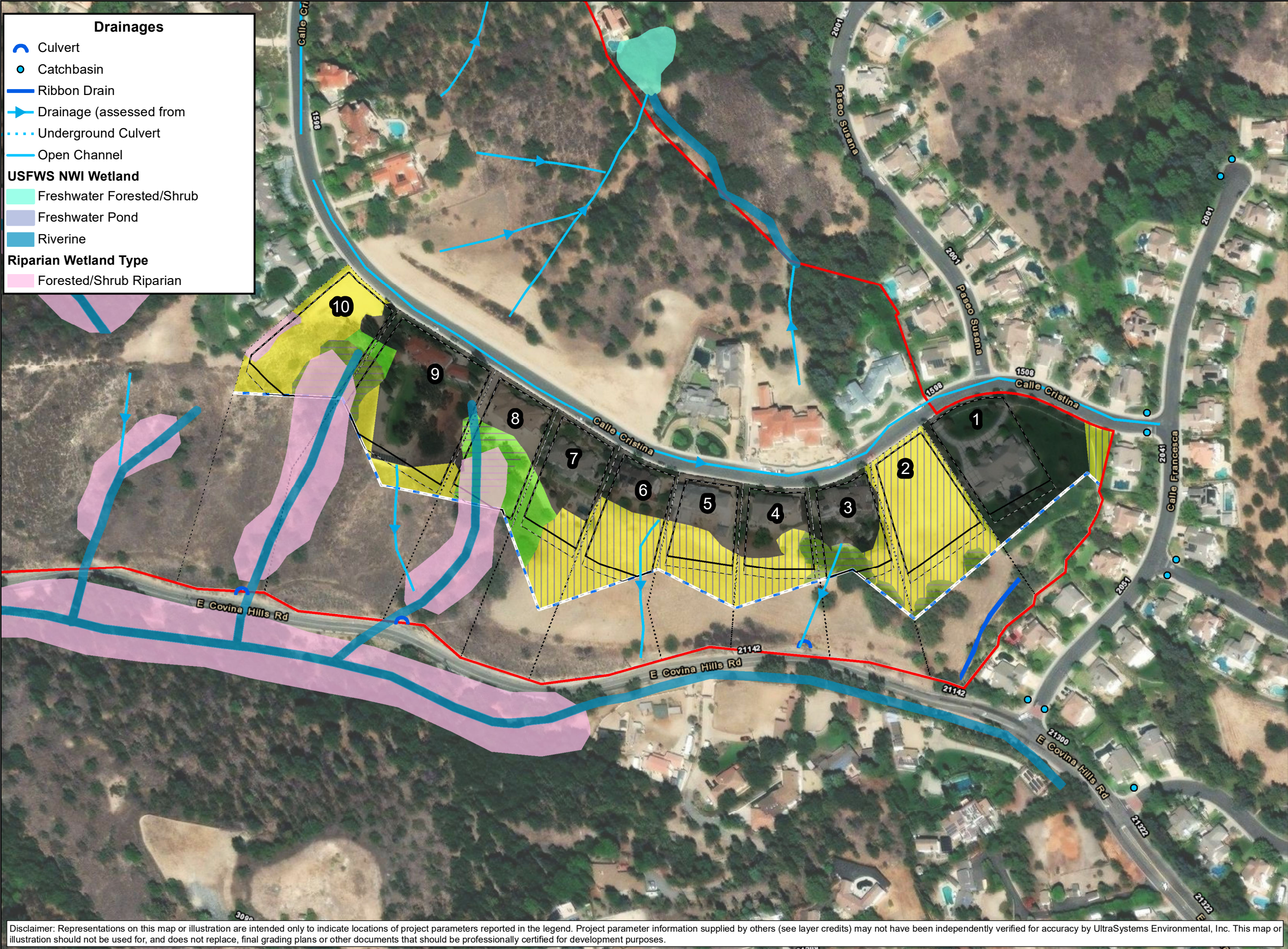
Bio Constrants Impacts Overview Map

Figure 12

Page 1 of 6

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Drainages

Culvert

Catchbasin

Ribbon Drain

Drainage (assessed from)

Underground Culvert

Open Channel

USFWS NWI Wetland

Freshwater Forested/Shrub

Freshwater Pond

Riverine

Riparian Wetland Type

Forested/Shrub Riparian

San Dimas
MCTA 20-0005

Legend

Project Boundary

Project Parcels

35% Lot Coverage (existing allowance)

20ft Grading Area Extension (MCTA, 1,000cuyd)

Remaining Parcel (extension to CE Boundary)

Conservation Easement

Land Cover

California buckwheat scrub

California walnut groves

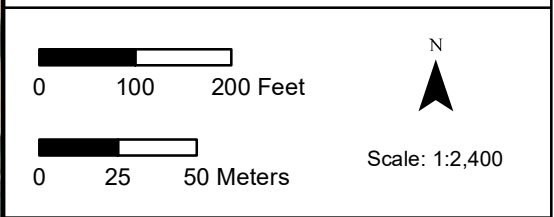
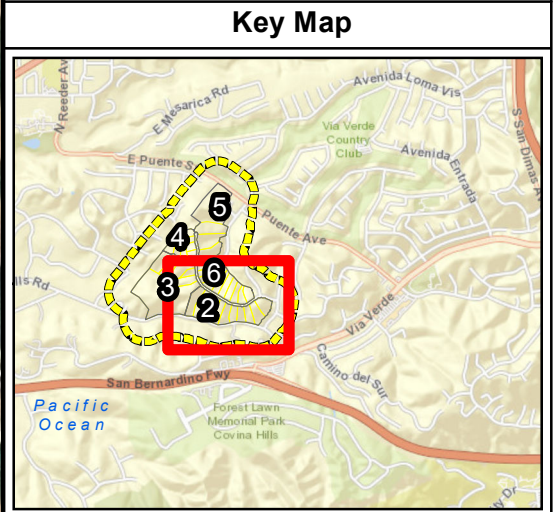
California walnut groves (disturbed)

Coast live oak woodland and forest (disturbed)

Developed/Ornamental

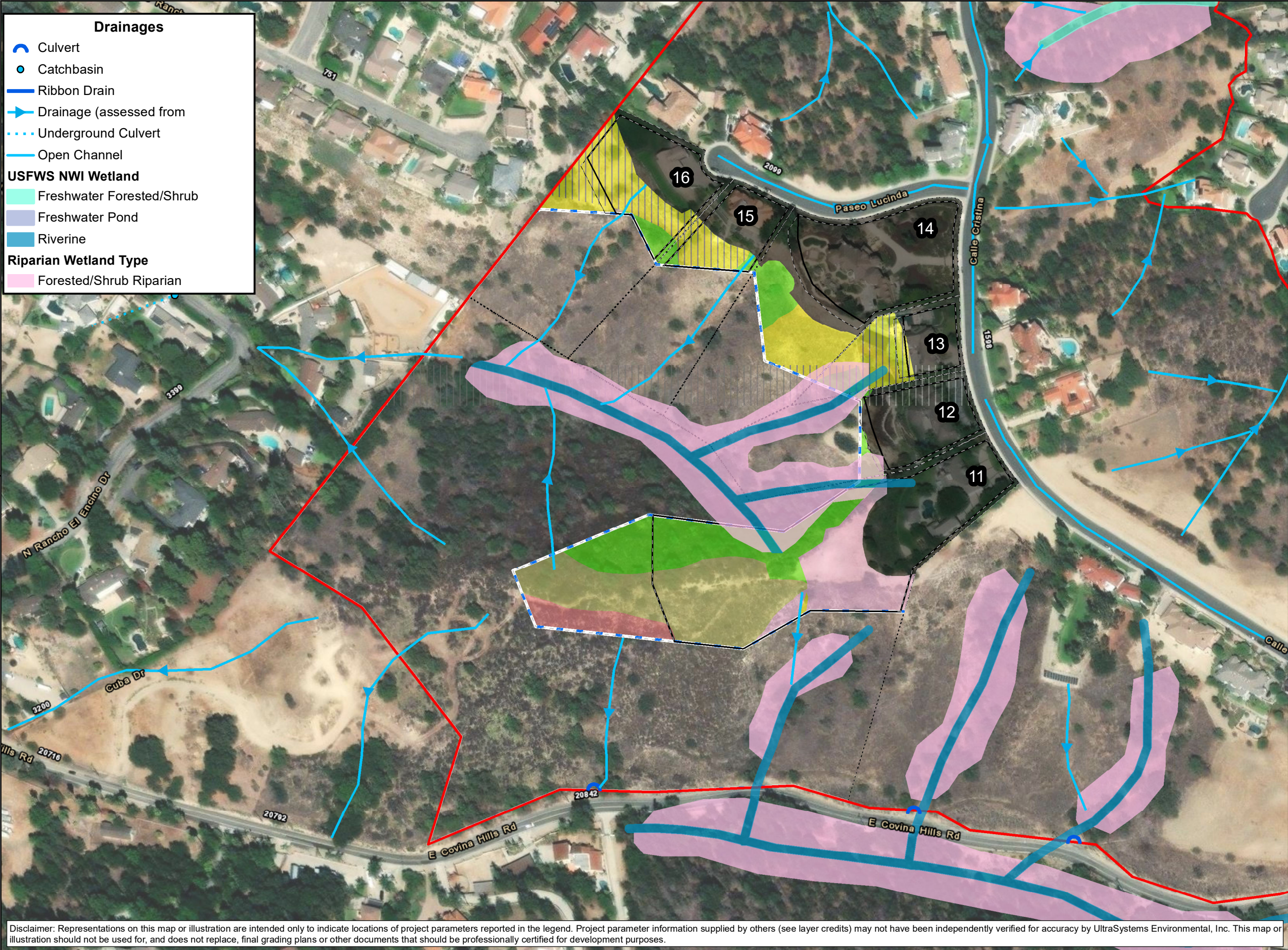
Upland mustards or star-thistle fields

Upland mustards or star-thistle fields (mowed)



Bio Constraints Impacts
Figure 12a
Page 2 of 6

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Drainages

Culvert

Catchbasin

Ribbon Drain

Drainage (assessed from)

Underground Culvert

Open Channel

USFWS NWI Wetland

Freshwater Forested/Shrub

Freshwater Pond

Riverine

Riparian Wetland Type

Forested/Shrub Riparian

San Dimas
MCTA 20-0005

Legend

Project Boundary

Project Parcels

35% Lot Coverage (existing allowance)

20ft Grading Area Extension (MCTA, 1,000cuyd)

Remaining Parcel (extension to CE Boundary)

Conservation Easement

Land Cover

California buckwheat scrub

California sagebrush - black sage scrub

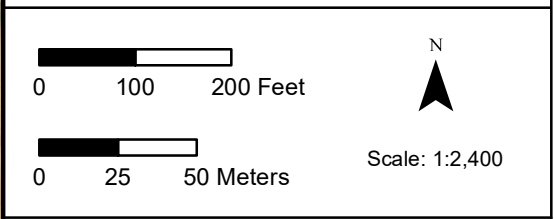
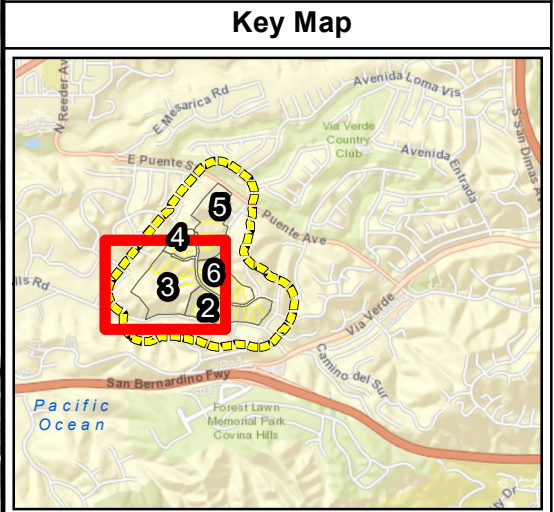
California walnut groves

Coast prickly pear scrub

Developed/Ornamental

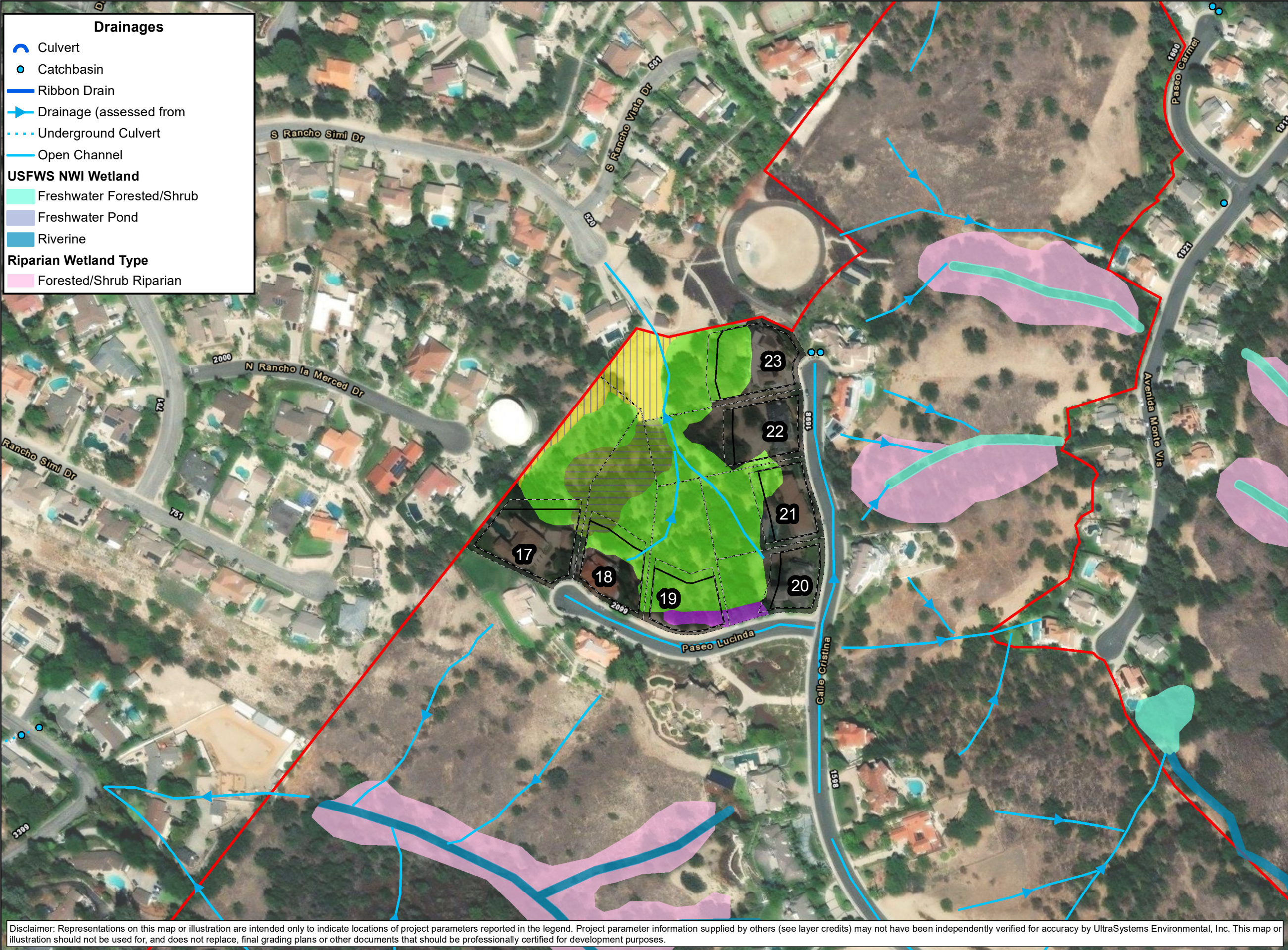
Upland mustards or star-thistle fields

Upland mustards or star-thistle fields (mowed)



Bio Constraints Impacts
Figure 12b
Page 3 of 6

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Drainages

Culvert

Catchbasin

Ribbon Drain

Drainage (assessed from

Underground Culvert

Open Channel

USFWS NWI Wetland

Freshwater Forested/Shrub

Freshwater Pond

Riverine

Riparian Wetland Type

Forested/Shrub Riparian

San Dimas
MCTA 20-0005

Legend

Project Boundary

Project Parcels

35% Lot Coverage (existing allowance)

20ft Grading Area Extension (MCTA, 1,000cuyd)

Remaining Parcel (extension to CE Boundary)

Land Cover

California buckwheat scrub

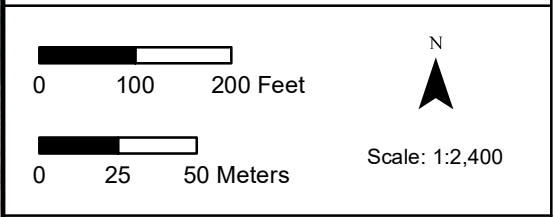
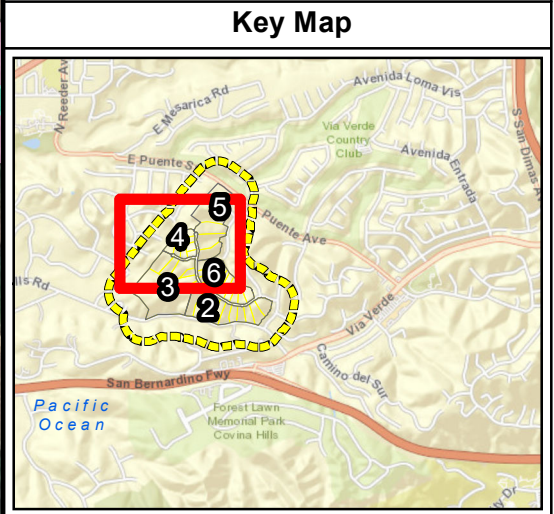
California walnut groves

Coast live oak woodland and forest (disturbed)

