

FINAL

HAFEN PRESERVE RESOURCE MANAGEMENT PLAN

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Acronyms and Abbreviations

ASA	Archaeological Sensitivity Assessment
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRAM	California Rapid Assessment Method
EMP	Environmental Mitigation Program
EOC	Environmental Oversight Committee
EPA	U.S. Environmental Protection Agency
ESLs	environmentally sensitive lands
FMP	Fire Management Plan
FR	Federal Register
FTSP	Foothill/Trabuco Specific Plan
IA	Implementing Agreement
IPM	integrated pest management
Msl	mean sea level
NCCP/HCP	Natural Community Conservation Plan/Habitat Conservation Plan
NROC	Nature Reserve of Orange County (renamed Natural Communities Coalition)
OCFA	Orange County Fire Authority
OC Parks	Orange County Parks
OCTA	Orange County Transportation Authority
OSC	Open Space Conservation District
PAR	Property Analysis Report
PCAs	Priority Conservation Areas
Regulatory Agencies	USACE, SWRCB, and CDFW
RMP	Resource Management Plan
SWRCB	State Water Resources Control Board
TCR	Trabuco Canyon Residential District
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
Wildlife Agencies	USFWS and CDFW

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Executive Summary

In 2006, Orange County voters approved the renewal of Measure M, effectively extending the half-cent sales tax to provide funding for transportation projects and programs in the county. As part of the renewed Measure M (or Measure M2), a portion of the M2 freeway program revenues were set aside for the M2 Environmental Mitigation Program (EMP) to provide funding for programmatic mitigation to offset impacts from the 13 freeway projects covered by Measure M2. The Orange County Transportation Authority (OCTA) prepared the M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP or Plan) as a mechanism to offset potential project-related effects on threatened and endangered species and their habitats in a comprehensive manner. A key component of the Plan has included the identification and acquisition of habitat Preserves to offset habitat impacts.

The Hafen Preserve (Preserve), purchased by OCTA in May 2011, is one of seven properties acquired by OCTA as part of the M2 EMP. Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place within the next five years. The Preserve Manager is responsible for the implementation of management and monitoring tasks as outlined in this long-term Resource Management Plan (RMP). The RMP, including subsequent revisions, must be reviewed (at least every five years) and approved by the Wildlife Agencies. These revisions will occur to prioritize management actions based on potential changing Preserve needs. For the purposes of this RMP, "Wildlife Agencies" is defined as the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) as the implementing agencies of the NCCP/HCP. All updates to the RMP will be shared with the EOC as part of a public meeting. Updated versions of the RMP will be posted on the OCTA website.

Key issues addressed and management actions set forth in this RMP include:

- **Public Access** – A goal of this RMP is to evaluate the opportunities for managed public access and passive recreational opportunities within the Preserve that are compatible with the protection of biological resources. Based on an evaluation of biological resources, safety concerns, and local land use/parking constraints, it was determined that public access cannot be accommodated on the Hafen preserve at this point in time. The current configuration of trails does not connect to other regional trails due to safety concerns and constraints of surrounding land ownership and limits to staging and parking areas. OCTA recognizes that opportunities to connect to regional trails and planning for regional trail networks will evolve and change over time. Therefore, OCTA, and the subsequent Preserve Manager, will participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made.
- **Invasive Species Control** – Invasive plants have been identified as a threat to natural communities and sensitive species on the Preserve, and invasive plant control is expected to be a long-term, ongoing management issue. The Preserve Manager will contract with a Restoration Ecologist to prepare an invasive plant treatment plan within two years of RMP adoption for review and approval. The treatment plan will prioritize invasive species for control; specify goals (eradication versus control); identify treatment locations, timelines (including potential re-treatments), and removal methods; provide realistic, measurable success criteria and monitoring methodology; and identify areas that may need post-treatment restoration.

- **Fire Management Plan** – The Orange County Fire Authority (OCFA) is responsible for fire control within the Preserve, and its first priority will be to protect life and property. The Preserve Manager will work closely with the OCFA to identify fire management guidelines. Within two years from adoption of the RMP, the Preserve Manager, in coordination with OCTA and OCFA, will develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. Prior to adoption of the FMP, fire management in the Preserve will consist primarily of conducting regular maintenance of weeds along existing trails and maintaining safe access for firefighters on existing trails.
- **Public Outreach and Education** – The RMP sets forth the objective to develop and implement a public outreach and education program to inform and engage the public on Preserve values, goals, and guidelines to promote stewardship of biological resources and compliance with Preserve rules and regulations. If the public is properly informed of the biological values, goals, and activity restrictions within the Preserve, it is more likely that management goals and guidelines will be respected and followed.
- **Biological Monitoring and Management** – The RMP sets forth Preserve-specific management objectives and actions to ensure the long-term viability of natural communities and Covered Species by protecting, managing, and enhancing populations and suitable habitat on the Preserve. Biological monitoring will be used to determine status, threats, and populations trends of Covered Species and their habitats within the Preserve.
- **Adaptive Management** – Adaptive management provides a strategy to improve future management actions through monitoring to evaluate management effectiveness. Where success criteria are not met, adaptive management provides a structured approach to improve management outcomes. Monitoring and adaptive management on the Preserve will be a cooperative effort between OCTA, the Preserve Manager, the Wildlife Agencies, and other parties with technical expertise or information to inform monitoring and adaptive management. Bi-annual meetings will be scheduled where both policy and technical expertise can be integrated into the process of revising goals and objectives, refining conceptual models, adjusting management and/or monitoring activities, or determining the allocation of funding.
- **Funding** – The RMP describes and outlines the financial requirements for start-up expenditures, ongoing Preserve management, adaptive management, effectiveness biological monitoring, and responding to changed circumstances. Using funds from the M2 EMP, OCTA has begun to establish a permanent, non-wasting endowment to provide funding for the commitments of Preserve management and monitoring in perpetuity.

The long-term Resource Management Plan (RMP) described herein provides guidelines for the management and monitoring of the Hafen Preserve in accordance with the goals and objectives set forth in the Orange County Transportation Authority's (OCTA's) M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP or Plan). The Hafen Preserve RMP provides guidance for the ongoing protection, preservation, and adaptive management of the natural resources found within the Preserve, including control of site-specific encroachment activities, while addressing fire protection issues and accommodating safe access and recreational use of the site by the general public.

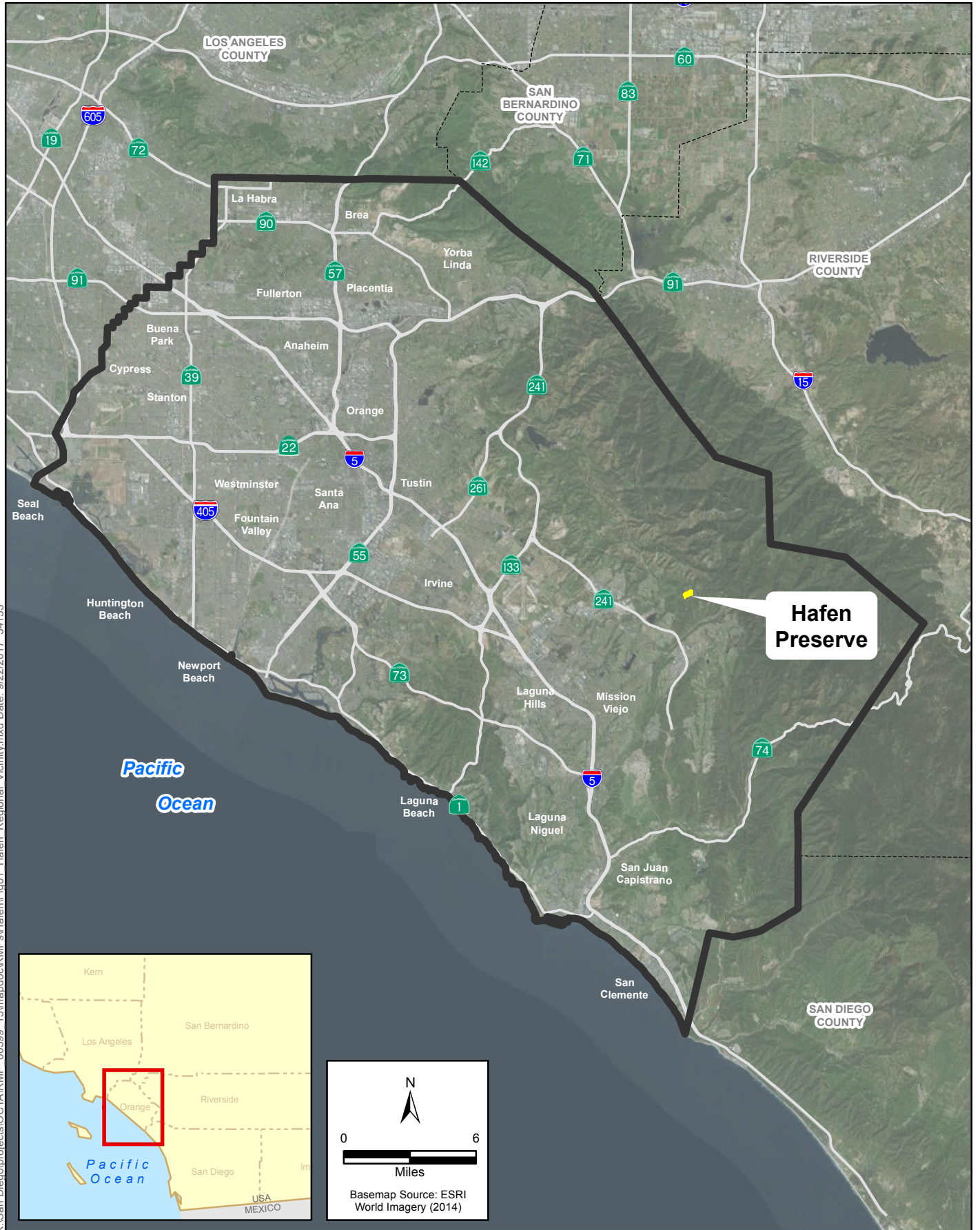
OCTA will contract with a Wildlife Agency-approved land management entity to implement the Hafen Preserve RMP. The implementation of the RMP will be funded in perpetuity ("life of the RMP") through establishment of a non-wasting endowment held and distributed by a financial institution approved by the Wildlife Agencies. If the financial institution shows signs of mismanagement or poor appropriation of funds or enters into bankruptcy, endowment funds will be redirected to another financial institution upon approval from the Wildlife Agencies.

1.1 Hafen Preserve Acquisition

The Hafen Preserve was purchased as part of the OCTA M2 Environmental Mitigation Program (EMP) in December 2011. Located in the eastern part of unincorporated Orange County (Figures 1 and 2), the Hafen Preserve is a component of the overall conservation strategy of the EMP to provide comprehensive mitigation to offset the environmental impacts of OCTA's 13 M2 freeway improvement projects. The EMP program is spearheaded by the Environmental Oversight Committee (EOC), which is made up of two OCTA Board of Directors members and representatives from the California Department of Transportation (Caltrans), Wildlife Agencies, USACE, environmental groups, and public members. The goal of the EOC was to identify conservation measures that protect and enhance habitats as mitigation for potential impacts associated with the M2 funded freeway improvement projects. The EOC will continue to serve as the interagency and public forum for decisions and oversight of the EMP.

Instead of mitigating the natural resource impacts of M2 freeway projects on a project-by-project basis, the EMP presents a comprehensive mitigation approach that provides not only replacement habitat within preserved open space areas, but also provides the opportunity to improve the overall functions and value of sensitive biological resources on a regional basis throughout Orange County (i.e., Plan Area). It does so by the enhancement of connectivity between EMP open space areas and other existing open space areas and preserves. Working collaboratively with the Wildlife Agencies, OCTA ultimately decided that the preparation of an NCCP/HCP would best serve as the EMP's main implementation tool.

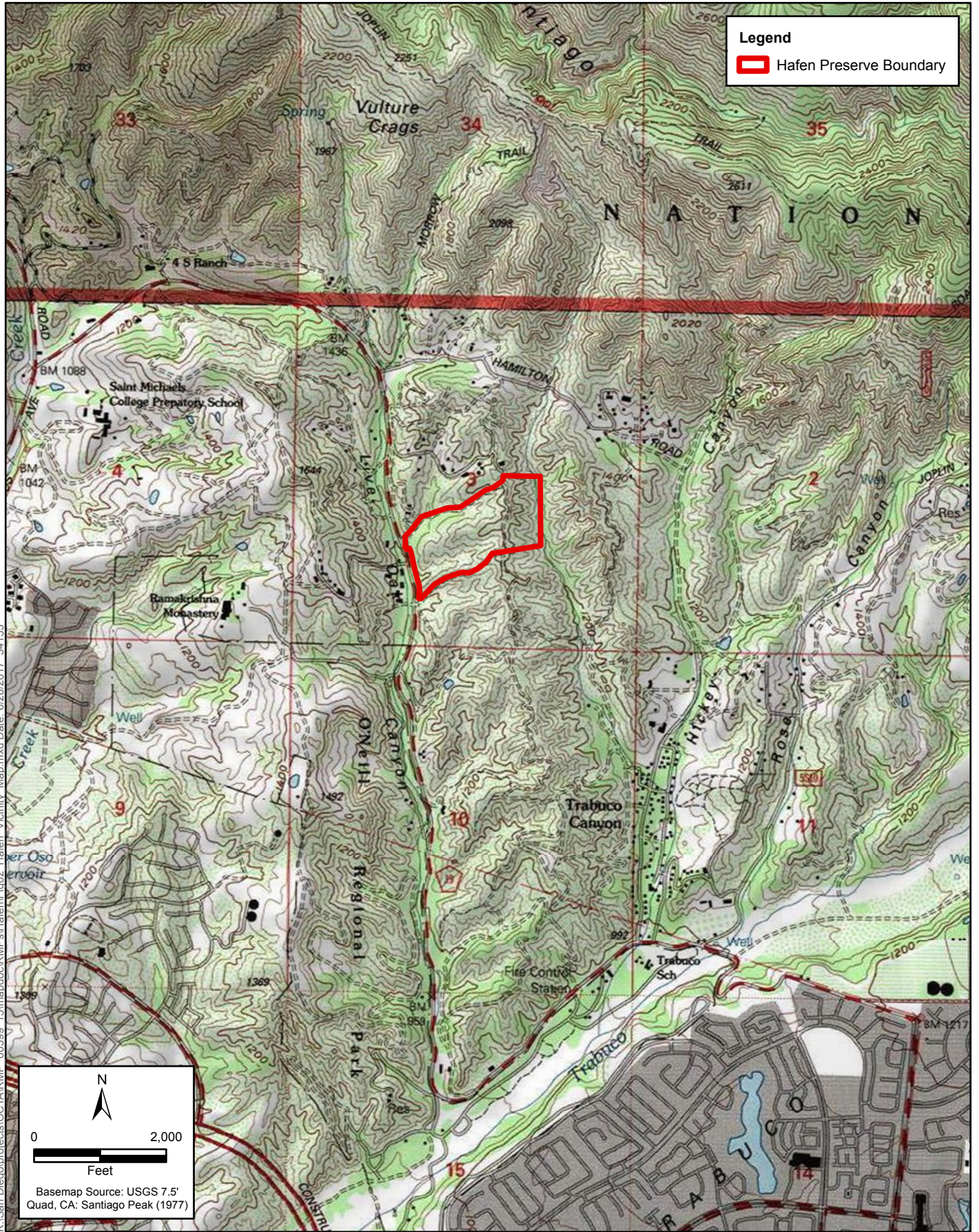
Based on the evaluation of opportunities throughout the Plan Area, Priority Conservation Areas (PCAs) were identified as part of the open space acquisition process and include candidate parcels and properties that could be managed as preserved open space for mitigation purposes (CBI 2009). A standardized criteria and prioritization process was also developed to facilitate property



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Figure 1
Regional Vicinity Map
Hafen Resource Management Plan



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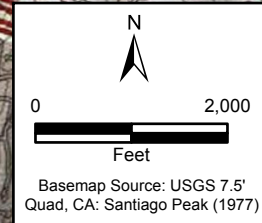


Figure 2
Preserve Vicinity Map
Hafen Resource Management Plan



evaluation and assessment. Properties for acquisition and restoration/preservation were selected based on some of the criteria listed below:

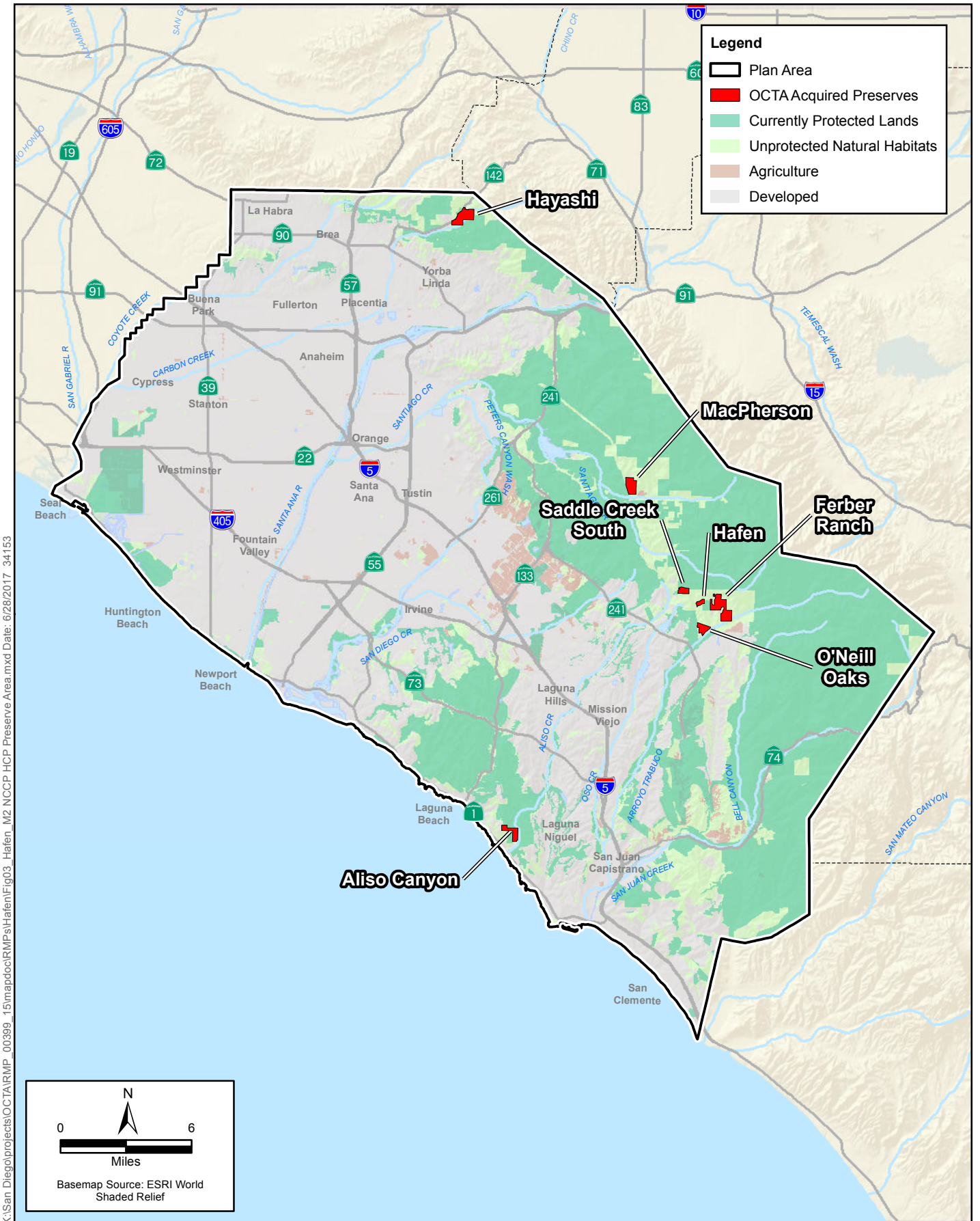
- Contains habitats impacted by the freeway projects.
- Contains habitat for Covered Species.
- Enhances natural lands connectivity, including significant wildlife corridors.
- Has the potential to mitigate the Covered Activities.
- Adjacent to or in close proximity to already conserved lands.