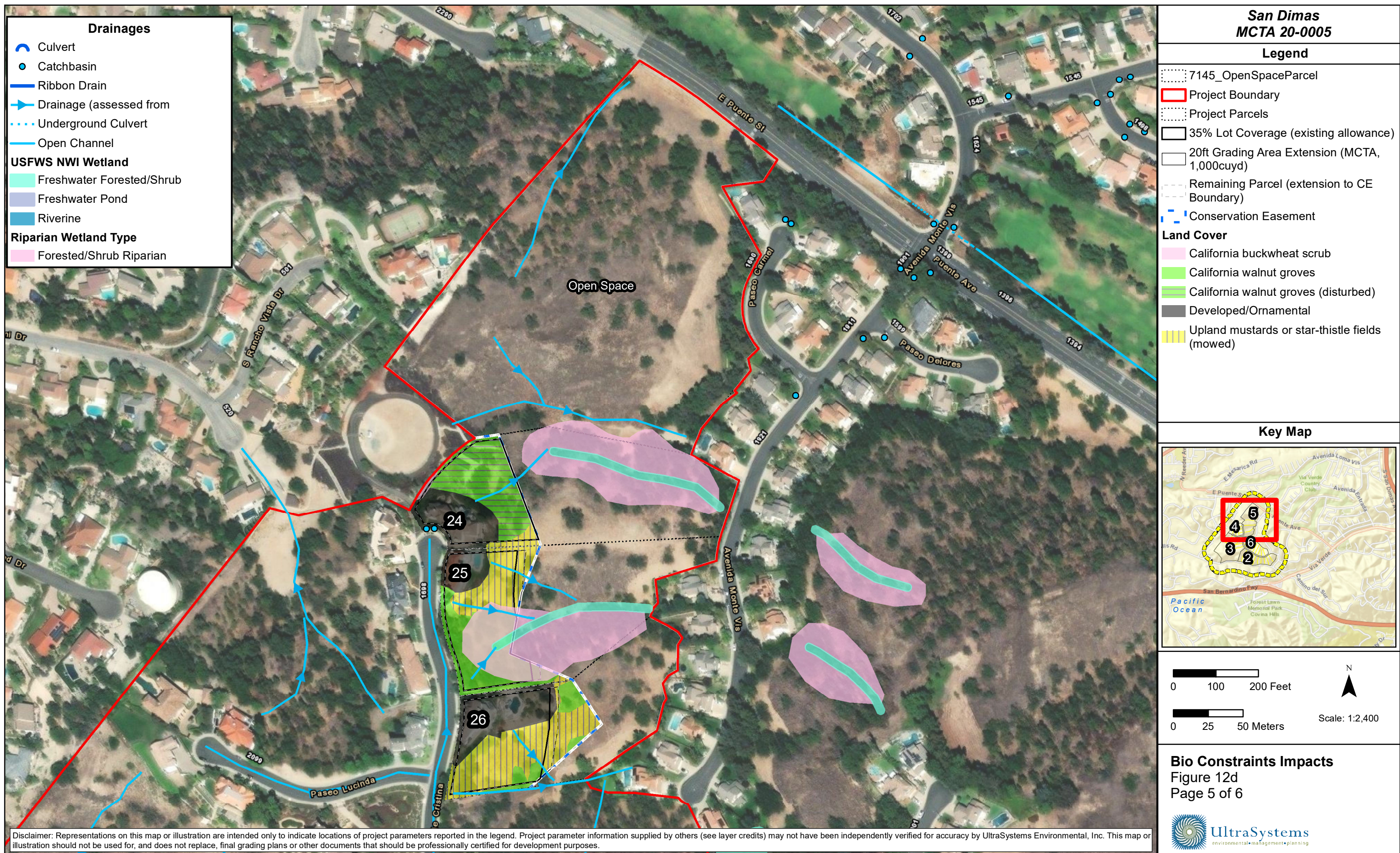
Developed/Ornamental

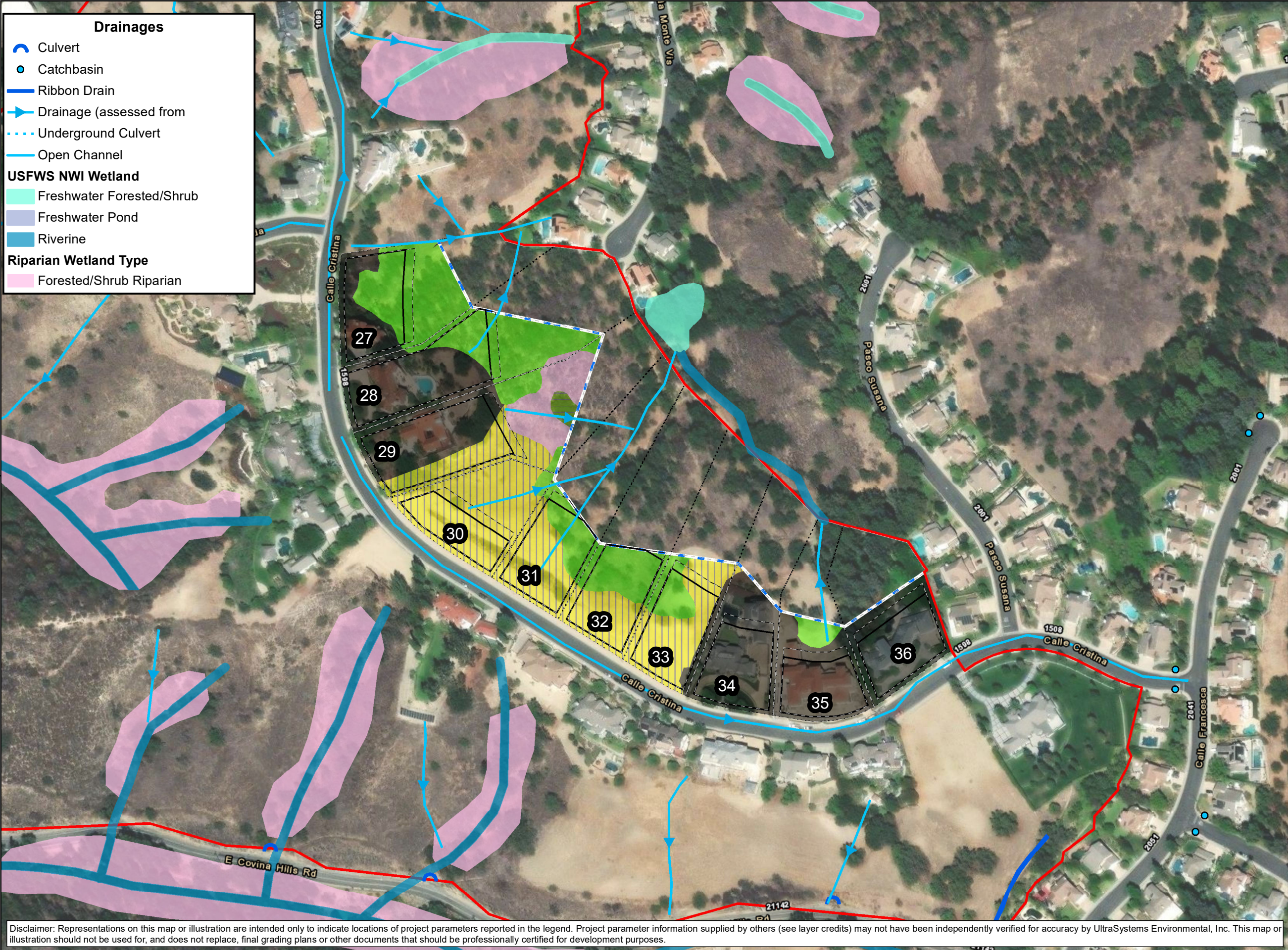
Pepper tree groves

Upland mustards or star-thistle fields (mowed)



Bio Constraints Impacts
Figure 12c
Page 4 of 6





Drainages

Culvert

Catchbasin

Ribbon Drain

Drainage (assessed from)

Underground Culvert

Open Channel

USFWS NWI Wetland

Freshwater Forested/Shrub

Freshwater Pond

Riverine

Riparian Wetland Type

Forested/Shrub Riparian

San Dimas
MCTA 20-0005

Legend

Project Boundary

Project Parcels

35% Lot Coverage (existing allowance)

20ft Grading Area Extension (MCTA, 1,000cuyd)

Remaining Parcel (extension to CE Boundary)

Conservation Easement

Land Cover

California buckwheat scrub

California walnut groves

Coast live oak woodland and forest (disturbed)

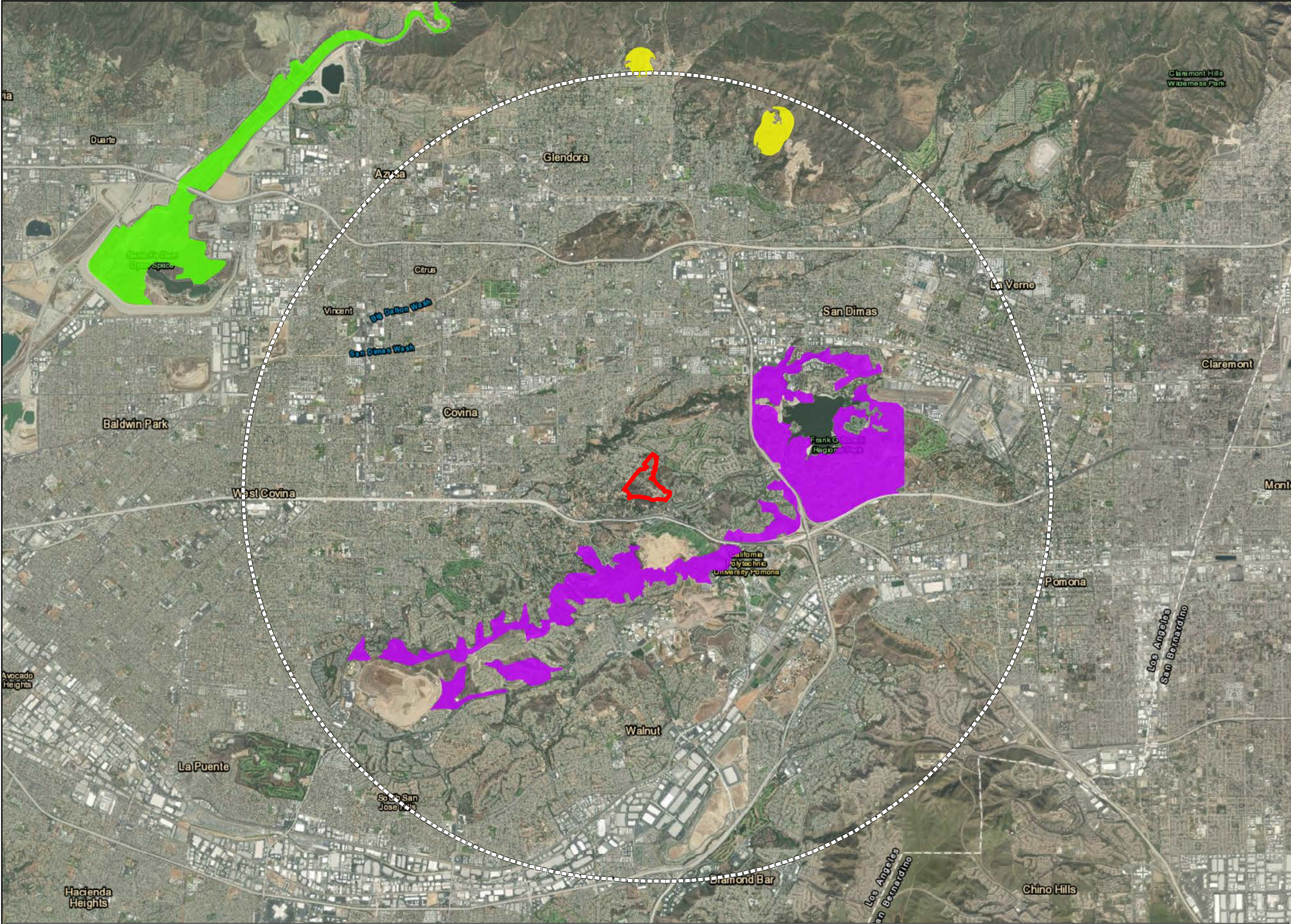
Developed/Ornamental

Upland mustards or star-thistle fields (mowed)

Key Map

Scale: 1:2,400

Bio Constraints Impacts
Figure 12e
Page 6 of 6



San Dimas
MCTA

Legend

Project Boundary

5-Mile Radius

USFWS Critical Habitat

Coastal California gnatcatcher,
Poliopitila californica californica

Southwestern willow flycatcher,
Empidonax traillii extimus

Thread-leaved brodiaea, *Brodiaea
filifolia*

Key Map

00.6251.25 Miles

00.61.2 Kilometers

N

Scale: 1:79,200

USFWS Critical Habitats

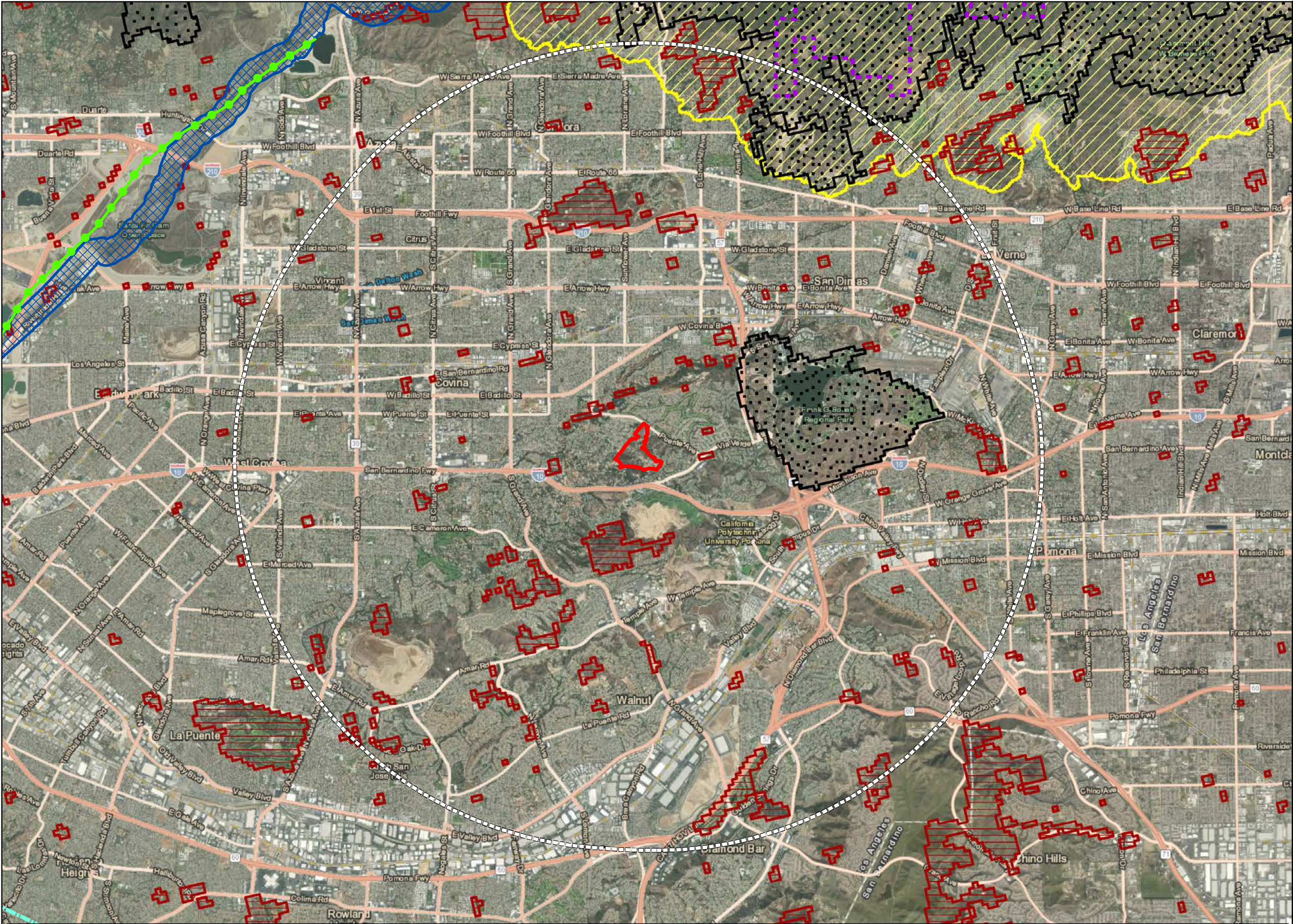
Figure 13

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Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_SanDimas_MCTA_4_4_CritHab_2022_09_29.mxd

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September 29, 2022



San Dimas MCTA

Legend

Project Boundary

5-Mile Radius

Natural Landscape Block

Essential Connectivity Area

Small Natural Areas

Potential Riparian Connections

LINKAGE TYPE, NAME

Choke-point, Puente Chino Hills

Missing Link, San Gabriel River

Linkage Network of the California Desert

Key Map

0 0.625 1.25 Miles

0 0.6 1.2 Kilometers

Scale: 1:79,200

CDFW Wildlife Corridors

Figure 14

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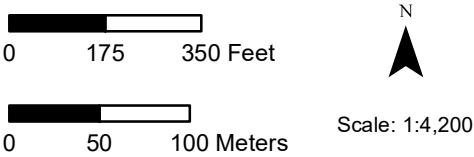


San Dimas
MCTA 20-0005

Legend

- Project Boundary
- Project Parcels
- Conservation Easement

Key Map



Residential Lots and
Associated Assessors Parcel
Numbers (APNs)

Figure 16



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APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL OCCURRENCE DETERMINATION

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Description in California	Plant Elevation Range (feet amsl)	BSA Contains Potential Suitable Habitat	BSA is Located Within the Plant Species' Known:		Potential For Occurrence in the BSA
						Elevation Range	General Distribution	
Listed Endangered, Threatened, Candidate and State Rare Plants: Plants with official status under the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and/or the Native Plant Protection Act (NPPA). A species may have other sensitive designations in addition to their federal or state listing.								
<i>Berberis nevinii</i> (= <i>Mahonia nevinii</i>)	Nevin's barberry	FE, SE, CRPR: 1B.1	Lifeform: perennial evergreen shrub Habitats: two habitat types- alluvial scrub community, chaparral community Soils: alluvial scrub community it grows on sandy and gravelly substrates along the margins of dry washes, chaparral community, it grows on steep, north-facing slopes with coarse soils and rocky slopes Bloom Period: February to June	229 – 2,706	Yes	Yes	Yes	Moderate potential to occur. There are some sandy-loam soils in the BSA, which could potentially create suitable consitions to support this species. In addition, the BSA contains steep slopes and contains chaparral habitat.
<i>Phacelia stellaris</i>	Brand's star phacelia (=Brand's phacelia)	FC, CRPR: 1B.1	Lifeform: annual herb Habitats: open areas in coastal dunes and coastal scrub Soils: sandy openings, sandy benches, dunes, sandy washes, or flood plains of rivers Bloom Period: March to June	3 – 1,312	No	Yes	Yes	No potential to occur. The soils of the project site and the BSA are not sandy. The BSA does not occur In a sandy wash or dune.
<i>Brodiaea filifolia</i>	thread-leaved brodiaea (=threadleaf clusterlily)	FT, SE, CRPR: 1B.1	Lifeform: perennial bulbiferous herb Habitats: gentle hillsides, valleys, and floodplains in semi-alkaline mudflats, vernal pools, mesic southern needlegrass grasslands, mixed native-nonnative grasslands and alkali grasslands plant communities Soils: clay to fine sand Bloom Period: March to June	82 – 3,674	Yes	Yes	Yes	Moderate potential to occur. The soils of the project site are fine and contain some clay. USFWS Critical Habitat for this species is located approximately 4.5 miles from the project site.
Sensitive Plants: These plants have no official status under the ESA, the CESA, and/or the NPPA; however they are designated as sensitive or locally important by federal agencies, state agencies, and/or local conservation agencies and organizations.								
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern	CRPR: 2B.2	Lifeform: perennial rhizomatous herb Habitats: meadows and seeps along streams and seepage areas Bloom Period: January to September	164 – 2,001	Yes	Yes	Yes	Low potential to occur. The BSA support marginally suitable habitat (seeps and other wet areas) required by this species. Drainages in the BSA are ephemeral.
<i>Pseudognaphalium leucocephalum</i> (= <i>Gnaphalium leucocephalum</i>)	white rabbit-tobacco	CRPR: 2B.2	Lifeform: perennial herb Habitats: chaparral, cismontane woodlands, coastal scrub and riparian woodlands; sandy or gravelly benches, dry stream bottoms, canyon bottoms Soils: sandy and gravelly sites Bloom Period: (July) August to November (December)	0 – 6,888	Yes	Yes	Yes	Moderate potential to occur. . The soils of the BSA are somewhat sandy although also contain significant clay and loam components, and the sloping topography of the project site could cause presence of enough water to support this species, especially at the points of lowest elevation and in the drainages. In addition, the BSA contains coastal scrub and cismontane woodlands which create suitable habitat to support this species.
<i>Senecio aphanactis</i>	chaparral ragwort (=rayless ragwort)	CRPR: 2B.2	Lifeform: annual herb Habitats: rocky limestone slopes and washes in pinyon and juniper woodlands (carbonate) Bloom Period: January to April (May)	49 – 2,624	No	Yes	Yes	No potential to occur. The BSA does not contain pinyon-juniper woodlands; a natural community in which this species is typically associated or carbonate soils.