The M2 NCCP/HCP complements the existing NCCP and HCPs in Orange County, which include the Central and Coastal NCCP/HCP and the Southern Subregion HCP. In support of these goals and objectives, large blocks of unprotected land that are located outside the habitat reserves established by these NCCP and HCPs will be protected by the M2 NCCP/HCP through the acquisition of these parcels and incorporation into the M2 Preserve Area. The M2 NCCP/HCP conservation strategy included the purchase of seven preserves that make up the M2 Preserve Area: Aliso Canyon (151 ac), O'Neill Oaks (116 ac), Hafen (48 ac), Saddle Creek South (83 ac), Ferber Ranch (396 ac), MacPherson (204 ac), and Hayashi (301 ac). The Hafen Preserve is one of four preserves in the Trabuco Canyon area (Figure 3).

The Hafen Preserve satisfies many of the property acquisition criteria that were utilized to evaluate potential alignment with the OCTA EMP program including being identified as a PCA; supporting Covered Species and associated natural communities; contributing to regional biological connectivity; and containing a diversity of high quality habitat types, including coastal sage scrub, ephemeral and intermittent streams supporting riparian woodland, wetlands, oak woodland, grassland, and cliff and rock.

1.2 Relevant Land Use and Conservation Plans

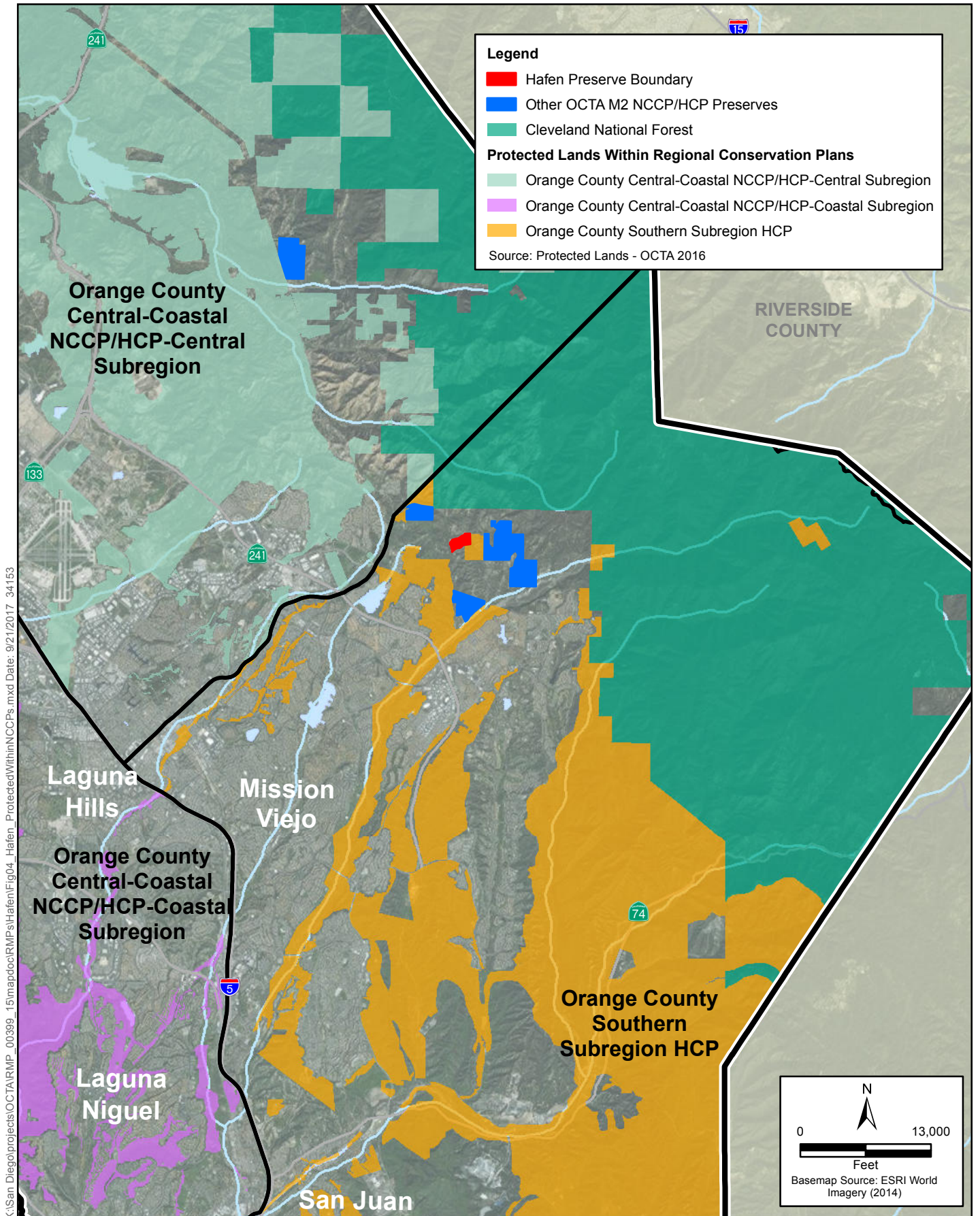
The Hafen Preserve is located within the jurisdictional boundaries of the Foothill/Trabuco Specific Plan (FTSP) (County of Orange 1991) area. The Hafen Preserve is in a location that supports local and regional biological connectivity. The Preserve is immediately adjacent to the State owned CDFW managed Hafen property along its eastern boundary that connects to the OCTA owned Ferber Ranch Preserve. This block of open space further connects to County open space lands adjacent to the Cleveland National Forest and Trabuco Canyon. This natural habitat provides for wildlife movement between these two areas. The Preserve has relatively large blocks of intact habitat with high biodiversity and habitat suitable for coastal California gnatcatcher occupancy and movement. Conserving a portion of the Northern Foothills core habitat with the acquisition of the Hafen Preserve helps minimize interior fragmentation and maintain connectivity to the Santa Ana Mountains. Figure 4 provides a regional perspective of how the Hafen Preserve is located within the network of open space lands, and Figure 5 depicts the other reserve areas in the nearby vicinity of the Hafen Preserve. The following sections include a description of the relevant land use plans and conservation plans overlapping or in the vicinity of the Preserve.



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Figure 3
M2 NCCP/HCP Preserve Area
Hafen Resource Management Plan



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Figure 4
Protected Lands in Boundaries of Regional Conservation Plans
Hafen Resource Management Plan

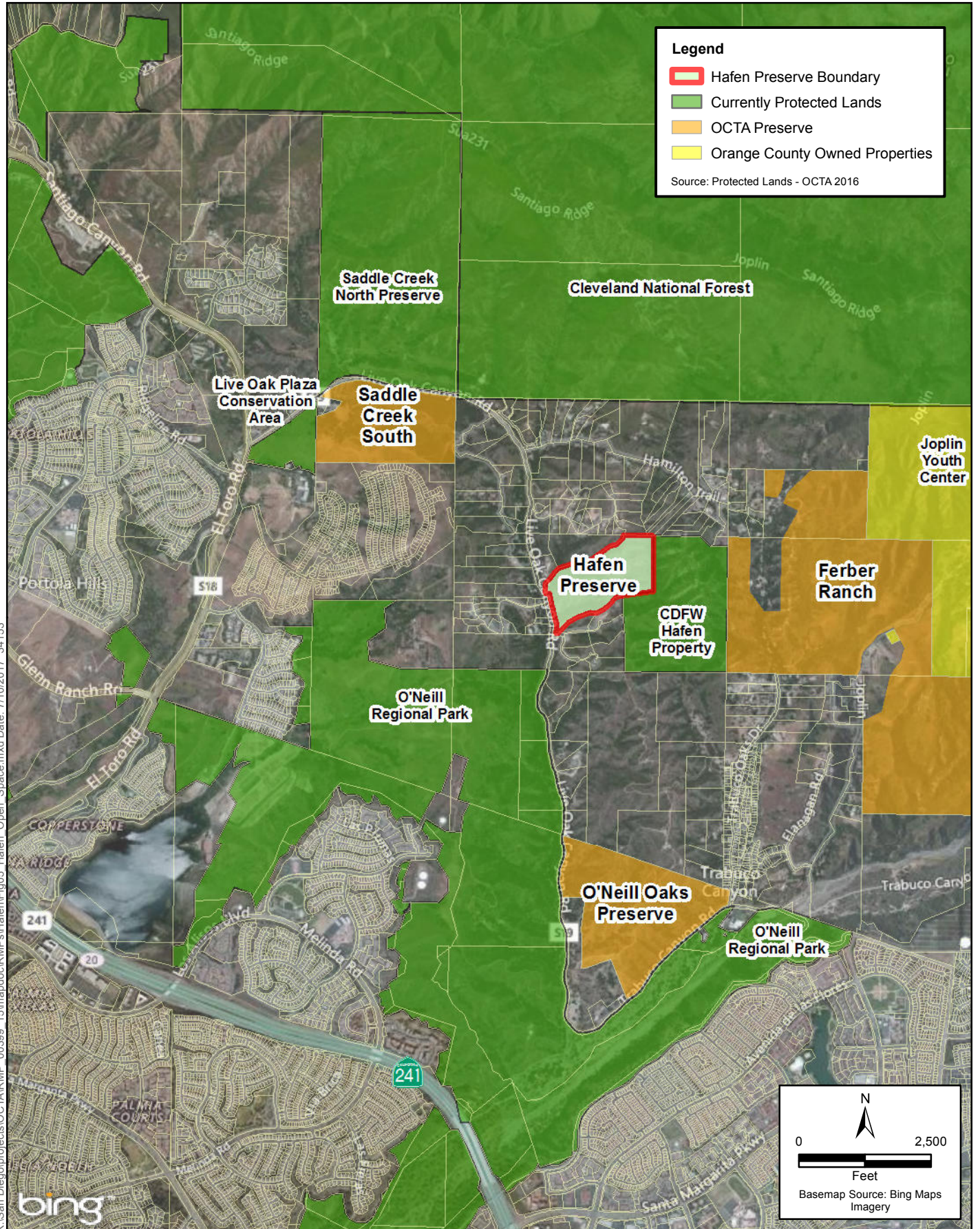


Figure 5
Open Space in Vicinity of Hafen Preserve
Hafen Resource Management Plan



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1.2.1 Foothill/Trabuco Specific Plan

The FTSP was adopted in 1991 by the Orange County Board of Supervisors to establish regulations for development that would preserve the rural character of the area. This Preserve is within the FTSP area. The Hafen Preserve is located within the Trabuco Canyon Residential District (TCR) that is part of the FTSP's Land Use District's designations. The property's TCR land use designation would have allowed the construction of up to 12 dwelling units; however, OCTA's acquisition of this Preserve ensures this core segment of the Trabuco Canyon area will be preserved in perpetuity as open space.

In addition, the FTSP recognizes the importance of maintaining wildlife movement within the FTSP area. This RMP establishes a management program designed to conserve and manage the Preserve for the benefit of wildlife movement, which is consistent with the intent of the FTSP. The FTSP also depicts a network of local hiking and riding trails that are proposed for establishment upon development of properties within the FTSP. This trail system includes one trail that crosses through the Preserve. The FTSP trails in relation to the Hafen Preserve are discussed in greater detail in Section 3.1.3, "Hafen Public Access Plan".

1.2.2 Conservation Plans

Currently, there are two completed subregional plans in Orange County: the Central-Coastal NCCP/HCP and the Southern Subregion HCP. The Central Coastal NCCP/HCP and the Southern Subregion HCP are two large-scale conservation programs designed to protect substantial amounts of open space that serve as habitat reserves for sensitive species and habitats in the Plan Area. In addition to the formal subregional plans, a substantial land area has been set aside as open space as part of individual land planning efforts in the county. This includes open space areas within large planned communities, some parks and open space managed by cities, and other HCPs. The Cleveland National Forest is located in the southeastern portion of the Plan Area and extends into adjacent Riverside County. The Cleveland National Forest is also located north and east of the Hafen Preserve upstream along Trabuco Creek. The Preserve Area of the M2 NCCP/HCP was designed to specifically target areas that complement the conservation efforts of these existing programs and open space areas by identifying and contributing key properties within core habitats and/or linkages that have not been permanently protected (Figure 4).

1.3 Covered Activities and Threats to Covered Species within Preserve

The OCTA NCCP/HCP (Section 3.1.3) authorizes specific Covered Activities within the NCCP/HCP Preserves. These Covered Activities might adversely affect some Covered Species and their habitats but most of the effects are expected to be temporary and of limited severity. Authorized Covered Activities in the Preserves include: 1) Recreational Facilities and Maintenance; 2) Management Activities; 3) Habitat Enhancement, Restoration, and Creation; 4) Species Surveys, Monitoring, and Research; and 5) Responses to Changed Circumstances. These Covered Activities were authorized under the OCTA NCCP/HCP in order to address (i.e., manage for) the threats and stressors to Covered Species and natural communities present on the various Preserves.

Prior to OCTA's acquisition, previous land use activities (now-unauthorized encroachment activities) occurred on the property. A review of historic aerial photographs of the property shows

that, in general, vegetation communities have not been altered significantly since 1946. Buildings or otherwise significant structures are not identified in the historic aerials. Low density residential development is present immediately north and south of the property, with the latest house built within the past two years. An unpaved road on the property was graded sometime between 1953 and 1975, though it is now largely overgrown. Evidence of grazing is not present on this property.

Management of the Hafen Preserve as part of the OCTA NCCP/HCP must address potential threats to conserved biological resources, including Covered Species and sensitive habitats as well as those that may result from the Covered Activities (i.e., preserve management).

These threats may include the following.

- Introduction and spread of invasive, nonnative plant and wildlife species
- Damage and clearing of native vegetation
- Erosion caused by vegetation removal and the creation of unauthorized trails and/or unauthorized use of closed trails
- Impacts to water quality and habitat in onsite streams and other aquatic resources
- Wildfire
- Harassment of wildlife species, including disturbance of nesting bird species
- Wildlife poaching
- Disruption of wildlife movement

This Preserve RMP addresses these potential threats by providing guidance for the ongoing protection and preservation of the natural resources found within the Preserve, including Covered Species and sensitive habitats, while addressing fire protection and public access issues.

1.4 Management and Monitoring Goals, Objectives and Actions

1.4.1 OCTA M2 NCCP/HCP Goals and Objectives Relevant to the Hafen Preserve

The M2 NCCP/HCP contains a broad set of biological goals and objectives at the landscape, natural community, and species levels that describe how the conservation actions would occur within areas important for regional conservation purposes. Goals are based on the conservation needs of the resources. Biological objectives describe in more detail the conservation or desired conditions to be achieved and have been designed to collectively achieve the biological goals. The biological goals and objectives indicate how the additional conservation of large blocks of habitat will benefit the biodiversity, natural communities, and habitat connectivity throughout key portions of the Plan Area, and provide for conservation and management of Covered Species. Biological goals for Covered Species are required by USFWS's 5-Point Policy to be included in HCPs (*Federal Register* (FR), Volume 65, Page 35242, June 1, 2000). The NCCP Act (Section 2810 of the Fish and Game Code) specifies the inclusion of conservation goals and objectives in the Planning Agreement. The following biological goals and objectives (documented in the M2 NCCP/HCP) are specifically applicable to the Hafen Preserve:

- **Landscape Goal 1:** Protect, manage, and enhance natural landscapes that result in conservation of areas large enough to support ecological integrity and sustainable populations of Covered Species, and are linked to each other and/or other areas of protected habitat in or adjacent to the Plan Area.
 - **Landscape Objective 1.1:** OCTA will conserve and manage natural landscapes within core and linkage areas contiguous with existing protected lands.
- **Landscape Goal 2:** Protect and enhance natural and semi-natural landscapes important to maintain wildlife movement within the Plan Area.
 - **Landscape Objective 2.1:** OCTA will acquire, protect, and manage natural landscapes that secure wildlife movement corridors and provide landscape connectivity.
- **Landscape Goal 3:** OCTA will protect, enhance, and/or restore natural landscapes within a range of environmental gradients and contiguous to other protected areas to allow for shifting species distributions in response to catastrophic events (e.g., fire, prolonged drought) or changed circumstances (e.g., climate change).
 - **Landscape Objective 3.1:** OCTA will acquire and/or restore natural landscapes within elevation ranges (0–500, 500–1,000, 1,000–1,500, 1,500–2,000 feet). The conservation and restoration of Covered Species habitat in or contiguous with existing Preserve lands will benefit potential shifting species distributions in response to catastrophic events and changed circumstances.
- **Landscape Goal 4:** Protect and enhance habitat in geographically distinct areas across the Plan Area to conserve species by facilitating/promoting genetic exchange.
 - **Landscape Objective 4.1:** OCTA will acquire and/or restore natural landscapes within most of the major watersheds (Hydrologic Unit Code 8) and a majority of the core and linkage areas that are contributing to genetic exchange within these areas.
- **Natural Community Goal 1:** Protect, manage, and enhance natural communities to promote native biodiversity.
 - **Natural Community Objectives:** OCTA will acquire and/or restore chaparral, riparian, scrub, and woodland habitat to promote conservation of native biodiversity and connectivity that benefit Covered Species of these natural community types.
- **Natural Community Goal 2:** Maintain and enhance riparian and wetland function and values to benefit Covered Species and promote native biodiversity.
 - **Natural Community Objective 2.1:** OCTA will acquire, restore and/or enhance areas with aquatic resources (per CDFW jurisdiction). These conservation actions will protect riparian and wetlands functions and values by improving the condition and integrity of the physical streambed, aquatic and riparian habitat, and hydrology.
- **Species Goal 1:** Provide conservation of **intermediate mariposa lily** within the Plan Area and minimize and mitigate impacts associated with Covered Activities.
 - **Species Objective 1.1:** OCTA will acquire Preserves with occurrences of intermediate mariposa lily. OCTA will ensure that appropriate management and monitoring actions are incorporated into the RMPs for each Preserve to support sustainable populations of intermediate mariposa lily.
- **Species Goal 5:** Provide conservation of **coast horned lizard** within the Plan Area and minimize and mitigate impacts associated with Covered Activities.