<i>Symphyotrichum greatae</i> (= <i>Aster greatae</i>)	Greata's aster	CRPR: 1B.3	Lifeform: perennial rhizomatous herb Habitats: mesic canyons of broad leafed upland forests, chaparral, cismontane woodlands, lower montane coniferous forests, and riparian woodlands Bloom Period: June to October	984 – 6,593	Yes	Yes	Yes	Low potential to occur. The BSA supports suitable habitat (riparian woodlands) required for this species. The majority of the documented observations of this species within the vicinity of the BSA occur in the Angeles National Forest.
<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Robinson's pepper grass	CRPR: 4.3	Lifeform: annual herb Habitats: chaparral and coastal sage scrub often around rock outcrops Soils: dry soils Bloom Period: January to July	3 – 2,903	Yes	Yes	Yes	Moderate potential to occur. The BSA provides some areas of suitable coastal sage scrub and chaparral habitat, particularly at Areas 4 & 5, to support this species.
<i>Thysanocarpus rigidus</i>	rigid fringe pod	CRPR: 1B.2	Lifeform: annual herb Habitats: pinyon and juniper woodlands on dry rocky slopes and ridges of oak and pine woodlands in arid mountain ranges Bloom Period: February to May	1,968 – 7,216	No	No	Yes	No potential to occur. The BSA is below the known elevation range of this species.
<i>Atriplex coulteri</i>	Coulter's saltbush	CRPR: 1B.2	Lifeform: perennial herb Habitats: coastal bluff scrub; on coastal dunes; and on ridge tops Soils: clay soils and alkaline low places Bloom Period: March to October	10 – 1,508	Yes	Yes	Yes	Moderate potential to occur. The project area does not contain coastal dunes, which are habitat types in which this species is typically found. However, the project area consists primarily of Zaca-Apollo soils, which have a significant amount of clay (Zaca). Soils of the project site are consistent with those preferred by this species.
<i>Calystegia felix</i>	lucky morning-glory	CRPR: 3.1	Lifeform: annual rhizomatous herb Habitats: meadows and seeps (sometimes alkaline) and alluvial riparian scrub Soils: silty loam and alkaline soils Wetlands, Drainages, or Seeps: Yes Bloom Period: March to September	98 - 705	No	Yes	Yes	No potential to occur. The BSA does not support suitable habitat (wetlands and seeps) required for this species. Drainages in the BSA are ephemeral.
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	CRPR: 2B.2	Lifeform: annual parasitic vine Habitats: freshwater marshes and swamps Bloom Period: July to October	49 - 918	No	Yes	Yes	No potential to occur. The BSA does not contain marshes or swamps that would be necessary to support this species.
<i>Dudleya cymosa</i> ssp. <i>crebrifolia</i>	San Gabriel River dudleya	CRPR: 1B.2	Lifeform: perennial herb Habitats: steep cliff faces Soils: granitic soils within chaparral Bloom Period: April to July	902 – 1,499	No	Yes	Yes	No potential to occur. The BSA does not support suitable habitat (cliff faces, chaparral) required for this species.
<i>Dudleya multicaulis</i>	many-stemmed dudleya	CRPR: 1B.2	Lifeform: perennial herb Habitats: barrens, rocky places, and ridgelines as well as thinly vegetated openings in chaparral, valley and foothill grasslands, and coastal sage scrub Soils: clay soils, heavy soils, often clay Bloom Period: April to July	49 – 2,591	Yes	Yes	Yes	Moderate potential to occur. The BSA contains suitable clay soils to support this species, particularly in Area 5 of the planning area. The BSA contains some vegetated openings in chaparral, therefore providing suitable habitat for this species.
<i>Sidalcea neomexicana</i>	salt spring checkerbloom (=mountain sidalcea)	CRPR: 2B.2	Lifeform: perennial herb Habitats: alkaline, mesic sites in chaparral, coastal scrub, lower montane coniferous forests, Mojavean desert scrub, alkali playas, and brackish marshes. Usually in wetlands. Bloom Period: March to June	49 – 5,018	No	Yes	Yes	No potential to occur. The BSA does not support suitable habitat (alkali playas, brackish marshes, wetlands) required for this species.
<i>Chorizanthe parryi</i> var. <i>parryi</i>	Parry's spineflower	CRPR: 1B.1	Lifeform: annual herb Habitats: coastal scrub, chaparral, cismontane woodlands, and valley and foothill grasslands Soils: sandy or rocky soils Bloom Period: April to June	902 – 4,002	Yes	Yes	Yes	Low potential to occur. The BSA contains chaparral, coastal scrub, and cismontane woodlands, both of which are suitable habitat types for this species. However, the soils of the project site and the BSA are fine-loamy and clay soils; the BSA does not contain the sandy, rocky soils necessary to support this species and therefore this species was determined to have a low potential to occur.

<i>Horkelia cuneata</i> <i>var. puberula</i> (= <i>Horkelia cuneata</i> ssp. <i>puperula</i>)	mesa horkelia	CRPR: 1B.1	Lifeform: perennial herb Habitats: maritime chaparral, coastal scrub, and cismontane woodlands Soils: sandy or gravelly sites Bloom Period: February to September	230 – 2,657	Yes	Yes	Yes	Moderate potential to occur. There is some suitable cismontane woodland, coastal scrub, and chaparral habitat in the BSA. The soils over most of the BSA contain sand components that could create suitable conditions for this species.
<i>Galium grande</i>	San Gabriel bedstraw	CRPR: 1B.2	Lifeform: perennial deciduous shrub Habitats: broad leaved upland forests, chaparral, cismontane woodlands, and lower montane coniferous forests Bloom Period: January to July	1,394 – 4,920	No	No	Yes	No potential to occur. The BSA is at a lower elevation than the known elevation range for this species..
<i>Cladium californicum</i>	California sawgrass	CRPR: 2B.2	Lifeform: perennial rhizomatous herb Habitats: meadows and seeps and alkaline or freshwater marshes and swamps Wetlands, Drainages, or Seeps: Yes Bloom Period: June to September	197 – 2,837	No	Yes	Yes	No potential to occur. The BSA does not support suitable habitat (meadows and seeps, marshes, or swamps) required for this species..
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	CRPR: 1B.2	Lifeform: perennial bulbiferous herb Habitats: shaded foothill canyons often on grassy slopes within other habitat, chaparral and coastal scrub Bloom Period: March to June (November)	1,050 – 3,280	Yes	Yes	Yes	Moderate potential to occur. The project area contains some grassy slopes and shaded areas.
<i>Calochortus plummerae</i>	Plummer’s mariposa lily	CRPR: 4.2	Lifeform: perennial bulbiferous herb Habitats: chaparral, cismontane woodlands, coastal scrub, valley and foothill grasslands, and lower montane coniferous forests Soils: dry, rocky slopes and soils Bloom Period: May to July	328 – 5,576	Yes	Yes	Yes	Moderate potential to occur. The project site contains some foothill grasslands that create low-quality suitable habitat for this species. The majority of the soils in the BSA are well-drained dry soils.
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily (=Weeds mariposa lily)	CRPR: 1B.2	Lifeform: perennial bulbiferous herb Habitats: dry, rocky open slopes and rock outcrops in coastal scrub and chaparral Bloom Period: May to July	344 – 2,804	Yes	Yes	Yes	Moderate potential to occur. There are recent observations of this species within a 2-mile radius of the project site. The BSA contains slopes and chaparral habitat that would create suitable conditions to support this species.
<i>Imperata brevifolia</i>	California satintail	CRPR: 2B.1	Lifeform: perennial rhizomatous herb Habitats: mesic sites within chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub Wetlands, Drainages, or Seeps: Yes Bloom Period: September to May	0 – 3,985	Yes	Yes	Yes	Moderate potential to occur. The BSA contains some areas of suitable habitat to support this species including chaparral and coastal scrub.

Legend and Notes

Federal Endangered Species Act (ESA) Listing Codes: the ESA is administered by the USFWS and NMFS. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, distinct population segments. The official federal listing of Endangered and Threatened plants is published in 50 CFR § 17.12.

•**FE** = federally listed as endangered: any species of plant or animal that is in danger of extinction throughout all or a significant portion of their range.

•**EC** = federal candidate for listing: candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them for listing as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by higher priority listing actions to address species in greater need. A proposed regulation has not yet been published in the Federal Register for these species.

California Endangered Species Act (CESA) and California Native Plant Protection Act (NPPA) Listing Codes: the CESA and NPPA are administered by CDFW. The official listing of Plants of California Declared to Be Endangered, Threatened or Rare is contained in the California Code of Regulations, Title 14, § 670.2. Species, subspecies and varieties of California native plants are declared to be endangered, threatened as defined by § 2062 and § 2067 of the Fish and Game Code or rare as defined by § 1901 of the Fish and Game Code.

•**SE = state-listed as endangered:** "endangered species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish and Game Code § 2062).¶

California Rare Plant Ranks (Formerly known as CNPS Lists): the CNPS is a statewide, nonprofit organization that maintains, with CDFW, an Inventory of Rare and Endangered Plants of California. In the spring of 2011, CNPS and CDFW officially changed the name “CNPS List” or “CNPS Ranks” to “California Rare Plant Rank” (or CPRP). This was done to reduce confusion over the fact that CNPS and CDFW jointly manage the Rare Plant Status Review Groups and the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

- **CRPR: 1A** = California Rare Plant Rank 1A - plants presumed extirpated in California and either rare or extinct elsewhere: the plants with a CRPA of 1A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes plants that are both presumed extinct as well as those plants which are presumed extirpated in California. All of the plants constituting CRPR 1A meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- CRPR 1B** = California Rare Plant Rank 1B - plants rare, threatened, or endangered in California and elsewhere: plants with a CRPR of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. All of the plants constituting CRPR 1B meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- CRPR 2A** = California Rare Plant Rank 2A - plants presumed extirpated in California, but more common elsewhere: the plant taxa of CRPR 2A are presumed extirpated because they have not been observed or documented in California for many years. This list includes only those plant taxa that are presumed extirpated in California, but more common elsewhere in their range. All of the plants on List 2A meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- CRPR 2B** = California Rare Plant Rank 2B - plants rare, threatened, or endangered in California, but more common elsewhere: except for being common beyond the boundaries of California, plants with a CRPR of 2B would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the ESA. All of the plants constituting CRPR 2B meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- CRPR 3** = California Rare Plant Rank 3 - plants about which more information is needed - a review list: the plants that comprise CRPR 3 are united by one common theme – CNPS and CDFW lack the necessary information to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting CRPR 3 are taxonomically problematic. Some of the plants constituting CRPR 3 meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. CNPS strongly recommends that CRPR 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.
- CRPR 4** = California Rare Plant Rank 4 - plants of limited distribution - a watch list: the plants in this category are of limited distribution or infrequent throughout a broader area in California. While CNPS and CDFW cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a CRPR 4 plant change, CNPS and CDFW will transfer it to a more appropriate rank. Some of the plants constituting CRPR 4 meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and CNPS strongly recommends that CRPR 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.
- Considered But Rejected** = plants that have been considered for inclusion into the CNPS Inventory, but were not included for various reasons.

California Native Plant Society (CNPS) Threat Ranks: The CNPS Threat Rank is an extension added onto the California Rare Plant Rank (CRPR) (as a decimal code) and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. A Threat Rank is present for all CRPR 1B's, 2B's, 4's, and the majority of CRPR 3's. CRPR 4 plants are seldom assigned a Threat Rank of .1, as they generally have large enough populations to not have significant threats to their continued existence in California; however, certain conditions exist to make the plant a species of concern and hence be assigned a CRPR. In addition, all CRPR 1A and 2A (presumed extirpated in California), and some CRPR 3 (need more information) plants, which lack threat information, do not have a Threat Rank extension.

- 1** = seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 2** = moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 3** = not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Notes:

The BSA contains approximate elevations ranging from 680 to 960 feet above mean sea level.

Yes = the BSA is located within the plant species’ known distribution, elevation range, and/or the BSA contains suitable habitats and/or soils to support the plant species. The plant species has a potential to occur within the BSA. Further evaluation is needed.
No = the BSA is located outside the plant species’ known distribution, elevation range, and/or the BSA lacks suitable habitats and/or soils to support the plant species. It is highly unlikely for the plant species to have a potential to occur within the BSA. No further evaluation is needed.
Present = observed within the BSA during surveys.
A CNPS elevation range is provided for each taxon in feet. The stated range is for the California portion of a plant's range only (if the taxon also occurs outside the state). These CNPS elevation range data are accumulated from literature, herbarium specimens, and field survey information.

- Resources**
- *The Jepson Desert Manual (Baldwin et al., 2002);*
 - *The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al., 2012);*
 - *BLM Special Status Plants under the jurisdiction of the California State Office as of October 30, 2013 (BLM, 2013);*
 - *The Final Environmental Impact Report and Statement (Final EIR/S) for the West Mojave Plan (BLM, 2005);*

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Descriptions in California	The BSA:		Potential For Occurrence in the BSA
				Located Within Species' Distribution and/or Elevation Range (if known)	Contains Suitable Foraging, Roosting, and/or Breeding Habitats	
Listed Endangered, Threatened, and Candidate Wildlife: Wildlife with official status under the federal Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA). A species may have other sensitive designations in addition to their federal or state listing.						
Listed Invertebrates						
Danaus plexippus pop. 1	monarch butterfly	FC: California overwintering population	Habitats: wind-protected tree groves (eucalyptus [<i>Eucalyptus</i> sp.], Monterey pine [<i>Pinus radiata</i>], cypress), with nectar and water sources nearby	Yes	Yes	Present. This species was observed in the BSA during field surveys.
Listed Fish						
Catostomus santaanae	Santa Ana sucker	FT[2], SSC	Habitats: small, shallow streams, less than 25 feet in width, with currents ranging from swift in the canyons to sluggish in the bottom lands, permanent streams in water ranging in depth from a few centimeters to a meter or more Soils: gravel, rubble, and boulders with growths of filamentous algae, sand/mud substrates Characteristics: most abundant where the water is cool, clean, and clear	Yes	No	No potential to occur. The BSA does not contain suitable aquatic habitats to support fish species.
Listed Amphibians						
Anaxyrus californicus (=Bufo californicus)	arroyo toad	FE, SSC	Habitats: sandy riverbanks, streams, washes, and arroyos, breeds in and near streams Characteristics: nearby sandy terraces, dampened in places by capillary action, and with some scattered vegetation providing surface sheltering and burrowing sites and foraging areas	Yes	No	Low potential to occur. The BSA does contain some suitable riparian, oak, and scrub habitats to support this toad. However, thie BSA generally lacks adequate water sources with sandy river banks that would create a suitable breeding habitat for this species.
Listed Birds						
Buteo swainsoni	Swainson's hawk	ST, BCC, Season of Concern: nesting	Habitats: large, open areas with abundant prey in association with suitable nest trees, native grasslands or lightly grazed pastures and croplands, open deserts, sparse shrub lands Characteristics: nest in juniper trees of juniper-sage flats not near riparian zones	Yes	Yes	Low potential to occur. While there are no suitable nesting sites for this species in the BSA, this species may utilize the BSA for passage or foraging because the BSA does support suitable habitat for many of the prey species of this raptor.
Laterallus jamaicensis coturniculus	California black rail	ST, fully protected, BCC	Habitats: high coastal marshes to freshwater marshes along the lower Colorado River, pickleweed, bulrushes, and matted salt grass (Distichlis spicata) and other marsh vegetation Characteristics: they use areas of shallow water with relatively stable water levels and flat shoreline	Yes	No	Not expected to occur. The BSA does not contain marsh vegetation or marshland habitat to support this species.
Empidonax traillii eximius	southwestern willow flycatcher	FE, SE, Season of Concern: nesting	Habitats: dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes, surface water, saturated soil, or herbaceous wetland plants present during the early summer months; woody riparian vegetation is present	Yes	Yes	Moderate potential to occur. The BSA contains riparian tree and shrub communities that create suitable habitat to support this species.
Vireo bellii pusillus	least Bell's vireo	FE, SE Season of Concern: nesting	Habitats: dry, intermittent streams, on the desert slopes mesquite (Prosopis sp.) and sandbar willow in canyon locations, willow-dominated riverine riparian habitats with well-developed overstories, understories, and low densities of aquatic and herbaceous cover	Yes	No	Moderate potential to occur. The BSA contains suitable habitat to support this species such as riparian/riverine areas in a canyon setting.
Riparia riparia	bank swallow	ST, Season of Concern: nesting	Habitats: naturally eroding habitats of major lowland river systems, sandy, vertical bluffs or riverbanks Characteristics: birds build nests within two to three-foot deep burrows that are dug perpendicularly into near vertical earthen banks along streams, coastal bluffs, and sand and gravel pits	Yes	No	Not expected to occur. The BSA does not contain vertical bluffs or riverbanks/lowland river systems to support this species.
Polioptila californica californica	coastal California gnatcatcher	FT, SSC	Habitats: small, non-migratory, permanent resident of coastal sage scrub, small, non-migratory, permanent resident of coastal sage scrub	Yes	Yes	Moderate potential to occur. The BSA contains areas with suitable coastal sage scrub to support this species.
Agelaius tricolor	tricolored blackbird	ST, SSC, BCC, Season of Concern: nesting colony	Habitats: fresh water, preferably in emergent wetland with tall, dense cattails (Typha sp.) or tules, natural grassland, woodland, or agricultural cropland Characteristics: species is not migratory, but is nomadic and highly colonial	Yes	No	Not expected to occur. The BSA generally lacks suitable aquatic sites and suitable vegetation to support this species.
Listed Mammals						
Dipodomys merriami parvus	San Bernardino kangaroo rat	FE, SSC	Habitats: Riversidean alluvial fan sage scrub, river and stream terraces, flood plains, and along washes with nearby sage scrub Soil: sandy loam soils, alluvial fans	Yes	No	Not expected to occur. The BSA does not support suitable habitat (alluvial fan sage scrub, river and stream terraces, floodplains, washes) required for the species.
Sensitive Wildlife: These animals have no official status under the ESA and/or the CESA; however they are designated as sensitive or locally important by federal agencies, state agencies, and/or local conservation agencies and organizations						
Sensitive Invertebrates						
Bombus crotchii	Crotch bumble bee	SSC	Habitats: grasslands and shrublands. Hotter and drier environment than other bumblebee species. Prefers milkweeds, dusty maidens, lupines, medics, phacelias, sages, clarkias, poppies, and wild buckwheats: This species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California. It has also been documented in southwest Nevada, near the California border.	Yes	Yes	Moderate potential to occur. The BSA contains suitable shrublands with buckwheat and other suitable plants that create favorable conditions for this species.
Diplectrona californica	California diplectronan caddisfly	Special Animals List	Habitats: No information has been published on the larva of this species, but other larvae in the genus live in fast-flowing, cool streams	Yes	No	No potential to occur. The BSA does not contain suitable aquatic breeding sites for this species.
Sensitive Fish						
Gila orcuttii	arroyo chub	SSC	Habitats: slow-moving or backwater sections of warm to cool (10-24 C) streams with mud or sand substrates	Yes	No	No potential to occur. The BSA does not contain suitable aquatic habitats to support fish species.
Sensitive Amphibians						
Rana boylei	foothill yellow-legged frog	SSC	Habitats: Stream or river frog of woodlands, chaparral, and forests, rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, Ponderosa pine (Pinus ponderosa), mixed conifer, coastal scrub, mixed chaparral, and wet meadow types Characteristics: foothill yellow-legged frogs are infrequent or absent in habitats where introduced aquatic predators	Yes	No	Not expected to occur. The BSA does not contain suitable aquatic breeding habitats to support this species. This frog requires a permanent water source, which is not present in the BSA.
Spea hammondi	western spadefoot	SSC	Habitats: coastal sage scrub, open chaparral, pine-oak woodlands and grassland habitats, grasslands with vernal pools or mixed grassland/coastal sage scrub areas Characteristics: upland habitats adjacent to potential breeding sites in burrows approximating 1 meter in depth	Yes	No	No potential to occur. The BSA dows not supports suitable aquatic breeding sites to support this toad.
Ensatina eschscholtzii klauberi	large-blotched salamander	SSC	Habitats: conifer and woodland associations; found in leaf litter, decaying logs, and shrubs in heavily forested areas.	Yes	No	No potential to occur. The BSA does not support suitable habitat (conifer woodlands, heavily forested areas) required for this species.
Taricha torosa	Coast Range newt (=California newt)	SSC (Monterey County and south)	Habitats: terrestrial habitats (grassland, woodland and forest), but breeds in ponds, reservoirs, and slow moving streams within coastal drainages Characteristics: can migrate over 1 km to breeding areas	Yes	No	No potential to occur. The BSA does not support suitable breeding habitat for this species. The nearest suitable breeding habitat are seperated from the BSA by suburban streets and a freeway, which would be avoided as movement corridors by this species.
Sensitive Reptiles						
Actinemys marmorata (=Actinemys marmorata marmorata) (=Emys marmorata)	northern western pond turtle (=northern western pond turtle)	SSC	Habitats: stagnant or slow-moving water in aquatic habitats, ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland	Yes	No	No potential to occur. The BSA does not support suitable aquatic habitat required for this species.
Anniella stebbinsi	southern California legless lizard	SSC	Habitats: occurs in many habitats with sandy soil. Coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans. Population occurs in Piute and Tehachapi mountains at elevation of 400-900 m in oak woodland and mixed conifer forest	Yes	Yes	Low potential to occur. The BSA contains some sandy-loam soils and oak woodlands which could create suitable habitat for this species.
Phrynosoma blainvilli (=Phrynosoma coronatum) (=Phrynosoma coronatum blainvillei)	Blainville's horned lizard (=coast horned lizard) (=San Diego horned lizard)	SSC	Habitats: wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest, habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low	Yes	Yes	Moderate potential to occur. The project site does contain some coastal scrub and oak woodland habitats to support this species. The soils in the BSA are primarily sandy-loam and clay; however there are some areas in the BSA that provide gravelly and loose soils.
Aspidoscelis tigris stejnegeri (=Cnemidophorus tigris multiscutatus)	San Diegan whiptail (=coastal whiptail)	SSC	Habitats: variety of ecosystems, primarily hot and dry open areas with sparse foliage such as deserts, chaparral and semiarid, found in open, often rocky areas with little vegetation or sunny microhabitats within shrub or grassland Characteristics: ground may be firm soil, sandy, or rocky	Yes	No	No potential to occur. The BSA contains vegetation cover considered too dense to be desirable by this species. The BSA does not offer optimal open, rocky areas.
Arizona elegans occidentalis	California glossy snake	SSC	Habitats: all ecological zones, from the coast to the mountain foothills, light shrubby to barren desert, sagebrush flats, grassland, chaparral-covered slopes, and woodlands Characteristics: refugia takes the form of mammal burrows, rock outcrops, and to a lesser extent	Yes	Yes	Moderate potential to occur. The BSA contains oak woodlands, which create suitable habitat to support this species. Area 5 in particular offers habitat that would be considered favorable to this species.

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Descriptions in California	The BSA:		Potential For Occurrence in the BSA
				Located Within Species' Distribution and/or Elevation Range (if known)	Contains Suitable Foraging, Roosting, and/or Breeding Habitats	
<i>Crotalus ruber</i>	red diamond rattlesnake	SSC	Habitats: desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore Characteristics: need rodent burrows, cracks in rocks or surface cover objects	Yes	Yes	Low potential to occur. This species typically prefers rocky, sandy soils. The soils in the BSA are sandy-loam and clay. This species is adaptive to a variety of habitat types. While the BSA could potentially support this species, the soils types are not optimal for this species.
<i>Thamnophis hammondi</i>	two-striped garter snake	SSC	Habitats: aquatic and it is rarely found far from water, permanent or semi-permanent bodies of freshwater and adjacent riparian habitat, oak woodlands, chaparral and coniferous forests on the coastal slopes of mountains and foothills to sea level	Yes	No	No potential to occur. The BSA does not support suitable aquatic habitat required for this species.
Sensitive Birds						
<i>Elanus leucurus</i>	white-tailed kite	fully protected	Habitats: undisturbed, open grasslands, meadows, emergent wetlands, farmlands, crops, pastures, and other cultivated habitats Characteristics: adjacent to their nesting woodland must be open foraging grasslands	Yes	Yes	Moderate potential to occur. The BSA supports suitable nesting and foraging habitat required for this species.
<i>Accipiter cooperii</i>	Cooper's hawk	WL, Season of Concern: nesting	Habitats: broken woodland and habitat edges Characteristics: tolerant of human activities near the nest and is seen more often nesting in urban/residential areas	Yes	Yes	Present. This species was observed in the BSA during field surveys.
<i>Aquila chrysaetos</i>	golden eagle	fully protected, WL, BCC, Season of Concern: nesting and wintering	Habitats: mountainous canyon land, rimrock terrain of open desert and grassland areas, open rolling foothills of grasslands, oak savannas, oak and juniper woodlands, chaparral, mountain areas, and desert, open habitats including grasslands, deserts, savannahs, and shrublands Characteristics: hilly or mountainous country, deeply cut canyons rising to open mountain slopes and crags are ideal habitat	Yes	Yes	Low potential to occur. This species occurs in a variety of habitat types, and the BSA and project site could offer feeding habitat due to the presence of grasslands, rolling slopes, and chaparral.
<i>Athene cunicularia</i>	burrowing owl	SSC, BCC, Season of Concern: burrowing sites and some wintering sites	Habitats: open, dry, flat ground or low rolling hills with sparse vegetation and available burrows; however, this species may be found in a variety of habitats. Characteristics: if no burrows are available, may dig their own burrows or utilize pipes, cracks in debris piles, and other artificial structures.	Yes	Yes	Low potential to occur. The BSA supports some suitable habitat required to support this species.
<i>Strix occidentalis occidentalis</i>	California spotted owl	SSC, BCC	Habitats: forests and woodlands with large old trees and snags, high basal areas of trees and snags, dense canopies (>70% canopy closure), multiple canopy layers, and downed woody debris Characteristics: low elevations, it uses coastal oak woodland, valley foothill riparian, and redwood (<i>Sequoia sempervirens</i>) forests	Yes	Yes	Low potential to occur. The BSA contains suitable oak woodlands to support this species, however this species prefers vegetative cover that is highly dense and multi-layered. Therefore, this species is determined to have only a low potential to occur in the BSA.
<i>Asio otus</i>	long-eared owl	SSC Season of Concern: nesting	Habitats: conifer, oak, riparian, pinyon-juniper, and desert woodlands Characteristics: long-eared owl appears to be more associated with forest edge habitat	Yes	Yes	Low potential to occur. The BSA provides suitable oak woodland habitat to support this species.
<i>Dryobates nuttallii</i> (= <i>Picoides nuttallii</i>)	Nuttall's woodpecker	BCC	Habitats: low-elevation oak (any species) woodlands, especially where mixed with California sycamore (<i>Platanus racemosa</i>) and deciduous riparian habitats Characteristics: nests are located mostly in riparian habitat	Yes	Yes	Present. This species was observed in the BSA during field surveys.
<i>Falco columbarius</i>	merlin	WL	Habitats: Alaska and Canada, Merlins winter in California from September to May, annual grasslands to open ponderosa pine and montane hardwood-conifer habitats, and coastlines, savannahs, woodlands, lakes, and wetlands Characteristics: dense tree stands may be used for cover and are frequently close to bodies of water	Yes	Yes	Moderate potential to occur. There are recent (<15 years) observations of this species within a 2-mile radius of the project site. The project also offers some suitable nesting woodland habitat. The trees with dense canopies on-site could create a suitable habitat for this species.
<i>Eremophila alpestris actia</i>	California horned lark	WL	Habitats: grasslands along the coast and deserts near sea level to alpine dwarf-shrub habitat above treeline Characteristics: birds forage on the ground in either bare areas	Yes	No	Not expected to occur. The BSA does not contain suitable open habitats with short vegetation to support breeding or foraging California horned larks.
<i>Campylorhynchus brunneicapillus sandiegensis</i>	coastal cactus wren (=San Diego cactus wren)	BCC	Habitats: coastal sage scrub plant community in which cacti are prominent Characteristics: usually absent from areas where only low, sprawling cacti grow	Yes	Yes	Moderate potential to occur. The BSA does contain suitable coastal sage scrub and coastal prickly pear scrub habitats with suitable nesting cactus vegetation to support this species.
<i>Setophaga petechia</i> (= <i>Dendroica petechia</i>)	yellow warbler	SSC, BCC	Habitats: deciduous trees of the riparian woodland from coastal desert woodlands to the Sierra Nevada – willows (<i>Salix</i> sp.), cottonwoods (<i>Populus</i> sp.), aspens (<i>Populus</i> sp.), California sycamores (<i>Platanus racemosa</i>), and alders (<i>Alnus</i> sp.) Characteristics: nests are deep cups, placed in an upright fork in a deciduous sapling or shrub, typically 2 to 16 feet high	Yes	Yes	Moderate potential to occur. The BSA does contain some suitable breeding and foraging habitats to support this species. Yellow warblers occur principally as a migrant and summer resident in California from late March through early October and breeds from April to late July.
<i>Icteria virens</i>	yellow-breasted chat	SSC	Habitats: dense riparian thickets of willows, vines, and brush associated with streams and other wetland habitats Characteristics: nest is an open cup placed in dense shrubs or thickets within 3 to 8 feet above ground along a stream or river	Yes	No	No potential to occur. The BSA does not support suitable nesting habitat (riparian thickets associated with streams or wetlands) required for this species.
<i>Aimophila ruficeps canescens</i>	southern California rufous-crowned sparrow	WL	Habitats: dry, steep sloping land and hillsides with a moderate density of low, scattered shrubs, coastal sage scrub, interspersed with grasses and forbs and occasional rock outcrops for song perches Characteristics: nests are placed in small depressions on the ground	Yes	Yes	Moderate potential to occur. The BSA contains steep slopes and coastal sage scrub which create suitable conditions for this species.
Sensitive Mammals						
<i>Chaetodipus fallax fallax</i>	northwestern San Diego pocket mouse	SSC	Habitats: open, sandy areas of both the Upper and Lower Sonoran life-zones of southwestern California and northern Baja California Characteristics: grassland and open sage scrub vegetation with sandy-loam to loam soils	Yes	No	Not expected to occur. The BSA does not provide sufficient open sandy areas to support this species.
<i>Eumops perotis californicus</i>	western mastiff bat	SSC, WBWG:H	Habitats: low-lying desert areas of southern California, desert riparian, desert wash, desert scrub, desert succulent shrub, alkali desert scrub, palm oasis, conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, chaparral, urban. Roosts in crevices in cliff faces, high buildings, trees, and tunnels Characteristics: bats often are found in large groups	Yes	Yes	Moderate potential to occur. The BSA provides suitable woodland and coastal scrub habitat to support this species.
<i>Nyctinomops femorosaccus</i>	pocketed free-tailed bat	SSC	Habitats: pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, chaparral, and palm oasis Characteristics: prefer rock crevices in cliffs as roosting sites	Yes	No	No potential to occur. The BSA does not support suitable desert habitat required for this species.
<i>Nyctinomops macrotis</i>	big free-tailed bat	SSC, WBWG:MH	Habitats: rugged, rocky habitats in arid landscapes, located in a variety of plant associations including desert shrub, woodlands, and evergreen forests. This bat roosts mainly in the crevices of cliff rocks although may roost in buildings, caves, and tree cavities. Characteristics: appears to be associated with lowlands primarily below 5,900 ft in the southwestern U.S.	Yes	Yes	Low potential to occur. The BSA provides suitable woodland and coastal scrub habitat required to support this species.
<i>Lasiurus cinereus</i>	hoary bat	WBWG:M	Habitats: near open grassy areas in coniferous and deciduous forest or near lakes, open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding Characteristics: winter roosts include sides of buildings and tree trunks	Yes	Yes	Moderate potential to occur. The BSA provides suitable woodland and coastal scrub habitat to support this species.
<i>Lasiurus xanthinus</i>	western yellow bat	SSC, WBWG:H	Habitats: valley foothill riparian, desert riparian, desert wash, and palm oasis habitats Characteristics: occurs year-round in California	Yes	Yes	Low potential to occur. The BSA supports some suitable habitat (valley foothill riparian) required for this species.
<i>Antrozous pallidus</i>	pallid bat	SSC	Habitats: variety of habitats is occupied by pallid bats, including deserts, grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests Characteristics: night roosts may be in more open sites, such as porches and open buildings	Yes	Yes	Moderate potential to occur in the BSA for foraging. The BSA is located within this bat's distribution and contains suitable grassland, shrubland, and woodland habitats; however they are most common in deserts, preferring areas of open, dry habitats, with rocky areas for roosting and water nearby.
<i>Puma concolor</i>	mountain lion (=cougar)	Protected by California Fish and Game Code §§ 4800 – 4810	Habitats: desert scrub, chaparral, swamps, and forests Characteristics: use rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral	Yes	Yes	Moderate potential to occur. The BSA contains suitable scrub and woodland habitats and prey items. Mountain lions are highly mobile and may pass through or hunt within the BSA.
<i>Taxidea taxus</i>	American badger	SSC	Habitats: Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Required sufficient food sources (e.g., burrowing rodents). Characteristics: requirements - sufficient food, friable soils, and relatively open, uncultivated ground	Yes	Yes	Not expected to occur. The BSA contains marginally suitable habitat for this species; however, the BSA may not provide sufficient food sources for multiple individuals.

Legend and Notes

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Descriptions in California	The BSA:		Potential For Occurrence in the BSA
				Located Within Species' Distribution and/or Elevation Range (if known)	Contains Suitable Foraging, Roosting, and/or Breeding Habitats	

Federal Endangered Species Act (ESA) Listing Codes: *the ESA is administered by the USEWS and NMFS. The USEWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, distinct population segments. The official federal listing of Endangered and Threatened animals is published in 50 CFR § 17.11.*

- FE** = federally listed as endangered: any species of plant or animal that is in danger of extinction throughout all or a significant portion of their range.
- ET** = federally listed as threatened: any species of plant or animal that is considered likely to become endangered throughout all or a significant portion of its range within the foreseeable future.
- EC** = federal candidate for listing: candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them for listing as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by higher priority listing actions to address species in greater need. A proposed regulation has not yet been published in the Federal Register for these species.

-

California Endangered Species Act (CESA) Listing Codes: *the CESA is administered by CDFW. The official listing of Animals of California Declared To Be Endangered or Threatened is contained in the California Code of Regulations, Title 14, § 670.5. Species and subspecies of California native animals are declared to be endangered or threatened as defined by §§ 2062 and 2067 of the Fish and Game Code.*

- SE** = state-listed as endangered: "endangered species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish and Game Code § 2062).
- ST** = state-listed as threatened: "threatened species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts (Fish and Game Code § 2067).

California Department of Fish and Wildlife (CDFW) Designations:

For some wildlife species, the CNDDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nesting colonies. For many species of birds, the primary emphasis is on the breeding population in California. For some species which do not breed in California but winter here, emphasis is on wintering range. The SSC designation thus may include a comment regarding the specific protection provided such as nesting or wintering

- SSC = species of special concern:** a species of special concern is a species, subspecies, or distinct population of an animal (fish, amphibian, reptile, bird and mammal) native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria: is extirpated from the state or, in the case of birds, in its primary seasonal or breeding role; is listed as federally-, but not state-, threatened or endangered; meets the state definition of threatened or endangered, but has not formally been listed; is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status; has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status.
- Fully protected:** fully protected animal species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Lists were created for fish (Fish and Game Code § 5515), amphibians and reptiles (Fish and Game Code § 5050), birds (Fish and Game Code § 3511) and mammals (Fish and Game Code § 4700).
- WL = watch list:** this list includes birds identified in the California Bird Species of Special Concern (Shuford and Gardali, 2008) report and are not on the current CDFW species of special concern list, but were on previous lists and they have not been state-listed under CESA; were previously state or federally listed and now are on neither list; or are on the list of fully protected species.
- Special Animals List:** The Special Animals List contains taxa that are actively inventoried, tracked, and mapped by the CNDDDB, as well as taxa for which mapped data may not yet be incorporated into CNDDDB user products

United States Fish and Wildlife Service (USFWS) Designations:

- ESC = federal species of concern:** federal species of concern is an informal term. It is not defined in the ESA. The term commonly refers to species that are declining or appear to be in need of conservation.
- BCC = bird of conservation concern:** a bird of conservation concern is listed in the USFWS' 2008 Birds of Conservation Concern report. The report identifies species, subspecies, and populations of all migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that, without additional conservation actions, are likely to become candidates for listing under the ESA. While all of the bird species included in the report is priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing.