- **Species Objective 5.1:** OCTA will acquire Preserves with natural habitat that includes areas with loose, fine soils with high sand fraction, open areas with limited overstory for basking, and other features known to support coast horned lizard and OCTA will ensure that appropriate management monitoring actions are incorporated into the RMPs for each Preserve that include suitable habitat for coast horned lizard.
- **Species Goal 6:** Provide conservation of **orangethroat whiptail** within the Plan Area and minimize and mitigate impacts associated with Covered Activities.
 - **Species Objective 6.1:** OCTA will acquire Preserves that have documented occurrences of orangethroat whiptail. OCTA will ensure that appropriate management and monitoring actions are incorporated into the RMPs for each Preserve to protect and maintain habitat to support sustainable populations of orangethroat whiptail.
- **Species Goal 8:** Provide conservation of **cactus wren** within the Plan Area and minimize and mitigate impacts associated with Covered Activities.
 - **Species Objective 8.1:** OCTA will protect and manage blocks of occupied cactus wren habitat to support sustainable populations and maintain habitat linkages between cactus wren populations within the Plan Area.
- **Species Goal 9:** Provide conservation of **coastal California gnatcatcher** within the Plan Area and minimize and mitigate impacts associated with Covered Activities.
 - **Species Objective 9.1:** OCTA will protect and manage blocks of occupied gnatcatcher nesting habitat to support sustainable populations and maintain habitat linkages between coastal California gnatcatcher populations within the Plan Area.
- **Species Goal 12:** Provide conservation of **bobcat** within the Plan Area and minimize and mitigate impacts associated with Covered Activities.
 - **Species Objective 12.1:** OCTA will protect and manage natural habitat that includes a combination of land cover types important for wildlife movement of mammals such as bobcat.
- **Species Goal 13:** Provide conservation of **mountain lion** within the Plan Area and minimize and mitigate impacts associated with Covered Activities.
 - **Species Objective 13.1:** OCTA will protect and manage natural habitat that includes a combination of land cover types important for wildlife movement of large mammals such as mountain lion.

1.4.2 Preserve Specific Management Objectives and Actions

The Hafen Preserve was purchased as part of the EMP because it helps achieve the conservation strategy/ biological goals of the M2 NCCP/HCP by providing high quality mitigation for M2 freeway impacts on biological resources. Conservation of Hafen ensures the preservation and enhancement of regional biological connectivity and the protection of Covered Species and their associated natural habitats. As identified in Section 1.4.1, there are a number of Plan Goals of the M2 NCCP/HCP that specifically apply to the Hafen Preserve. In addition to the broader Plan Goals, this RMP also identifies Preserve specific management objectives and actions that support the broader Plan Goals. The Preserve-specific management objectives and actions are summarized in Table 1-1 and described in more detail in Chapter 3, “Preserve Management” and Chapter 4, “Biological Monitoring and Management”. A summary checklist and annual schedule of ongoing preserve management and biological monitoring actions is included as Appendix A.

Table 1-1. Preserve Specific Management Objectives and Actions

Category/Goal	Management Objectives	Management Actions
<i>Preserve Management (Chapter 3)</i>		
Public Access (Section 3.1)	Evaluate opportunities to offer managed public access and recreational opportunities within the Preserve that are compatible with the protection of biological resources.	<ul style="list-style-type: none"> • Install gates, signage, and obstructions, as appropriate, to control unauthorized access. • Monitor and control permitted activities and unauthorized activities (e.g., use or creation of unauthorized trails). • Implement a public education and outreach program to communicate and regularly reinforce the value and purpose of the Preserve and importance of self-monitoring behavior within it. • Participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made.
Invasive Species Control Plan (Section 3.2)	Implement an invasive plant species control program to protect natural communities and Covered Species habitat.	<ul style="list-style-type: none"> • The Preserve Manager will contract with a Restoration Ecologist to prepare an invasive plant treatment plan within two years of RMP adoption for review and approval by the Wildlife Agencies. The treatment plan will prioritize invasive species for control; specify goals (eradication versus control); identify treatment locations, timelines (including potential re-treatments), and removal methods; provide realistic, measurable success criteria and monitoring methodology; and identify areas that may need post-treatment restoration. • Prior to implementation of the invasive plant treatment plan, the Preserve Manager will map priority invasive species during general stewardship and biological monitoring efforts. • Establish and implement a monitoring schedule to evaluate the success of invasive plant control efforts for five years following implementation or until eradication is maintained for one year without follow-up control activities.
Vegetation Management (Section 3.4)	Minimize impacts to native plants and wildlife habitat resulting from management, maintenance, or other activities on the Preserve.	<ul style="list-style-type: none"> • Pruning, cutting, or clearing of native vegetation will generally be avoided except for potential maintenance along access trails and installation of erosion control measures, if necessary. • The clearing of natural vegetation on the Preserve will be required to comply with the Nesting Bird Policy included in the OCTA M2 NCCP/HCP.

Category/Goal	Management Objectives	Management Actions
Fire Management (Section 3.5)	Develop a Fire Management Plan (FMP) for the Preserve that maximizes protection of biological resources during fire suppression activities, to the degree feasible.	<ul style="list-style-type: none"> • Within two years from adoption of the RMP, the Preserve Manager, in coordination with OCTA and the OCFA, will develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. • Identify and map environmentally sensitive lands to be included in FMP. • If a fire occurs on the Preserve, the Preserve Manager will inventory the condition of natural communities following the fire, and will coordinate with the Monitoring Biologist, Wildlife Agencies, and Regulatory Agencies as necessary, to determine if habitat restoration is warranted.
Nonnative Animal Species Management (Section 3.6)	Control invasive (nonnative) animal species that are known to impact native wildlife species and habitats.	<ul style="list-style-type: none"> • The Preserve Manager will work towards controlling the spread of invasive ant species. • The Preserve Manager will monitor and address other potential infestations of invasive insects and other pathogens that can threaten native habitat. • Implement and enforce feral and domestic animal restrictions and control.
Property Management (Section 3.7)	Implement routine and ongoing property management activities to ensure that the Preserve is maintained in good condition.	<ul style="list-style-type: none"> • Collect and dispose of trash and debris regularly to maintain the Preserve in good condition minimize impacts to Covered Species and natural communities. • Implement the public access plan and ensuring operational activities within the Preserve avoid or minimize impacts on Covered Species and natural communities from lighting or noise. • Potentially install fencing and/or gates to control unauthorized access and trespassing. • Inspect and identify situations requiring erosion control.
Land Uses within the Preserve (Section 3.8)	Allow selected activities on the Preserve that can be managed to minimize impacts to protected biological resources and facilitate ongoing resource preservation.	<ul style="list-style-type: none"> • Identify and allow only land uses within the Preserve that are conditionally allowed if it can be assured that the activity minimizes or avoids impacts on biological resources and ecosystem functions. • Conduct monitoring of the Preserve to ensure prohibited uses are not occurring with the Preserve.

Category/Goal	Management Objectives	Management Actions
Lands Uses Adjacent to the Preserve (Section 3.9)	Monitor and address negative edge effects from existing land uses adjacent to the Preserve.	<ul style="list-style-type: none"> • The Preserve Manager will monitor land uses adjacent to the Preserve to identify situations in which edge effects can negatively affect biological resources within the Preserve. • The Preserve Manager will develop and implement a public awareness program within two years of the RMP approval to educate existing property owners in the vicinity of the Preserve of the Preserve’s goals and objectives and steps they can take to protect the biological resources. • Prior to implementation of the public awareness program, the Preserve Manager will regularly monitor the interface of the Preserve with urban/residential areas. The Preserve Manager will identify situations in which adjacent land uses create negative effects on biological resources and maintain a dialogue with adjacent landowners to discuss and address edge effect issues. • To the extent practicable, the Preserve Manager and OCTA will coordinate with local land use authorities (e.g., for the CEQA public review process) to ensure that new developments adjacent to the Preserve adhere to the following adjacency guidelines.
Management of Cultural Resources (Section 3.10)	Manage the Preserve in a manner that does not impact sensitive archeological resources.	<ul style="list-style-type: none"> • Preserve Manager will follow directives set forth in the Archeological Sensitivity Assessment (ASA) of how and where cultural resources need to be protected, and the Preserve Manager will use this information to help ensure that activities on the Preserve do not impact any sensitive cultural resources. These include, but not limited to, monitoring by a qualified archaeologist for any ground-disturbing activities within 100 feet of culturally sensitive areas; and if significant portions of the Preserve are ever burned by a wildfire, sensitive areas will be resurveyed for archaeological resources.
Public Outreach and Education (Section 3.11)	Develop and implement a public outreach and education program to inform and engage the public on Preserve values, goals, and guidelines to promote stewardship of biological resources and compliance with Preserve rules and regulations.	<ul style="list-style-type: none"> • Hold public meetings. • Develop and maintain website. • Provide educational and interpretative materials. • Develop outreach and volunteer program. • Develop an educational/outreach program focused on adjacent landowners to communicate information regarding Preserve management and obtain information regarding observations or concerns from adjacent landowners.