Western Bat Working Group (WBWG) Designations:

The WBWG is composed of agencies, organizations, and individuals interested in bat research, management, and conservation from 13 western states and provinces. Species are ranked as High, Medium, or Low Priority in each of 10 regions in western North America.

- H = High Priority:** These species are considered the highest priority for funding, planning, and conservation actions, Information about status and hreats to most species could result in effective conservation actions being implemented should a commitment to management exist. These species are imperiled or are at high risk of imperilment.
- M = Medium Priority:** These species warrant closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat.

Resources

- *Check-List of North American Birds*, 7th edition (AOU, 1998);
- (AOU website);
- *Amphibian species accounts* (Amphibiaweb website);
- *Terrestrial Mammal Species of Special Concern in California* (Bolster, 1998);
- *Mammals of North America* (Bowers et al., 2004);
- *Special Status Animals in California, Including BLM Designated Sensitive Species* (BLM, 2010);
- *Life History Accounts and Range Maps* (CDFG, 1988a and updates; CDFG, 1988b and updates; CDFG, 1988c and updates);
- *The Status of Rare, Threatened, and Endangered Plants and Animals of California, 2000–2004* (CDFG, 2005);
- *Atlas of the Biodiversity of California* (CDFG, 2003);
- *RareFind*, CDFW, California Natural Diversity Database (CNDDDB);
- *State & Federally Listed Endangered & Threatened Animals of California* (CDFW, 2016);
- *Special Animals List* (CDFG, 2016);
- *CDFW's California Wildlife Habitat Relationships: Online Life History Accounts and Range Maps ;*
- *California Herps website ;*
- *California Partners in Flight website ;*
- *CNAH website ;*
- *AOU supplement* (Chesser et al., 2015);
- *A Field Guide to Hawks of North America, Second Edition* (Clark and Wheeler, 2001);
- *Mammals of California* (Eder, 2005);
- *Fairy Shrimps of California's Puddles, Pools, and Playas* (Eriksen and Belk, 1999);
- *Atlas of Breeding Birds, Orange County, California* (Gallagher, 1997);

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Descriptions in California	The BSA:		Potential For Occurrence in the BSA
				Located Within Species' Distribution and/or Elevation Range (if known)	Contains Suitable Foraging, Roosting, and/or Breeding Habitats	

- *Amphibian and Reptile Species of Special Concern in California* (Jennings and Hayes, 1994);
- *Mammals of North America* (Kays and Wilson, 2002);
- *Inland Fishes of California* (Moyle, 2002);
- *Fish Species of Special Concern in California, Third Edition* (Moyle et al., 2015);
- *Reference Atlas to the Birds of North America* (National Geographic Society, 2003);
- *Complete Birds of North America* (National Geographic Society, 2006);
- *Field Guide to the Birds of North America, 4th Ed* (National Geographic Society, 2002);
- (NatureServe Explorer website);
- *Shorebirds of North America. The Photographic Guide* (Paulson, 2005);
- *A Field Guide to Mammals of North America North of Mexico. Fourth Edition* (Reid, 2006);
- *A Natural History of California* (Schoenherr, 1992);
- *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California* (Shuford and Gardali, 2008);
- *National Audubon Society, The Sibley Guide to Birds* (Sibley, 2000);
- *A Field Guide to Western Reptiles and Amphibians, Third Edition* (Stebbins, 2003);
- (The Birds of North America Online website);
- *Life on the Edge: A Guide to California's Endangered Natural Resources. Wildlife* (Thelander et al., 1994);
- (California Fish Website);
- *United States Department of Agriculture (USDA) Forest Service, Pacific Southwest Region, Sensitive Animal Species by Forest* (USFS, 2013);
- *Mammalian Species of Special Concern in California* (Williams, 1986);
- *Mammal Species of the World* (Wilson and Reeder, 2005);
- *The Smithsonian Book of North American Mammals* (Wilson and Ruff, 1999);
- *The Final Environmental Impact Report and Statement (Final EIR/S) for the West Mojave Plan* (BLM, 2005);
- *Proposed Northern & Eastern Colorado Desert Coordinated Management Plan (NECO)* (BLM and CDFG, 2002);
- *UltraSystems in-house records.*

Notes:

- **Yes** = the BSA is located within the wildlife species' known distribution, elevation range, and/or the BSA contains suitable habitats or conditions to support the species. The wildlife species has a potential to occur within the BSA. Further evaluation is needed.
- **No** = the BSA is located outside the wildlife species' known distribution, elevation range, and/or the BSA lacks suitable habitats or conditions to support the species. It is highly unlikely for the wildlife species to have a potential to occur within the BSA. No further evaluation is needed.
- **Present** = observed within the BSA during surveys.
- **Elevation** = The BSA contains elevations ranging from 680 to 960 feet above mean sea level.

APPENDIX C

SOILS REPORT



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for Los Angeles County, California, Southeastern Part

Expanded and Updated July 8,
2022



July 8, 2022

Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

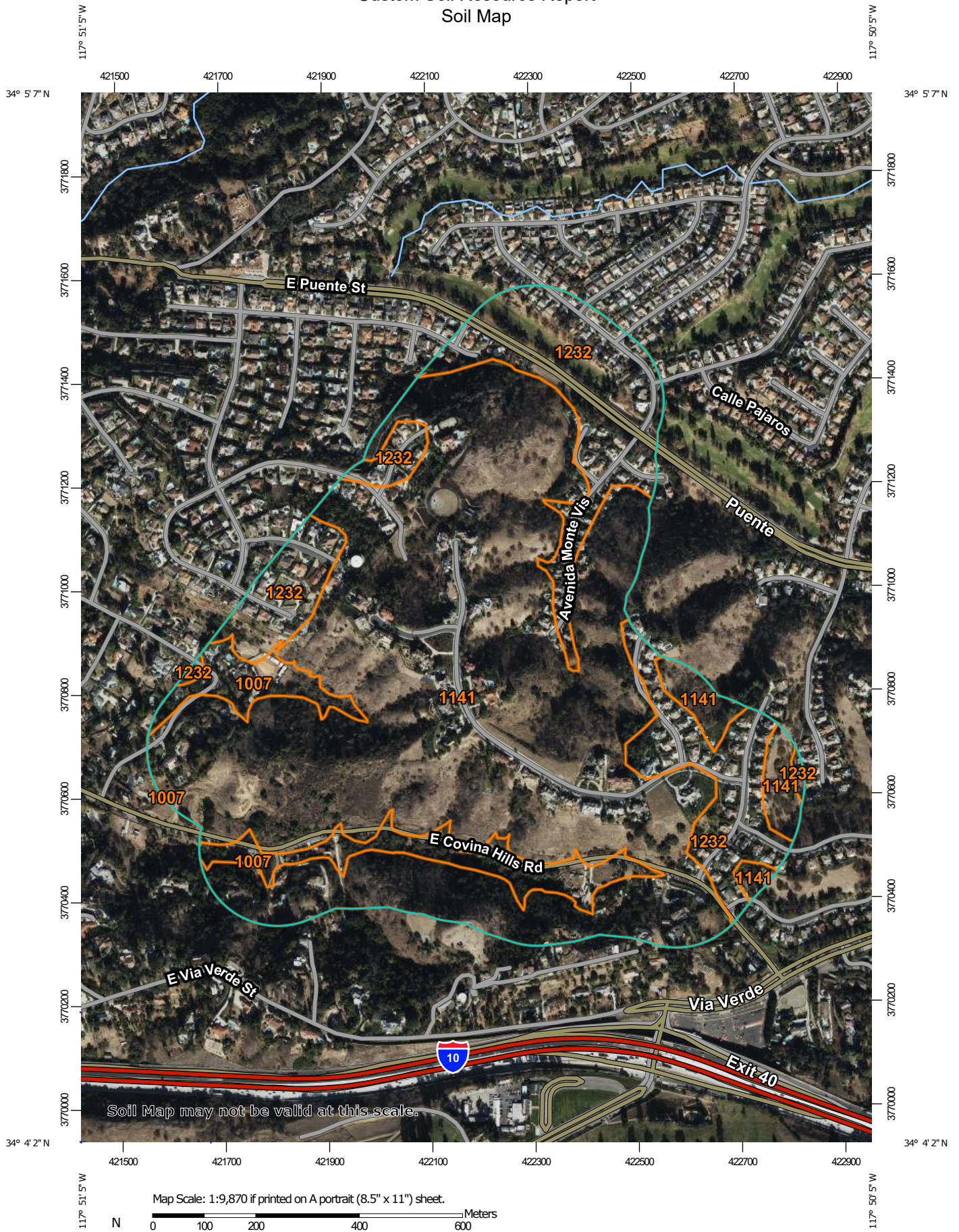
Custom Soil Resource Report

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

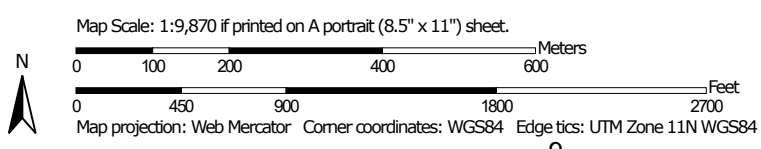
Soil Map

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

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Los Angeles County, California, Southeastern Part

Survey Area Data: Version 8, Sep 13, 2021

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

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	52.4	21.0%
Totals for Area of Interest		249.3	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Los Angeles County, California, Southeastern Part

1007—Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2qds9

Elevation: 60 to 1,140 feet

Mean annual precipitation: 13 to 20 inches

Mean annual air temperature: 64 to 67 degrees F

Frost-free period: 350 to 365 days

Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Urban land: 45 percent

Biscailuz and similar soils: 30 percent

Pico and similar soils: 15 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Alluvial fans

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 0 inches to manufactured layer

Runoff class: Very high

Frequency of flooding: RareNone

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Ecological site: R019XG911CA - Loamy Fan

Hydric soil rating: No

Description of Biscailuz

Setting

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock

Typical profile

Ap - 0 to 13 inches: loam

Bk1 - 13 to 28 inches: loam

Bk2 - 28 to 37 inches: loam

Bkg - 37 to 49 inches: sandy clay loam

C1 - 49 to 57 inches: sandy loam

C2 - 57 to 79 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Ecological site: R019XG911CA - Loamy Fan
Hydric soil rating: No

Description of Pico

Setting

Landform: Flood plains, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Discontinuous human-transported material over mixed alluvium
derived from granite and/or sedimentary rock

Typical profile

A - 0 to 16 inches: loam
Bk1 - 16 to 28 inches: loam
Bk2 - 28 to 55 inches: sandy loam
C2 - 55 to 79 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R019XG907CA - Loamy Bottom
Hydric soil rating: No

Minor Components

Metz

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Pachic calcixerolls

Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cropley

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

1141—Zaca-Apollo, warm complex, 20 to 55 percent slopes

Map Unit Setting

National map unit symbol: 2pt45
Elevation: 220 to 1,630 feet
Mean annual precipitation: 14 to 21 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Zaca and similar soils: 50 percent
Apollo, warm, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zaca

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope

Custom Soil Resource Report

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Colluvium and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 8 inches: clay

Bkss1 - 8 to 21 inches: clay

Bkss2 - 21 to 37 inches: clay

Bk - 37 to 53 inches: clay

Cr - 53 to 63 inches: bedrock

Properties and qualities

Slope: 20 to 55 percent

Depth to restrictive feature: 37 to 69 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Hydric soil rating: No

Description of Apollo, Warm

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Colluvium and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 4 inches: clay loam

Btk1 - 4 to 11 inches: clay loam

Btk2 - 11 to 26 inches: clay loam

Bk - 26 to 45 inches: clay loam

Cr - 45 to 55 inches: bedrock

Properties and qualities

Slope: 20 to 55 percent

Depth to restrictive feature: 31 to 55 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Very high

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Boades

Percent of map unit: 8 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, backslope, summit

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Balcom

Percent of map unit: 7 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

1232—Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced

Map Unit Setting

National map unit symbol: 2pt4f

Elevation: 160 to 1,330 feet

Mean annual precipitation: 14 to 19 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 320 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Counterfeit and similar soils: 45 percent

Urban land: 40 percent

Custom Soil Resource Report

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Counterfeit

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser, tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Human-transported material consisting mostly of colluvium and/or residuum weathered from sedimentary rock

Typical profile

^Au - 0 to 5 inches: clay loam

^Cu1 - 5 to 18 inches: clay

^Cu2 - 18 to 37 inches: clay

^Cu3 - 37 to 57 inches: clay loam

^C - 57 to 79 inches: sandy loam

Properties and qualities

Slope: 10 to 35 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 12 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Hydric soil rating: No

Description of Urban Land

Setting

Landform: Hillslopes

Properties and qualities

Slope: 0 to 10 percent

Depth to restrictive feature: 0 inches to manufactured layer

Runoff class: Very high

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

Minor Components

Apollo, warm

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Zaca

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Balcom

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Chemical Properties

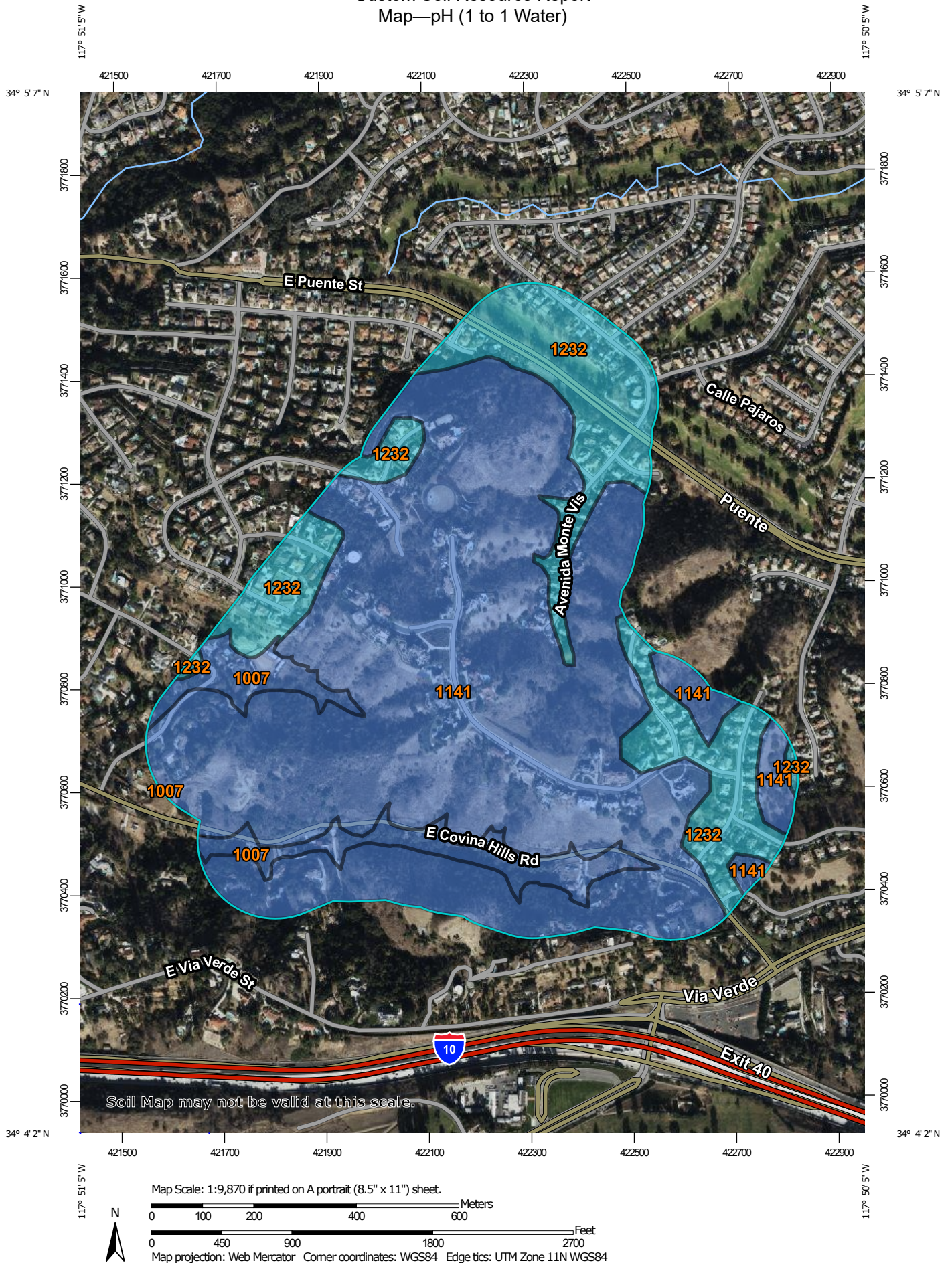
Soil Chemical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

pH (1 to 1 Water)

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion. In general, soils that are either highly alkaline or highly acid are likely to be very corrosive to steel. The most common soil laboratory measurement of pH is the 1:1 water method. A crushed soil sample is mixed with an equal amount of water, and a measurement is made of the suspension.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.