Category/Goal	Management Objectives	Management Actions
<i>Biological Monitoring and Management (Chapter 4)</i>		
<p>Covered Plant Species (Section 4.1.1)</p> <p>Plants</p> <p>Plan Species Goal 1 and Species Objective 1.1</p>	<p>Ensure the long-term viability of Covered Plants by protecting, managing, and enhancing populations and suitable habitat on the Preserve.</p>	<ul style="list-style-type: none"> • Identify status, threats, and population trends. • Identify anthropogenic conflicts. • Maintain database of population size of Covered Plants on Preserve. • Protect Covered Plants during property maintenance and/or from unauthorized access. • Protect Covered Plants during fire suppression activities. • Augment populations.
<p>Covered Animal Species (Section 4.1.2)</p> <p>Reptiles</p> <p>Plan Species Goal 5 and Species Objective 5.1 and Species Goal 6 and Species Objective 6.1</p>	<p>Ensure the long-term viability of Covered Reptiles by protecting, managing, and enhancing suitable habitat on the Preserve.</p>	<ul style="list-style-type: none"> • Identify status, threats, and population trends. • Identify anthropogenic conflicts. • Protect Covered Reptiles and habitat during property maintenance and/or from unauthorized access.
<p>Covered Animal Species (Section 4.1.2)</p> <p>Birds</p> <p>Plan Species Goal 8 and Species Objective 8.1 and 8.3, and Species Goal 9 and Species Objective 9.1 and 9.3</p>	<p>Ensure the long-term viability of Covered Birds by protecting, managing, and enhancing populations and suitable habitat on the Preserve.</p>	<ul style="list-style-type: none"> • Identify status, threats, and population trends. • Identify anthropogenic conflicts. • Protect Covered Birds and habitat during property maintenance and/or from unauthorized access. • Protect Covered Birds and habitat during fire suppression activities.
<p>Covered Animal Species (Section 4.1.2)</p> <p>Mammals</p> <p>Plan Species Goal 12 and Species Objective 12.1 and Species Goal 13 and Species Objective 13.1</p>	<p>Ensure the long-term viability of Covered Mammals by protecting, managing, and enhancing populations and suitable habitat on the Preserve.</p>	<ul style="list-style-type: none"> • Identify status, threats, and population trends. • Identify anthropogenic conflicts. • If necessary, develop a fencing approach that protects the Preserve while facilitating wildlife movement. • Protect Covered Mammals from hunting. • Protect Covered Mammals from unauthorized access.

Category/Goal	Management Objectives	Management Actions
<p>Natural Communities (Section 4.1.3)</p> <p>Plan Natural Communities Goal 1 and Natural Communities Objective (1.1-1.5) and Natural Communities Goal 2 and Natural Communities Objective 2.1</p>	<p>Ensure the long-term viability of natural communities by protecting, managing, and enhancing these resources on the Preserve.</p>	<ul style="list-style-type: none"> • Maintain updated vegetation map. • Identify operational conflicts. • Establish long-term monitoring plots to identify vegetation conditions and trends. • Monitor nonnative invasive species eradication efforts and/or enhancement/restoration actions. • Control invasive pests or disease. • Restore natural communities impacted by altered fire regime or climate change. • Protect natural communities from unauthorized access. • Protect natural communities from erosion. • Protect natural communities from edge effects.
<p>Adaptive Management (Section 4.2)</p>	<p>Preserve Manager will manage the Hafen Preserve in accordance with the principles and procedures for adaptive management.</p>	<p>Key issues for a focused adaptive management approach to address uncertainties of preserve management on the Hafen Preserve include the following:</p> <ul style="list-style-type: none"> • Covered Plants and vegetation management.
<p>Annual Progress Reports (Section 4.3)</p>	<p>The Preserve Manager will prepare an Annual Progress Report that summarizes the results of research and monitoring activities, provides recommendations for future preserve management activities for the Preserve, and discusses anticipated activities for the upcoming year.</p>	<p>Annual reports will include updates and anticipated activities for the upcoming year and will provide updates including, but not limited to:</p> <ul style="list-style-type: none"> • Monitoring of preserved biological resources, including natural communities and Covered Species. • Fire management and control, access, general site maintenance, and encroachment issues. • Habitat restoration and enhancement. • Education and outreach.

This chapter describes the land uses on site and adjacent to the Preserve, as well as physical characteristics and biological resources found on the Preserve. These descriptions are based on a comprehensive baseline biological survey completed by BonTerra Consulting (2013). A copy of the 2013 Baseline Biological Surveys Technical Report that includes Hafen is included in Appendix B.

2.1 Preserve Setting, Adjacent Property Owners, and Land Uses

The 48-acre Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon (Figures 1 and 2), immediately adjacent to the east side of Live Oak Canyon Road, north of its intersection with Shelter Canyon Road and is accessed from Live Oak Canyon Road, Shelter Canyon Road, and Hunky Dory Lane. Surrounding land uses include CDFW's Hafen property, Cleveland National Forest, O'Neill Regional Park, and areas of low density, rural residential development (Figure 5). Low density residential development is present immediately north and south of the property, with the latest house built within the past two years. An unpaved trail traverses the Preserve though it is largely overgrown. Evidence of grazing is not present on the Preserve.

2.2 Physical Characteristics

The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 1,190 to 1,450 feet above mean sea level (msl). Two ephemeral drainages that flow in a westerly direction are located in the western half of this property. A larger ephemeral drainage is located along the eastern boundary of the property and appears on the USGS quadrangle as a blue line stream; several small ephemeral drainages flow into this drainage from within the property limits. Soil types mapped on the Hafen property consist of Botella clay loam (9 to 15 percent slopes), Cienega sandy loam (30 to 75 percent slopes, eroded), and Soboba cobbly loamy sand (0 to 15 percent slopes (Figure 6).

2.3 Biological Resources

Biological surveys were conducted on the Preserve in spring/summer 2012 to establish baseline biological conditions and assess special-status species, including Covered Species, and their associated natural communities (BonTerra Consulting 2013). Subsequent ongoing monitoring results will be compared to baseline information to measure change over time. Sub regional and regional monitoring efforts undertaken by other conservation entities such as the Natural Communities Coalition (formerly Nature Reserve of Orange County) will also be considered when evaluating Preserve-level changes/trends. Baseline biological surveys consisted of the following.

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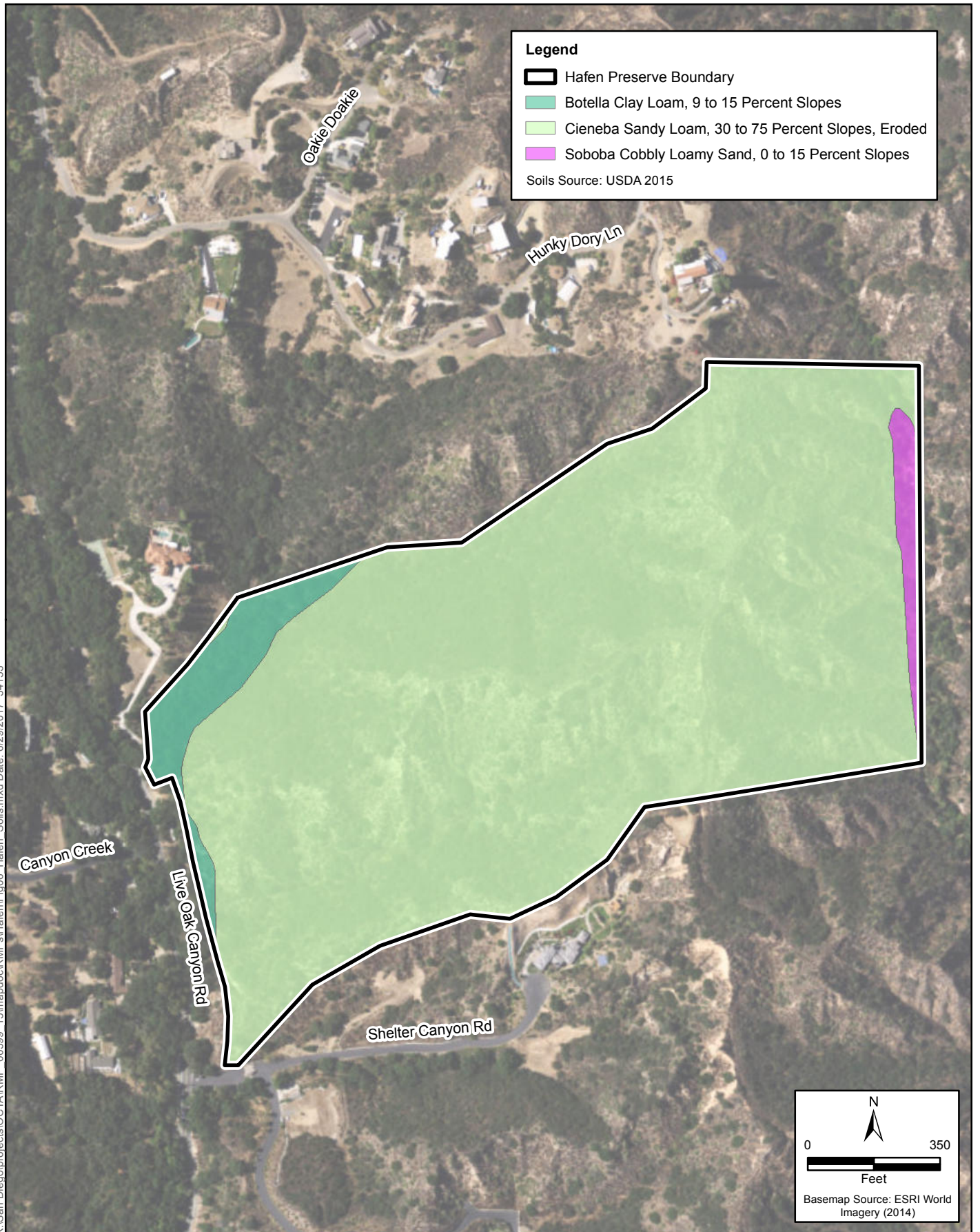


Figure 6
Soils
Hafen Resource Management Plan

- Vegetation mapping and evaluation of habitat conditions.
- Focused plant and coastal California gnatcatcher (*Poliophtila californica californica*) and bat surveys.
- A jurisdictional delineation of riparian and wetland resources.