Custom Soil Resource Report
Map—pH (1 to 1 Water)



Custom Soil Resource Report













MAP LEGEND

Area of Interest (AOI)













 Area of Interest (AOI)

Soils



Soil Rating Polygons











-  Ultra acid (pH < 3.5)
-  Extremely acid (pH 3.5 - 4.4)
-  Very strongly acid (pH 4.5 - 5.0)
-  Strongly acid (pH 5.1 - 5.5)
-  Moderately acid (pH 5.6 - 6.0)
-  Slightly acid (pH 6.1 - 6.5)
-  Neutral (pH 6.6 - 7.3)
-  Slightly alkaline (pH 7.4 - 7.8)
-  Moderately alkaline (pH 7.9 - 8.4)
-  Strongly alkaline (pH 8.5 - 9.0)
-  Very strongly alkaline (pH > 9.0)
-  Not rated or not available

Soil Rating Lines


-  Ultra acid (pH < 3.5)
-  Extremely acid (pH 3.5 - 4.4)
-  Very strongly acid (pH 4.5 - 5.0)
-  Strongly acid (pH 5.1 - 5.5)
-  Moderately acid (pH 5.6 - 6.0)
-  Slightly acid (pH 6.1 - 6.5)
-  Neutral (pH 6.6 - 7.3)
-  Slightly alkaline (pH 7.4 - 7.8)
-  Moderately alkaline (pH 7.9 - 8.4)
-  Strongly alkaline (pH 8.5 - 9.0)
-  Very strongly alkaline (pH > 9.0)
-  Not rated or not available

Soil Rating Points


-  Ultra acid (pH < 3.5)
-  Extremely acid (pH 3.5 - 4.4)

-  Very strongly acid (pH 4.5 - 5.0)
-  Strongly acid (pH 5.1 - 5.5)
-  Moderately acid (pH 5.6 - 6.0)
-  Slightly acid (pH 6.1 - 6.5)
-  Neutral (pH 6.6 - 7.3)
-  Slightly alkaline (pH 7.4 - 7.8)
-  Moderately alkaline (pH 7.9 - 8.4)
-  Strongly alkaline (pH 8.5 - 9.0)
-  Very strongly alkaline (pH > 9.0)
-  Not rated or not available






Background

 Aerial Photography

Water Features

 Streams and Canals

Transportation

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

Custom Soil Resource Report

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

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

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—pH (1 to 1 Water)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	7.9	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	7.9	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	7.8	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—pH (1 to 1 Water)

Aggregation Method: Weighted Average

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

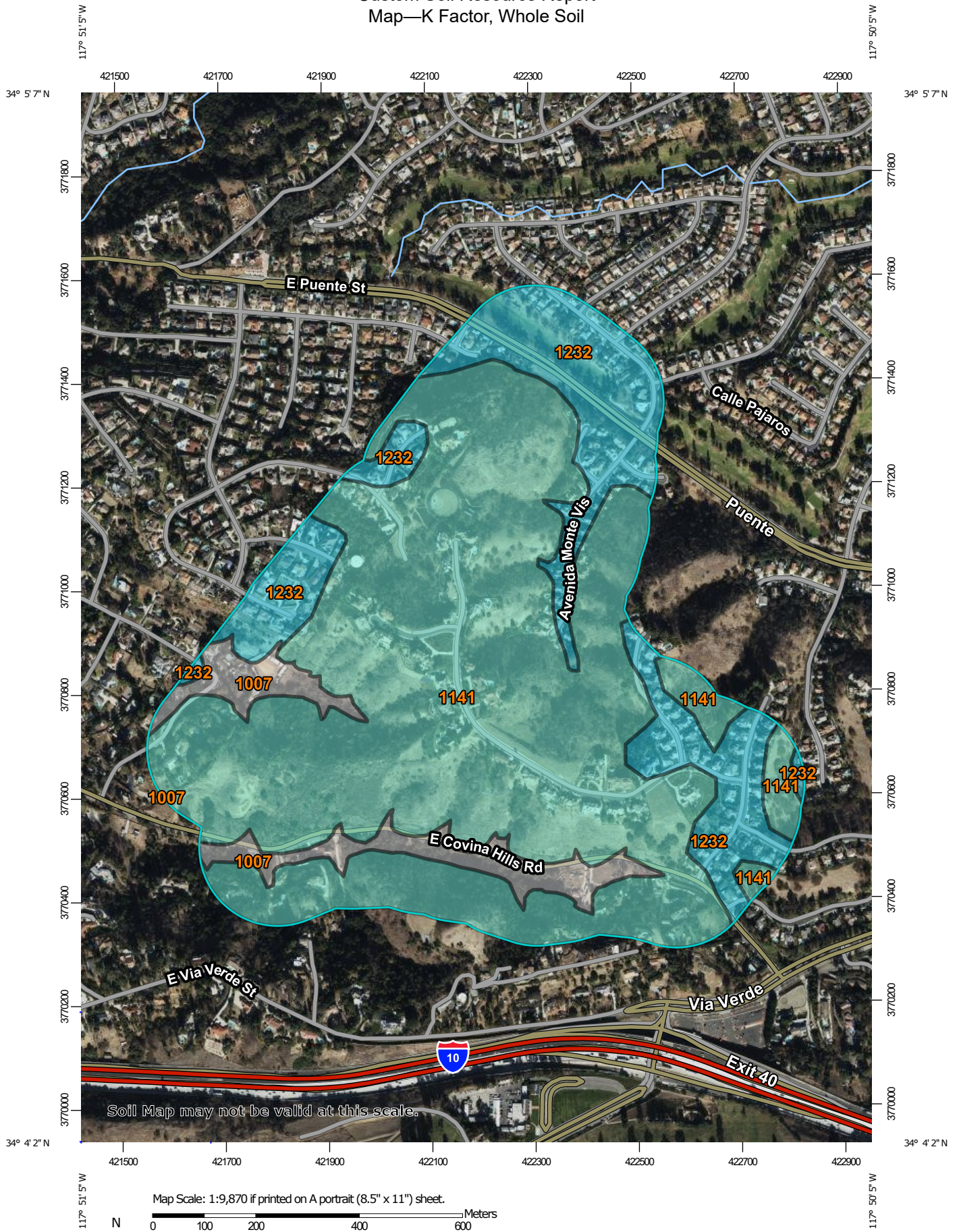
Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Custom Soil Resource Report

Factor K does not apply to organic horizons and is not reported for those layers.


Custom Soil Resource Report Map—K Factor, Whole Soil



Custom Soil Resource Report
















MAP LEGEND

Area of Interest (AOI)







 Area of Interest (AOI)










Soils

Soil Rating Polygons
















	.02
	.05
	.10
	.15
	.17
	.20
	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

Soil Rating Lines








	.02
	.05
	.10
	.15
	.17
	.20

	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

Soil Rating Points

	.02
	.05
	.10
	.15
	.17
	.20
	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

Water Features

	Streams and Canals
	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads
	Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

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

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

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

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

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

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	.32	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	.37	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—K Factor, Whole Soil*Aggregation Method: Dominant Condition*

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

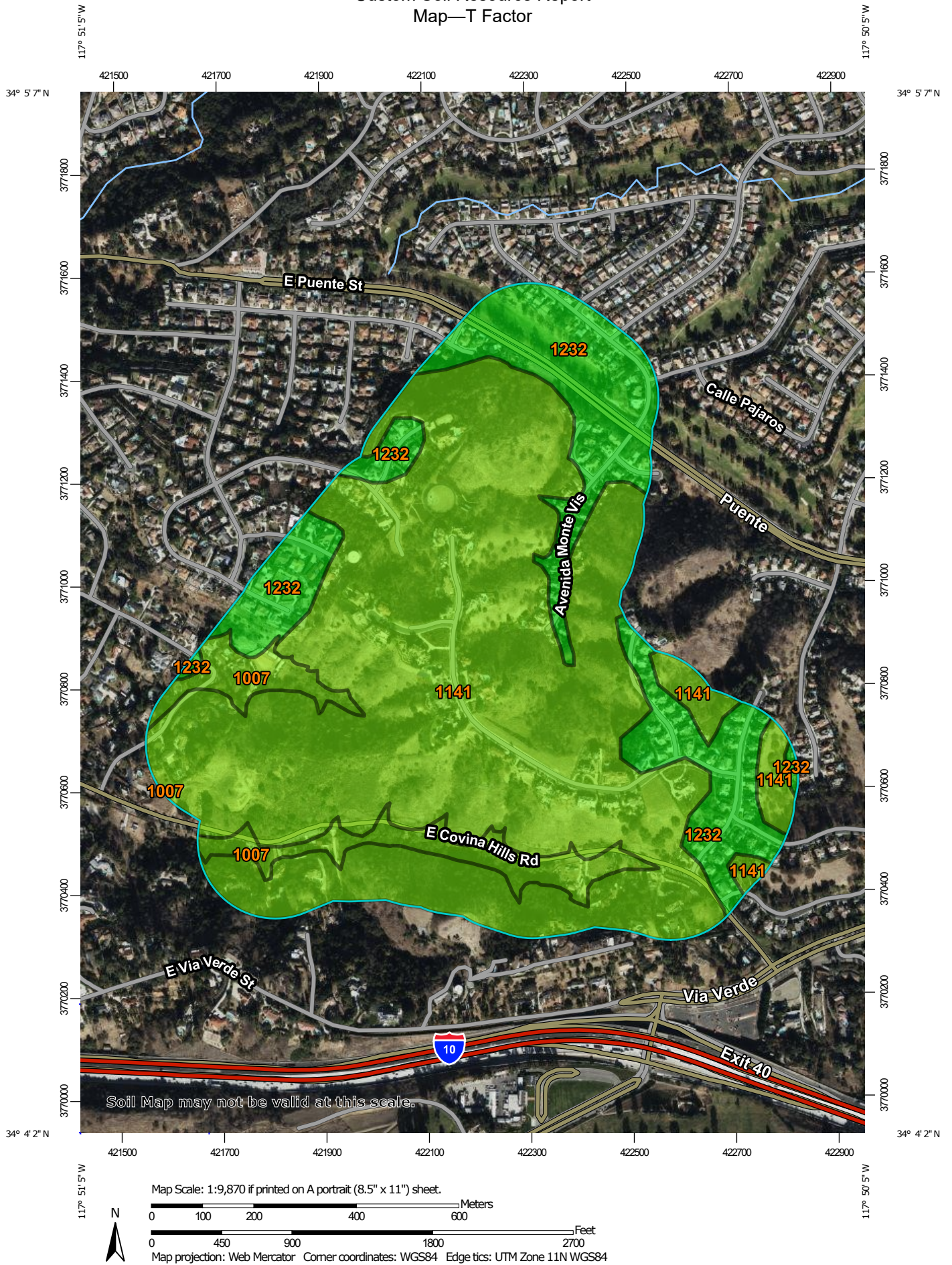
When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

T Factor


The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Custom Soil Resource Report Map—T Factor








MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils




Soil Rating Polygons

 1
 2
 3
 4
 5
 Not rated or not available


Soil Rating Lines

 1
 2
 3
 4
 5
 Not rated or not available






Soil Rating Points

 1
 2
 3
 4
 5
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Los Angeles County, California, Southeastern Part
 Survey Area Data: Version 8, Sep 13, 2021

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

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	4	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	4	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	5	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—T Factor

Units of Measure: tons per acre per year

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

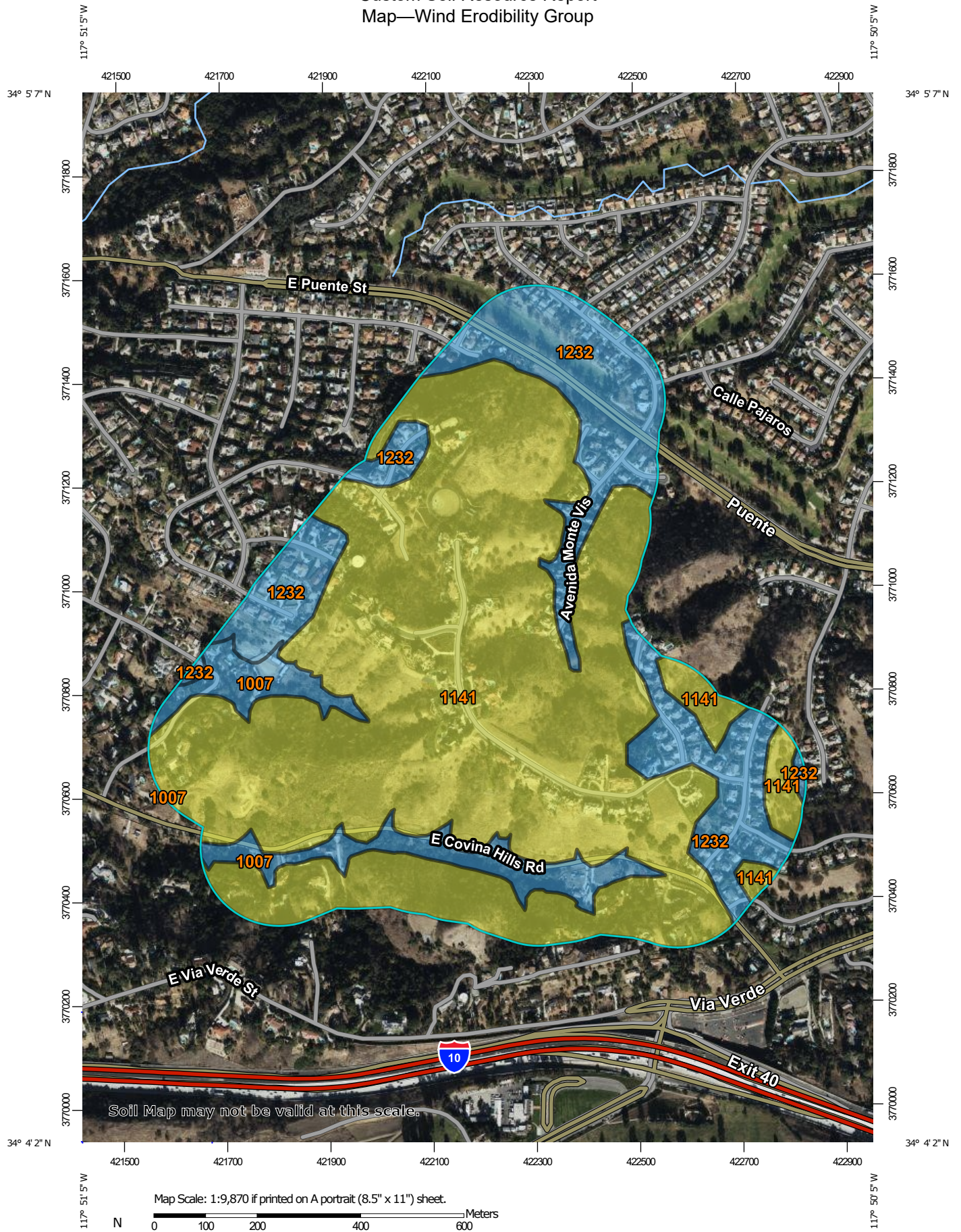
Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Wind Erodibility Group

A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Custom Soil Resource Report Map—Wind Erodibility Group







MAP LEGEND

Area of Interest (AOI)











 Area of Interest (AOI)

Soils

Soil Rating Polygons

 1
 2
 3
 4
 4L
 5
 6
 7
 8
 Not rated or not available


Soil Rating Lines

 1
 2
 3
 4
 4L
 5
 6
 7
 8
 Not rated or not available





Soil Rating Points

 1
 2
 3
 4
 4L
 5
 6
 7
 8
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Los Angeles County, California, Southeastern Part
 Survey Area Data: Version 8, Sep 13, 2021

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

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Wind Erodibility Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	6	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	4	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	6	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—Wind Erodibility Group

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

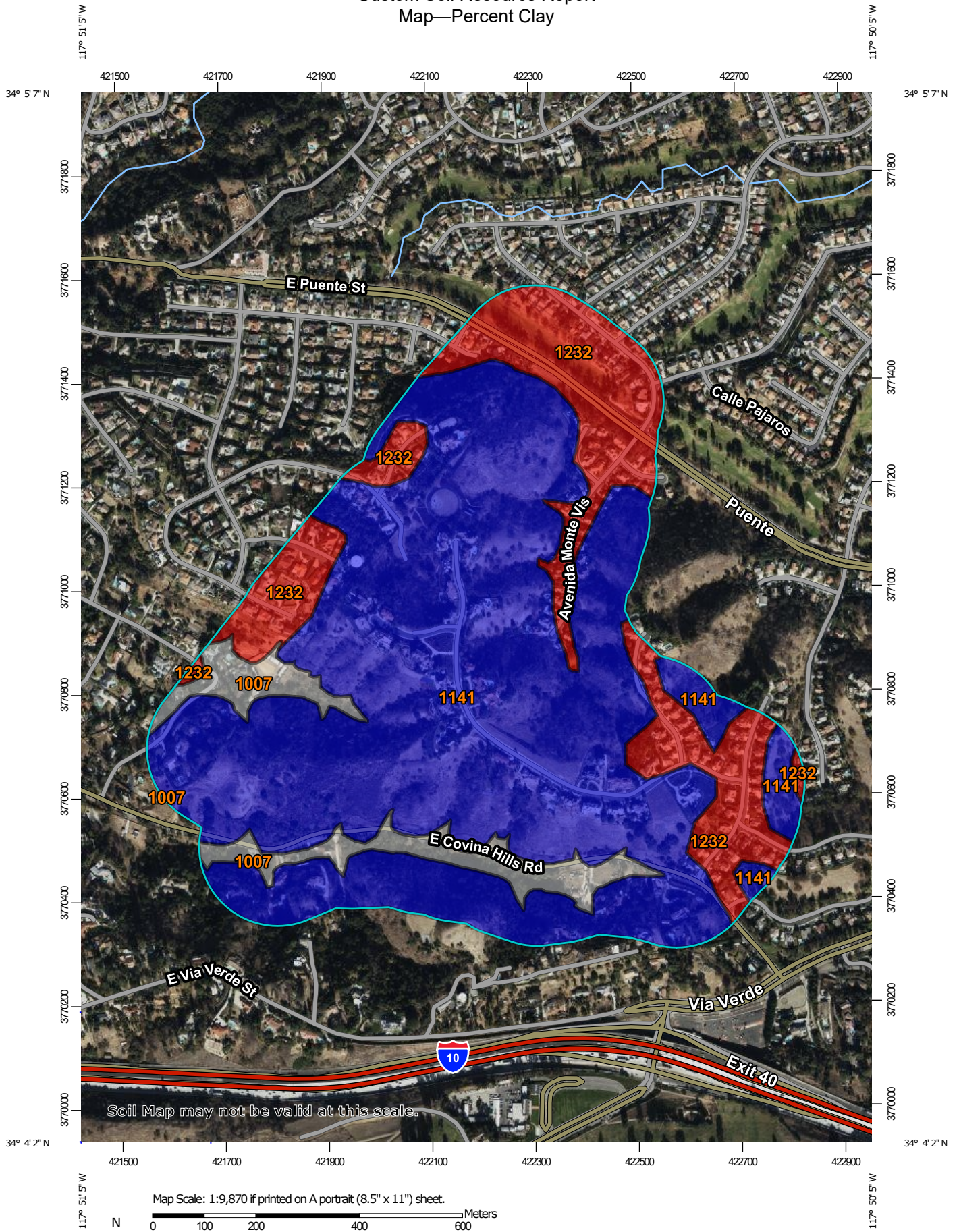
Percent Clay

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.


For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report Map—Percent Clay






MAP LEGEND

Area of Interest (AOI)




 Area of Interest (AOI)

Soils




Soil Rating Polygons

 ≤ 33.7
 > 33.7 and ≤ 48.8
 Not rated or not available


Soil Rating Lines

 ≤ 33.7
 > 33.7 and ≤ 48.8
 Not rated or not available






Soil Rating Points

 ≤ 33.7
 > 33.7 and ≤ 48.8
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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Soil Survey Area: Los Angeles County, California, Southeastern Part
 Survey Area Data: Version 8, Sep 13, 2021

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Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	48.8	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	33.7	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—Percent Clay

Units of Measure: percent

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Top Depth: 1

Bottom Depth: 120

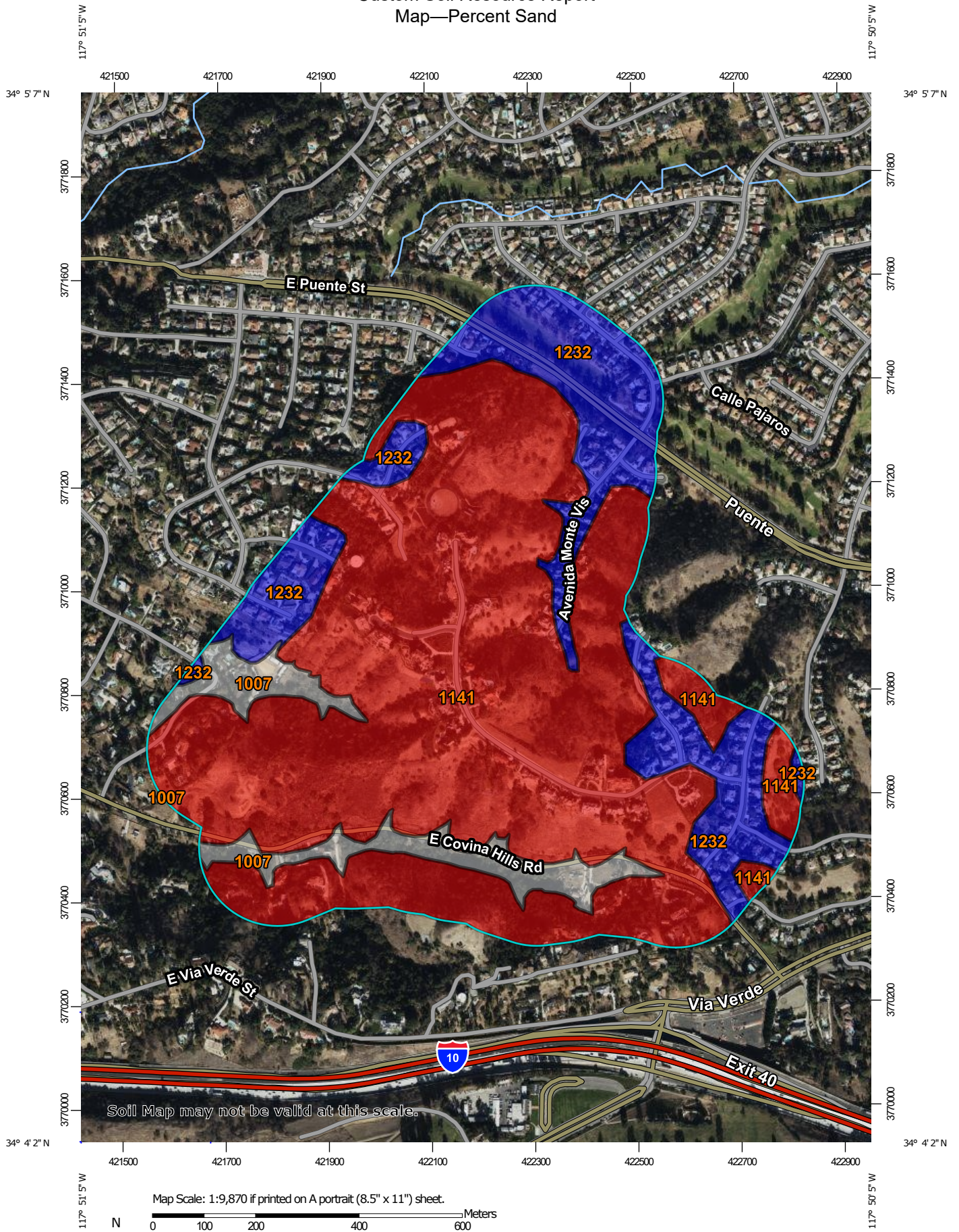
Units of Measure: Inches

Percent Sand

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the database, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.


For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Percent Sand






MAP LEGEND

Area of Interest (AOI)




 Area of Interest (AOI)

Soils




Soil Rating Polygons

 ≤ 14.9
 > 14.9 and ≤ 34.0
 Not rated or not available


Soil Rating Lines

 ≤ 14.9
 > 14.9 and ≤ 34.0
 Not rated or not available






Soil Rating Points

 ≤ 14.9
 > 14.9 and ≤ 34.0
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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 Survey Area Data: Version 8, Sep 13, 2021

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Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Percent Sand

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	14.9	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	34.0	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—Percent Sand

Units of Measure: percent

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Top Depth: 1

Bottom Depth: 120

Units of Measure: Inches

Percent Silt

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the database, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

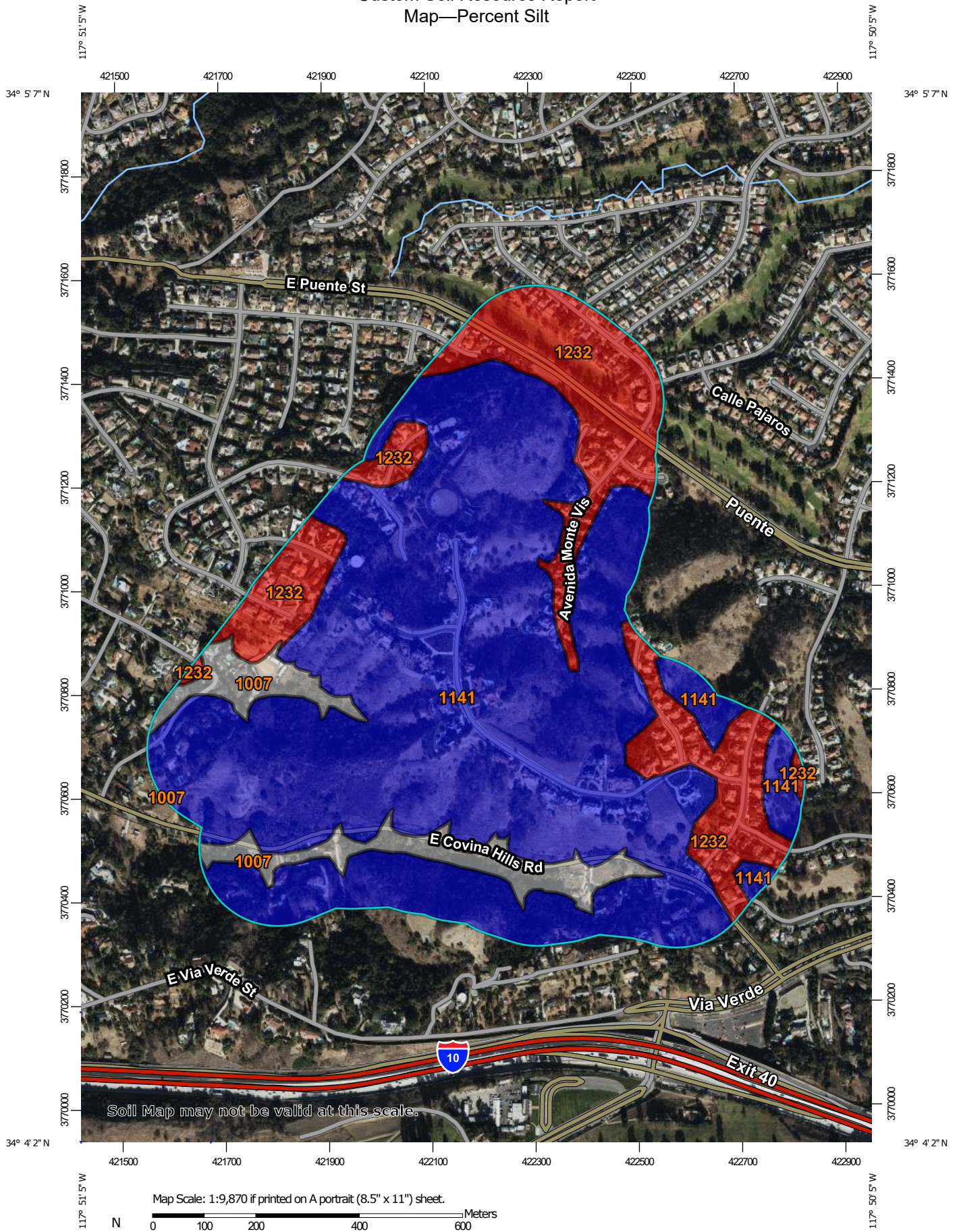
The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this

Custom Soil Resource Report


attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report Map—Percent Silt






MAP LEGEND

Area of Interest (AOI)




 Area of Interest (AOI)

Soils




Soil Rating Polygons

 ≤ 32.3
 > 32.3 and ≤ 36.4
 Not rated or not available


Soil Rating Lines

 ≤ 32.3
 > 32.3 and ≤ 36.4
 Not rated or not available






Soil Rating Points

 ≤ 32.3
 > 32.3 and ≤ 36.4
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

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

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

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Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

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MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Percent Silt

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	36.4	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	32.3	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—Percent Silt*Units of Measure:* percent*Aggregation Method:* Dominant Component*Component Percent Cutoff:* None Specified*Tie-break Rule:* Higher*Interpret Nulls as Zero:* No*Layer Options (Horizon Aggregation Method):* Depth Range (Weighted Average)*Top Depth:* 1*Bottom Depth:* 120*Units of Measure:* Inches**Plasticity Index**

Plasticity index (PI) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid.

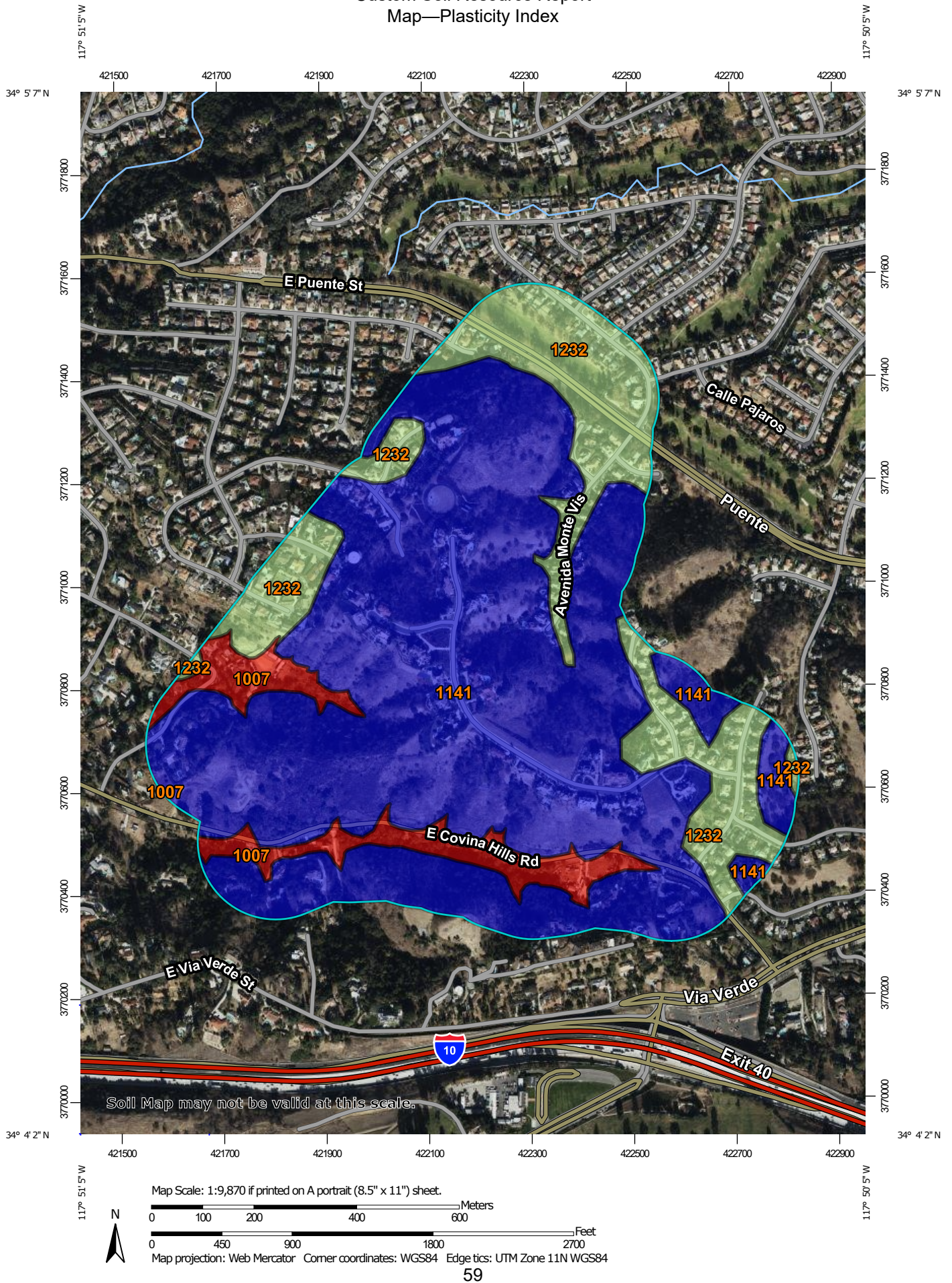
The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state.

Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large PI values. Plasticity index is used in classifying soils in the Unified and AASHTO classification systems.

Custom Soil Resource Report

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.


Custom Soil Resource Report Map—Plasticity Index




Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)





 Area of Interest (AOI)

Background





 Aerial Photography

Soils





Soil Rating Polygons

-  ≤ 11.1
-  > 11.1 and ≤ 24.0
-  > 24.0 and ≤ 27.0
-  Not rated or not available


Soil Rating Lines

-  ≤ 11.1
-  > 11.1 and ≤ 24.0
-  > 24.0 and ≤ 27.0
-  Not rated or not available






Soil Rating Points

-  ≤ 11.1
-  > 11.1 and ≤ 24.0
-  > 24.0 and ≤ 27.0
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

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

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

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

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

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Survey Area Data: Version 8, Sep 13, 2021

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Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

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MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Plasticity Index

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	11.1	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	27.0	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	24.0	52.4	21.0%
Totals for Area of Interest			249.3	100.0%

Rating Options—Plasticity Index

Units of Measure: percent

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the following National Soil Survey Handbook link: "[National Soil Survey Handbook](#)."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3

Low: 3 to 6

Moderate: 6 to 9

High: 9 to 12

Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluvies. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology)

from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left

behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2

Low: 0.2 to 0.4

Moderately low: 0.4 to 0.75

Moderate: 0.75 to 1.25

Moderately high: 1.25 to 1.75

High: 1.75 to 2.5

Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can

occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Custom Soil Resource Report

Very low: Less than 0.5 percent

Low: 0.5 to 1.0 percent

Moderately low: 1.0 to 2.0 percent

Moderate: 2.0 to 4.0 percent

High: 4.0 to 8.0 percent

Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and

promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5

Extremely acid: 3.5 to 4.4

Very strongly acid: 4.5 to 5.0

Strongly acid: 5.1 to 5.5

Moderately acid: 5.6 to 6.0

Slightly acid: 6.1 to 6.5

Neutral: 6.6 to 7.3

Slightly alkaline: 7.4 to 7.8

Moderately alkaline: 7.9 to 8.4

Strongly alkaline: 8.5 to 9.0

Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
 - A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
 - B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
 - C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
 - A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
 - B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where "Rock outcrop" is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which "severely eroded," "very severely eroded," or "gullied" is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to $\text{Ca}^{++} + \text{Mg}^{++}$. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1

Moderate: 13-30:1

Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0

Coarse sand: 1.0 to 0.5

Medium sand: 0.5 to 0.25

Fine sand: 0.25 to 0.10

Very fine sand: 0.10 to 0.05

Silt: 0.05 to 0.002

Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated

Prismatic: Vertically elongated and having flat tops

Columnar: Vertically elongated and having rounded tops

Angular blocky: Having faces that intersect at sharp angles (planes)

Subangular blocky: Having subrounded and planar faces (no sharp angles)

Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand

Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field

generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.

APPENDIX D

PLANT AND WILDLIFE SPECIES OBSERVED DURING SURVEYS

Table 1 contains the list of vascular plant taxa recorded during the biological field survey conducted within the BSA. Plant nomenclature and taxonomic order is based on *The Jepson Manual: Vascular Plants of California*, second Edition (Baldwin et al., 2012), and/or the Calflora website (Calflora, 2022).

Table 1
Plant Species Observed during the Field Surveys

Scientific Name	Common Name	
EUDICOTS		
Adoxaceae	Muskroot Family	Status
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	blue elderberry	
Amaranthaceae	Amaranth Family	
<i>Amaranthus albus</i> *	pigweed amaranth	
Anacardiaceae	Sumac or Cashew Family	
<i>Schinus molle</i> *	Peruvian pepper tree (=California pepper tree)	Cal-IPC: limited
<i>Toxicodendron diversilobum</i>	poison oak	
Apocynaceae	Dogbane Family	
<i>Funastrum cynanchoides</i> ssp. <i>hartwegii</i> (=Sarcostemma cynanchoides)	climbing milkweed	
Asparagaceae	Asparagus Family	
<i>Hesperoyucca</i>	Newberry's yucca	
Asteraceae (=Compositae)	Sunflower Family	
<i>Erigeron canadensis</i> * (=Conyza canadensis)	horseweed (=mare's tail)	
<i>Baccharis pilularis</i>	coyote brush	
<i>Baccharis salicifolia</i> ssp. <i>salicifolia</i> (=Baccharis salicifolia)	mule fat (=seep willow)	
<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i>	Italian thistle	
<i>Gutierrezia microcephala</i>	threadleaf snakeweed	
<i>Pseudognaphalium biolettii</i> (=Gnaphalium bicolor)	two-toned everlasting (=bicolored cudweed)	
<i>Malacothrix saxatilis</i>	cliff aster (=cliff malacothrix)	
<i>Silybum marianum</i> *	milk thistle	Cal-IPC: limited
<i>cirsium occidentale</i>	western thistle	
<i>Centuarea militensis</i>	maltese star-thistle	
<i>Artemisia californica</i>	California sagebrush	

Scientific Name	Common Name	
Boraginaceae	Borage or Waterleaf Family	
<i>Cryptantha</i> sp.	cryptantha	
Brassicaceae	Mustard Family	
<i>Brassica nigra</i> *	black mustard	Cal-IPC: moderate
<i>Hirschfeldia incana</i> *	short-pod mustard	
Cactaceae	Cactus Family	
<i>Opuntia littoralis</i>	coastal prickly pear	
<i>Opuntia ficus-indica</i> *	mission prickly pear (=tuna cactus, =mission fig)	
Caprifoliaceae	Honeysuckle Family	
<i>Lonicera japonica</i> *	Japanese honeysuckle	
Chenopodiaceae	Goosefoot Family	
<i>Chenopodium album</i> *	lamb's quarters (=white goosefoot)	
<i>Salsola tragus</i> *	Russian thistle (=tumbleweed)	Cal-IPC: limited
<i>Atriplex semibaccata</i> *	Australian saltbush	Cal-IPC: moderate
Convolvulaceae	Morning-Glory Family	
<i>Cuscuta</i> sp.	dodder	
Cucurbitaceae	Gourd Family	
<i>Cucurbita foetidissima</i>	stinking gourd	
<i>Marah macrocarpa</i> (=Marah macrocarpus)	wild cucumber (=man-root)	
Euphorbiaceae	Spurge Family	
<i>Euphorbia albomarginata</i>	rattlesnake sandmat	
<i>Ricinus communis</i> *	castor bean	Cal-IPC: limited
Fabaceae (=Leguminosae)	Legume Family	
<i>Lupinus succulentus</i>	arroyo lupine (=foothill lupine)	
Fagaceae	Oak Family	
<i>Quercus agrifolia</i> var. <i>agrifolia</i>	coast live oak	
Lamiaceae (=Labiatae)	Mint Family	
<i>Trichostema lanceolatum</i>	vinegar weed	