Refer to Appendix B for the biological technical report for the Preserve (BonTerra Consulting 2013). The description of biological resources in this section is based on the 2012 effort.

2.3.1 Vegetation

Vegetation and non-vegetated habitat types were mapped on the Preserve by BonTerra Consulting in 2012 (Figure 7). In general, vegetation and other habitats on site include scrub, riparian, chaparral, woodland, and developed/non-native. Vegetation communities and other habitats documented in 2012 on the Preserve are summarized in Table 2-1 and shown on Figure 7. Refer to Appendix B for a complete list of plant species observed during 2012 focused plant surveys. A brief description of each vegetation type and other habitat area mapped during 2012 surveys follows Table 2-1.

Table 2-1. Summary of Vegetation Types and Other Areas from 2012 Surveys

Vegetation Types and Other Areas	Acreage
Scrub Oak Chaparral	30.56
California Sagebrush - California Buckwheat Scrub	11.61
Coast Live Oak – California Sycamore Woodland Association	2.35
Coast Live Oak Woodland	3.61
Disturbed (Bare Ground)	0.12

Scrub Oak Chaparral

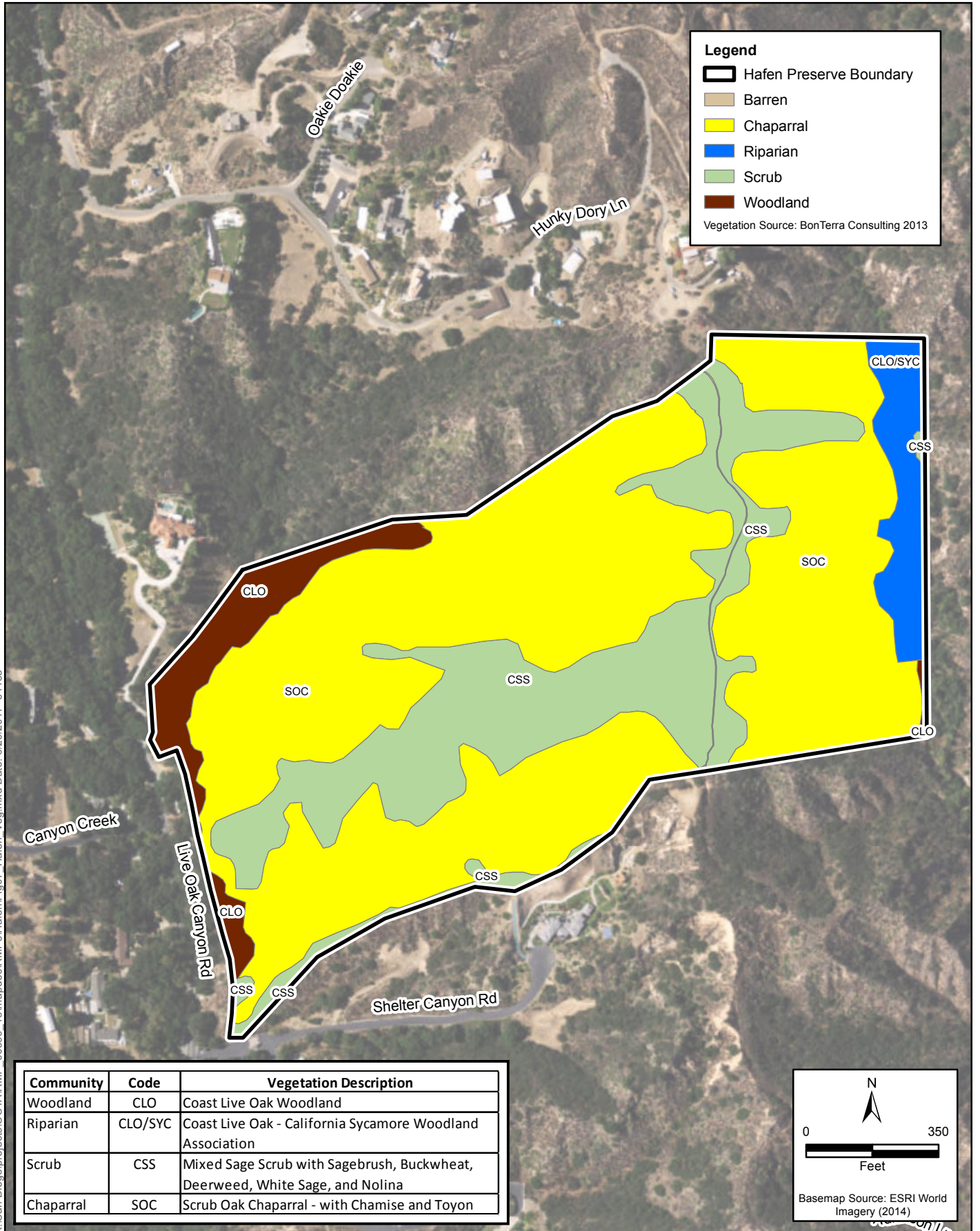
A total of 30.56 acres of scrub oak chaparral occurs on north-facing slopes throughout the Preserve. This vegetation type is dominated by dense scrub oak. Toyon and chamise are subdominant species.

California Sagebrush - California Buckwheat Scrub

A total of 11.61 acres of California sagebrush – California buckwheat scrub occurs on the Preserve. This vegetation type is located on the south-facing slopes of the Preserve and along the ridgeline that runs north-south across the Preserve. It is co-dominated by a variety of scrub species such as California sagebrush, California buckwheat, black sage, and deerweed. Chaparral nolina, a special status plant species (i.e., with a CRPR of 1B.2), is also prevalent in this vegetation type.

Coast Live Oak – California Sycamore Woodland Association

A total of 2.35 acres of coast live oak – California sycamore woodland association occurs on the Preserve. This vegetation type occurs along the drainage bottom at the eastern edge of the Preserve. It is dominated by mature coast live oak and western sycamore trees. Common understory species include mugwort and mule fat.



Legend

- Hafen Preserve Boundary
- Barren
- Chaparral
- Riparian
- Scrub
- Woodland

Vegetation Source: BonTerra Consulting 2013

Community	Code	Vegetation Description
Woodland	CLO	Coast Live Oak Woodland
Riparian	CLO/SYC	Coast Live Oak - California Sycamore Woodland Association
Scrub	CSS	Mixed Sage Scrub with Sagebrush, Buckwheat, Deerweed, White Sage, and Nolina
Chaparral	SOC	Scrub Oak Chaparral - with Chamise and Toyon

N

0 350

Feet

Basemap Source: ESRI World Imagery (2014)

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Figure 7
Vegetation Communities
Hafen Resource Management Plan

Coast Live Oak Woodland

A total of 3.61 acres of coast live oak woodland occurs on the Preserve. This vegetation type occurs in drainage bottoms along the western edge of the Preserve adjacent to Live Oak Canyon Road and at the northwest and southeast corners of the Preserve. It is dominated by mature coast live oaks. The understory includes smilo grass, western poison oak, and Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*).

Disturbed (Bare Ground)

A total of 0.12 acres of disturbed (bare ground) areas comprise the trails on the Preserve. These areas consist of bare ground and contain areas with little to no vegetation.

2.3.2 Wildlife

The Preserve provides habitat for a wide variety of wildlife species that are characteristic of scrub habitats, riparian, chaparral, and woodland. Focused surveys for coastal California gnatcatcher and bats were performed on site by BonTerra Consulting in 2012.

Wildlife species observed or detected on site in 2012 include reptiles such as western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*); birds such as western wood-pewee (*Contopus sordidulus*), ash-throated flycatcher (*Myiarchus cinerascens*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red tailed hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*); mammals such as Yuma bat (*Myotis yumanensis*), Brazilian free-tailed bat (*Tadarida brasiliensis*), desert cottontail (*Sylvilagus audubonii*), woodrat (*Neotoma* sp.), and botta's pocket gopher (*Thomomys bottae*). Refer to Appendix B (Appendix A Plant and Wildlife Compendia) for a complete list of wildlife species observed during 2012 surveys.

Wildlife Movement and Habitat Connectivity

Wildlife movement generally consists of three types of activities: (1) wildlife dispersal, (2) seasonal migration of wildlife species, and (3) wildlife movement related to home range activities. Below are definitions of the terms used to describe the different landscape and physical features that wildlife use to travel from one area to another.

Travel Route: This is a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) in a larger natural habitat area that is used frequently by wildlife for local or regional travel and to provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred by wildlife species because it provides the least amount of topographic resistance in moving from one area to another; it supplies adequate food, water, and/or cover to wildlife moving between habitat areas and provides a relatively direct link between target habitat areas.