Scientific Name	Common Name	
<i>Marrubium vulgare</i> *	horehound	Cal-IPC: limited
<i>Salvia mellifera</i>	black sage	
Juglandaceae	Walnut Family	
<i>Juglans californica</i> (= <i>Juglans californica</i> var. <i>californica</i>)	southern California black walnut	
Myrtaceae	Eucalyptus Family	
<i>Eucalyptus</i> spp.	eucalyptus (ornamental)	Cal-IPC: limited
Plantaginaceae	Plantain Family	
<i>Penstemon heterophyllus</i>	foothill penstemon	
Rosaceae	Rose Family	
<i>Heteromeles arbutifolia</i>	toyon (=Christmas-berry, =California holly)	
Polygonaceae	Buckwheat Family	
<i>Eriogonum fasciculatum</i>	California buckwheat	
<i>Polygonum aviculare</i> *	prostrate knotweed	
Pinaceae	Pine Family	
<i>Pinus</i> spp.	ornamental pine(s)	
Rhamnaceae	Buckthorn Family	
<i>Rhamnus ilicifolia</i>	holly-leaf redberry	
Salicaceae	Willow Family	
<i>Salix lasiolepis</i>	arroyo willow	
Simaroubaceae	Simaroubaceae Family	
<i>Ailanthus altissima</i> *	tree of heaven	Cal-IPC: moderate
Solanaceae	Nightshade Family	
<i>Nicotiana glauca</i> *	tree tobacco	Cal-IPC: moderate
<i>Datura wrightii</i>	desert thorn apple (=desert thornapple)	
Tamaricaceae	Tamarisk Family	
<i>Tamarix ramosissima</i> *	saltcedar	Cal-IPC: high
MONOCOTS		
Poaceae	Grass Family	

Scientific Name	Common Name	
<i>Bromus diandrus</i> *	ripgut grass	Cal-IPC: moderate
<i>Avena spp.</i> *	wild oat	
<i>Bromus rubens</i> *	red brome	Cal-IPC: high
<i>Stipa coronata</i>	crested needle grass	

*Non-native species

Table 2 contains the list of wildlife species observed and/or detected during the biological field surveys. Wildlife nomenclature and taxonomic order is based on the following treatments according to class of species:

- **Birds.** *Check-list of North American Birds*. Seventh Edition and Supplements (Chesser et al., 2022)
- **Mammals.** *Complete List of Amphibian, Reptile, Bird and Mammal Species in California* (CDFW, 2016).
- **Native Wildlife.** *California's Life History Accounts and Range Maps* (accessed, 9/30/2022), CDFW 2022)

Table 2
Wildlife Species Observed/Detected during the Field Surveys

Scientific Name	Common Name	Status
Arthropods		
Nymphalidae	Brush-Footed Butterfly Family	
<i>Danaus plexippus</i>	monarch butterfly	Federal candidate for listing: overwintering population
Birds		
Accipitridae	Accipiter Family	
<i>Buteo lineatus</i>	red-shouldered hawk	
<i>Accipiter cooperii</i>	Cooper's hawk	CDFW Watch List, season of concern: nesting
<i>Buteo jamaicensis</i>	red-tailed hawk	
<i>Gallus domesticus</i>	domestic rooster	
Aegithalidae	Bushtit Family	
<i>Psaltiriparus minimus</i>	bushtit	
Columbidae	Dove/Pigeon Family	
<i>Streptopelia decaocto*</i>	Eurasian collared-dove	
Corvidae	Crow Family	
<i>Aphelocoma californica</i>	California scrub jay	
<i>Corvus brachyrhynchos</i>	American crow	
Fringillidae	Finch Family	
<i>Spinus psaltria</i>	lesser goldfinch	
<i>Spinus tristis</i>	American goldfinch	

Scientific Name	Common Name	Status
<i>Haemorhous mexicanus</i>	house finch	
Hirundinidae	Swallow Family	
<i>Petrochelidon pyrrhonota</i>	cliff swallow	
Mimidae	Mimid Family	
<i>Mimus polyglottos</i>	northern mockingbird	
Passeridae	Old World Sparrow Family	
<i>Passer domesticus</i>	house sparrow	
Passerellidae	New World Sparrow Family	
<i>Pipilo maculatus</i>	spotted towhee	
<i>Melospiza crissalis</i>	California towhee	
Picidae	Woodpecker Family	
<i>Melanerpes formicivorus</i>	acorn woodpecker	
<i>Dryobates nuttallii</i>	Nuttall's woodpecker	BCC
Trochilidae	Hummingbird Family	
<i>Calypte anna</i>	Anna's hummingbird	
Troglodytidae	Wren Family	
<i>Thryomanes bewickii</i>	Bewick's wren	
<i>Troglodytes aedon</i>	house wren	
Tyrannidae	Tyrant Flycatcher Family	
<i>Tyrannus vociferans</i>	Cassin's kingbird	
<i>Tyrannus verticalis</i>	western kingbird	
Mammals		
Canidae	Canine Family	

Scientific Name	Common Name	Status
<i>Canis latrans</i>	coyote	
<i>Canis lupus familiaris</i>	domestic dog	
Cricetidae	Woodrat Family	
<i>Neotoma fuscipes</i>	dusky-footed woodrat	
Geomyidae	Pocket Gopher Family	
<i>Thomomys bottae</i> *	Botta's pocket gopher	
Leporidae	Rabbit/Hare Family	
<i>Sylvilagus audubonii</i>	cottontail rabbit	
Sciuridae	Squirrel Family	
<i>Otospermophilus beecheyi</i>	California ground squirrel	
<i>Sciurus niger</i> *	eastern fox squirrel	
<i>Sciurus griseus</i>	western gray squirrel	
Reptiles		
Phrynosomatidae	North American Spiny Lizard Family	
<i>Sceloporus occidentalis longipes</i>	Great Basin fence lizard	
<i>Uta stansburiana elegans</i>	western side-blotched lizard	

APPENDIX E

REPRESENTATIVE SITE PHOTOGRAPHS



PHOTO 1: Areas 4a, 4g, and 4f from southwest of Area 3c. California buckwheat scrub, walnut woodland, and coast live oak woodland visible midground; water tank to the west (8/5/2022).



PHOTO 2: Areas 3b and 3c from southwest. Ribbon drain from water tank visible in middle foreground. Also shown: walnut woodland, upland mustards/star thistle fields, California buckwheat scrub, and developed areas (8/5/2022).



PHOTO 3: Area 1c, coast prickly pear scrub (7/1/2022).



PHOTO 4: Area 5f; coastal cactus scrub with buckwheat in foreground, and coast live oak woodland in left background. View is southwest (8/4/2022).



PHOTO 5: Area 2c, coyote on ridge. View is north (6/30/2022).



PHOTO 6: Area 5f, dust bath area (8/4/2022).



PHOTO 7: Area 5f, small woodrat midden (8/4/2022).



PHOTO 8: Area 5f, large woodrat midden (8/4/2022).



PHOTO 9: Area 5f, California sage brush intergrading to walnut woodlands. View is northwest (8/4/2022).



PHOTO10: Area 5f, pepper tree grove and upland mustard/star thistle in background. View is east to Area A1 (8/4/2022).



PHOTO 11: Pepper tree groves along East Covina Hills Road. View is to the east (2/7/2022).



PHOTO 12: Area 3, open space. View is south, with Areas 3c, 3b, 3a, and 3 in the background (8/5/2022).

APPENDIX F

LOT-SPECIFIC IMPACTS

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
1	Developed/Ornamental	0.80	0.07	0.71	0.15	1.72
	Upland mustards or star-thistle fields (mowed)			0.12	0.44	0.55
1 Total		0.80	0.07	0.83	0.58	2.28
2	Coast live oak woodland and forest (disturbed)			0.11	0.31	0.42
	Coast prickly pear scrub				0.03	0.03
	Developed/Ornamental				0.25	0.25
	Upland mustards or star-thistle fields (mowed)	0.79	0.09	0.36	0.34	1.57
2 Total		0.79	0.09	0.47	0.92	2.27
3	Coast live oak woodland and forest (disturbed)	0.12	0.01	0.07	0.20	0.40
	Coast prickly pear scrub				0.11	0.11
	Developed/Ornamental	0.37		0.08		0.44
	Upland mustards or star-thistle fields (mowed)	0.06	0.02	0.10	0.43	0.61
3 Total		0.54	0.03	0.25	0.74	1.56
4	California buckwheat scrub				0.11	0.11
	California walnut groves				0.00	0.00
	Coast live oak woodland and forest (disturbed)	0.03	0.00	0.02	0.03	0.09
	Developed/Ornamental	0.33		0.10	0.01	0.43
	Upland mustards or star-thistle fields (mowed)	0.13	0.06	0.15	0.41	0.76
4 Total		0.49	0.07	0.27	0.56	1.40
5	California buckwheat scrub				0.16	0.16
	California walnut groves				0.01	0.01
	Developed/Ornamental	0.30		0.10		0.40
	Upland mustards or star-thistle fields (mowed)	0.18	0.06	0.19	0.35	0.79
5 Total		0.47	0.06	0.29	0.53	1.36

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
6	California buckwheat scrub (disturbed)				0.34	0.34
	Developed/Ornamental	0.28		0.08		0.36
	Upland mustards or star-thistle fields (mowed)	0.40	0.05	0.18	0.62	1.25
6 Total		0.67	0.05	0.27	0.96	1.95
7	California buckwheat scrub (disturbed)				0.33	0.33
	California walnut groves	0.08	0.02	0.12	0.13	0.35
	Developed/Ornamental	0.47		0.11		0.58
	Upland mustards or star-thistle fields (mowed)	0.09	0.04	0.25	0.24	0.61
7 Total		0.65	0.06	0.47	0.70	1.88
8	California buckwheat scrub (disturbed)				0.06	0.06
	California walnut groves	0.13	0.01	0.03	0.87	1.04
	California walnut groves (disturbed)	0.31	0.02	0.03	0.00	0.36
	Developed/Ornamental	0.30		0.11	0.01	0.41
	Upland mustards or star-thistle fields	0.00	0.00	0.03	0.21	0.25
8 Total		0.75	0.03	0.20	1.15	2.13
9	California walnut groves	0.04		0.01	0.02	0.07
	California walnut groves (disturbed)	0.01		0.01		0.02
	Coast live oak woodland and forest (disturbed)	0.09		0.04	0.77	0.90
	Developed/Ornamental	1.13	0.03	0.12		1.28
	Upland mustards or star-thistle fields	0.12	0.06	0.11	1.45	1.74
9 Total		1.38	0.09	0.30	2.23	4.00
10	California buckwheat scrub	0.04		0.05		0.09
	California buckwheat scrub (disturbed)				0.17	0.17
	California walnut groves	0.03		0.01	0.17	0.21

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Coast live oak woodland and forest (disturbed)	0.27		0.02	0.40	0.68
	Developed/Ornamental	0.05		0.02	0.00	0.07
	Upland mustards or star-thistle fields	0.60	0.04	0.13	1.03	1.80
10 Total		0.99	0.04	0.22	1.77	3.03
11	California buckwheat scrub	0.79		0.02	0.53	1.33
	California buckwheat scrub (disturbed)				0.64	0.64
	California sagebrush - black sage scrub	0.98		0.61	3.27	4.86
	California walnut groves	0.83		0.36	7.25	8.45
	Coast prickly pear scrub	0.00		0.33	3.38	3.71
	Developed/Ornamental	1.08		0.16	0.01	1.25
	Pepper tree groves				0.66	0.66
	Upland mustards or star-thistle fields	0.01			0.49	0.50
11 Total		3.70		1.48	16.22	21.40
12	California walnut groves	0.00	0.01	0.07	1.11	1.20
	Developed/Ornamental	0.69	0.06	0.14	0.00	0.88
12 Total		0.69	0.07	0.21	1.11	2.08
13	California walnut groves			0.08	0.05	0.13
	Developed/Ornamental	0.31	0.00	0.10		0.42
	Upland mustards or star-thistle fields			0.07	0.00	0.07
	Upland mustards or star-thistle fields (mowed)	0.01	0.05	0.26		0.33
13 Total		0.33	0.06	0.51	0.05	0.95

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
14	California walnut groves			0.21	0.53	0.74
	Developed/Ornamental	1.36	0.13	0.40		1.88
	Upland mustards or star-thistle fields			0.42	0.56	0.98
14 Total		1.36	0.13	1.02	1.09	3.60
15	California walnut groves	0.03		0.02	0.92	0.98
	Developed/Ornamental	0.34		0.09		0.44
	Upland mustards or star-thistle fields				0.49	0.49
	Upland mustards or star-thistle fields (mowed)	0.21		0.03	0.05	0.29
15 Total		0.58		0.14	1.46	2.19
16	California walnut groves	0.08		0.01	0.50	0.59
	Developed/Ornamental	0.50		0.11		0.61
	Upland mustards or star-thistle fields	0.00	0.01	0.07	1.20	1.28
	Upland mustards or star-thistle fields (mowed)	0.43	0.05	0.16		0.64
16 Total		1.01	0.06	0.35	1.69	3.11
17	California walnut groves	0.05	0.04	0.47		0.56
	Coast live oak woodland and forest (disturbed)	0.01	0.00	0.17		0.19
	Developed/Ornamental	0.48	0.02	0.14		0.65
	Upland mustards or star-thistle fields (mowed)			0.16		0.16
17 Total		0.54	0.07	0.94		1.55
18	California walnut groves	0.12	0.04	0.21		0.37
	Coast live oak woodland and forest (disturbed)	0.02	0.03	0.38		0.42

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Developed/Ornamental	0.24		0.06		0.31
	Upland mustards or star-thistle fields (mowed)			0.00		0.00
18 Total		0.38	0.06	0.66		1.11
19	California walnut groves	0.23	0.06	0.54		0.82
	Developed/Ornamental	0.04		0.04		0.08
	Pepper tree groves	0.08		0.01		0.09
19 Total		0.35	0.06	0.58		0.99
20	California walnut groves		0.00	0.22		0.23
	Developed/Ornamental	0.24	0.05	0.11		0.41
	Pepper tree groves		0.00	0.06		0.06
20 Total		0.24	0.06	0.39		0.70
21	California walnut groves	0.05	0.04	0.44		0.53
	Developed/Ornamental	0.27	0.03	0.10		0.40
21 Total		0.32	0.07	0.53		0.93
22	California walnut groves	0.01	0.00	0.30		0.31
	Coast live oak woodland and forest (disturbed)			0.10		0.10
	Developed/Ornamental	0.36	0.05	0.23		0.64
	Upland mustards or star-thistle fields (mowed)			0.00		0.00
22 Total		0.37	0.05	0.63		1.05
23	California buckwheat scrub			0.00		0.00

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	California walnut groves	0.22	0.07	0.37		0.67
	Coast live oak woodland and forest (disturbed)			0.00		0.00
	Developed/Ornamental	0.27	0.00	0.11		0.39
	Upland mustards or star-thistle fields (mowed)			0.38		0.38
23 Total		0.50	0.07	0.88		1.44
24	California buckwheat scrub	0.00		0.02		0.02
	California walnut groves (disturbed)	0.63		0.04	2.16	2.83
	Developed/Ornamental	0.39		0.07		0.46
	Upland mustards or star-thistle fields (mowed)	0.03		0.04	0.46	0.52
24 Total		1.05		0.17	2.62	3.83
25	California walnut groves	0.66	0.02	0.14	1.05	1.86
	California walnut groves (disturbed)				0.13	0.13
	Developed/Ornamental	0.19		0.04		0.23
	Upland mustards or star-thistle fields (mowed)	0.30	0.06	0.07	0.96	1.39
25 Total		1.15	0.08	0.25	2.14	3.61
26	California walnut groves	0.05	0.01	0.13	0.94	1.13
	Developed/Ornamental	0.45	0.02	0.09		0.56
	Upland mustards or star-thistle fields (mowed)	0.52	0.07	0.23	0.40	1.21
26 Total		1.02	0.09	0.45	1.34	2.91
27	California walnut groves	0.28	0.09	0.43	0.44	1.25
	Developed/Ornamental	0.30		0.11	0.00	0.42

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
27 Total		0.59	0.09	0.55	0.44	1.67
28	California buckwheat scrub			0.02		0.02
	California walnut groves	0.18	0.06	0.45	0.68	1.37
	Developed/Ornamental	0.66		0.15		0.81
	Upland mustards or star-thistle fields (mowed)				0.22	0.22
28 Total		0.84	0.06	0.62	0.90	2.42
29	California buckwheat scrub		0.00	0.43	0.22	0.64
	California walnut groves			0.14	0.25	0.39
	Coast live oak woodland and forest (disturbed)			0.07	0.06	0.12
	Developed/Ornamental	0.59	0.02	0.13		0.75
	Upland mustards or star-thistle fields (mowed)	0.25	0.04	0.15	0.06	0.51
29 Total		0.84	0.07	0.92	0.58	2.42
30	California walnut groves			0.03		0.03
	Upland mustards or star-thistle fields (mowed)	0.37	0.08	0.56		1.01
30 Total		0.37	0.08	0.59		1.04
31	California buckwheat scrub				0.01	0.01
	California walnut groves	0.19	0.03	0.04	0.94	1.21
	Upland mustards or star-thistle fields (mowed)	0.40		0.11		0.52
31 Total		0.60	0.03	0.16	0.96	1.74
32	California walnut groves	0.30	0.01	0.06	1.03	1.40

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Upland mustards or star-thistle fields (mowed)	0.29		0.08		0.37
32 Total		0.59	0.01	0.15	1.03	1.77
33	California walnut groves	0.13	0.01	0.05	0.71	0.91
	Developed/Ornamental	0.02	0.00	0.06		0.08
	Upland mustards or star-thistle fields (mowed)	0.42	0.04	0.16	0.03	0.65
33 Total		0.58	0.05	0.28	0.74	1.65
34	California walnut groves			0.00	0.47	0.47
	Coast live oak woodland and forest (disturbed)				0.05	0.05
	Developed/Ornamental	0.51	0.05	0.34	0.02	0.92
	Upland mustards or star-thistle fields (mowed)			0.01	0.02	0.02
34 Total		0.51	0.05	0.34	0.56	1.46
35	California walnut groves			0.10	0.16	0.27
	Coast live oak woodland and forest (disturbed)				0.17	0.17
	Developed/Ornamental	0.44	0.06	0.24	0.07	0.81
35 Total		0.44	0.06	0.34	0.40	1.24
36	California walnut groves				0.19	0.19
	Coast live oak woodland and forest (disturbed)				0.01	0.01
	Developed/Ornamental	0.49	0.08	0.22	0.41	1.20
36 Total		0.49	0.08	0.22	0.60	1.40