Wildlife Corridor: This is a piece of habitat, usually linear in nature that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bordered by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate their movement while in the corridor. Larger landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife Crossing: A wildlife crossing is a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that would otherwise hinder or prevent movement. Crossings typically are human-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent “choke points” along a movement corridor.

The Preserve contributes to regional biological connectivity and wildlife movement due to its proximity to open space and park areas such as the adjacent CDFW Hafen property, Cleveland National Forest, O’Neill Regional Park, the Trabuco Creek corridor, and Central-Coastal NCCP reserve areas, as well as other, nearby open space parcels acquired by OCTA as part of the NCCP/HCP Preserve design. The Preserve serves as an important piece of the regional link among open space areas in southern and central Orange County, and Trabuco Creek open space areas.

The Preserve contains ridgelines and canyons that provide a variety of travel routes for local wildlife movement. Trails on site may also be used for movement. Movement on site is expected to occur via these features, as well as between the Preserve and contiguous offsite habitat. Large mammals expected to move across the Preserve include mule deer, mountain lion, bobcats, and coyote.

2.3.3 Jurisdictional Resources

The Preserve is located on the southwestern flank of the Santa Ana Mountains, within the San Juan Creek Watershed. The site generally drains from higher elevations in the north to lower elevations in the south. Two ephemeral drainages that flow in a westerly direction are located in the western half of the Preserve. A larger ephemeral drainage is located along the eastern boundary of the Preserve and appears on the USGS quadrangle as a blue-line stream; several small ephemeral drainages flow into this drainage from within the Preserve limits (Figure 8). All onsite drainages are tributaries to Trabuco Creek, which eventually flow to the Pacific Ocean, a Traditional Navigable Water (TNW), as designated by the USACE. The tributaries of Trabuco Creek do not satisfy the USACE criteria for Relatively Permanent Waters (RPW); however, they have a connection to those larger creeks either directly, through an underground drainage system, or via sheet flow over upland areas. No “Waters of the U.S.” on the Preserve exhibited the three parameters (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) to be considered a wetland.

BonTerra Consulting conducted a jurisdictional delineation in July 2012 to define the extent of resources under the jurisdiction of the USACE, SWRCB and CDFW. The jurisdictional delineation determined that the following jurisdictional resources occur on the Preserve (Figure 8).

- A total of 0.66 acre of non-wetland “Waters of the U.S.” under the jurisdiction of the USACE and SWRCB.
- A total of 3.90 acres of streambeds and associated riparian resources under the jurisdiction of the CDFW.

As part of the jurisdictional delineation, BonTerra Consulting also evaluated the quality of the jurisdictional resources using the California Rapid Assessment Method (CRAM) at different locations within the Hafen Preserve. CRAM is a wetland monitoring tool that was developed in response to a monitoring framework recommended by the EPA to help states meet monitoring requirements stated in the Federal Clean Water Act (EPA 2006). Personnel from the EPA, USACE, SWRCB, and CDFW (among other agencies) participated in the development of CRAM, and it is an accepted

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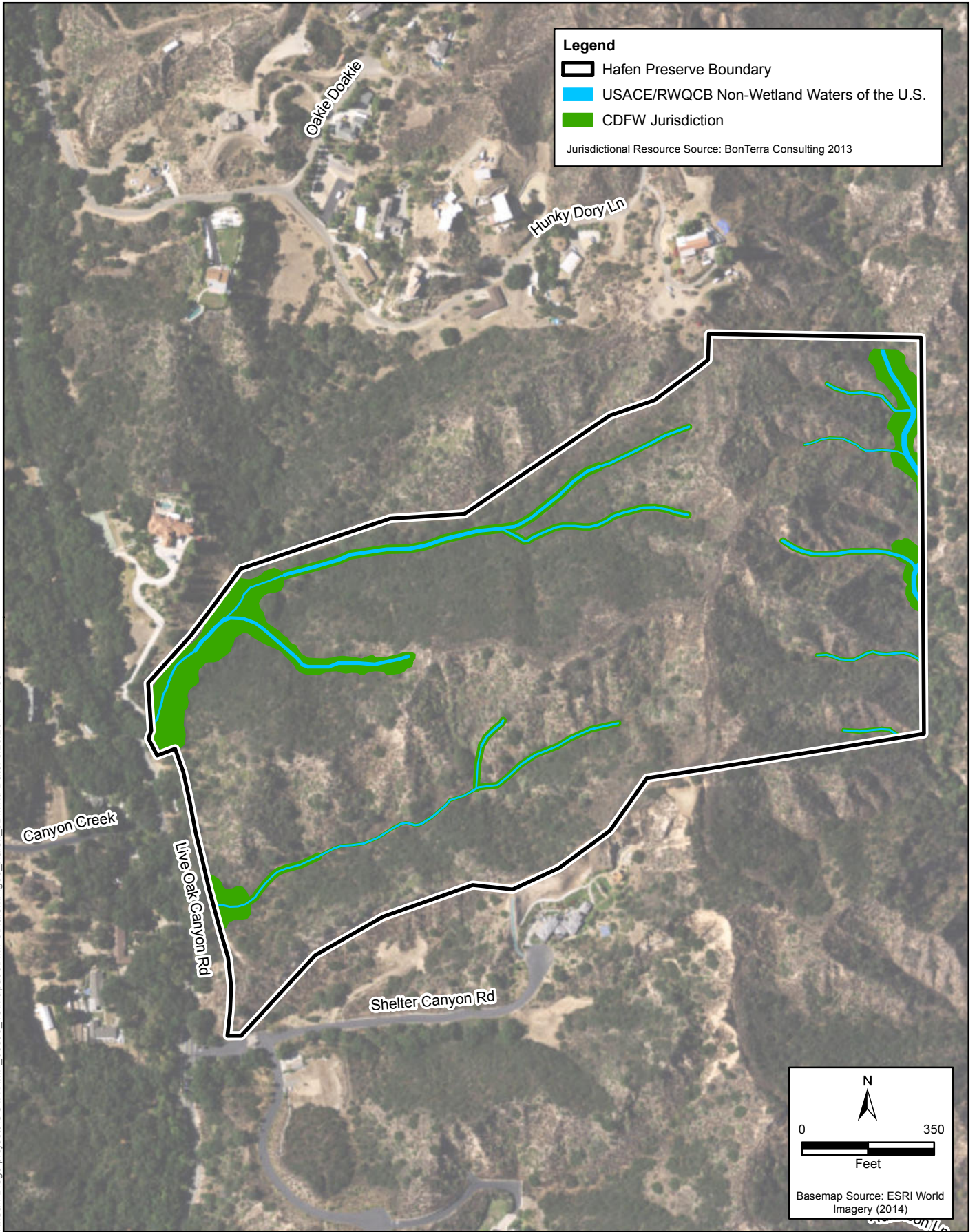


Figure 8
Jurisdictional Resources
Hafen Resource Management Plan

assessment tool by these agencies. CRAM scores result from the evaluation of four equally weighted attributes: (1) buffer and landscape context, (2) hydrology, (3) physical structure, and (4) biotic structure (CWMW 2012). Refer to Appendix B for details and results of the CRAM evaluation.

2.3.4 Special-Status Biological Resources

This section summarizes the special-status biological resources that were observed, reported, or have the potential to occur on the Hafen Preserve. Special-status biological resources include plant and wildlife species, as well as vegetation types and habitats, that have been afforded special status and/or recognition by the Wildlife Agencies (e.g., USFWS, CDFW, and CDFW's California Natural Diversity Database [CNDDDB]), as well as private conservation organizations (e.g., California Native Plant Society [CNPS]). In addition to special-status biological resources, all Covered Species with the potential to occur on the Preserve are addressed in this section. In general, the principal reason an individual taxon (species, subspecies, or variety) is given such recognition is the documented or perceived decline of its population size or geographical extent and/or distribution resulting from habitat loss or degradation or other threats. Protection of special-status biological resources in compliance with State and Federal Wildlife Agencies, as well as local and private conservation organizations, must be addressed during Preserve management activities. Additionally, biological resource protection measures addressed in the M2 NCCP/HCP apply to the ongoing management of special-status resources on the Preserve.

The following biological evaluations have been conducted on the Preserve by BonTerra Consulting in 2012.

- Vegetation and habitat mapping.
- Focused surveys for coastal California gnatcatcher.
- Focused plant surveys.
- Jurisdictional delineation (BonTerra Consulting in 2012).
- Focused bat surveys (BonTerra Consulting [BioResources Consultants Inc.] in 2012).

BonTerra Consulting prepared a comprehensive Biological Technical Report (Appendix B) for the baseline surveys completed in 2012 (BonTerra Consulting 2013). The following sub-sections summarize the special-status biological resources identified during the evaluations performed by BonTerra Consulting and other supporting materials provided by OCTA.

Special-Status Species

Special-status plant species documented at the Preserve in 2012 include intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) and chaparral nolina/chaparral beargrass (*Nolina cismontana*).

Special-status wildlife species documented at the Preserve in 2012 include Cooper's hawk (*Accipiter cooperii*), coastal cactus wren, and Yuma bat (*Myotis yumanensis*).

Tables 2-2 and 2-3 summarize the listed status of these species and provide notes on observations or potential for occurrence. Refer to Appendix B for additional information on special-status plant and wildlife species known to occur in proximity to the Preserve.

Table 2-2. Special-Status Plant Species Observed On Site during 2012 Surveys

Species	Status			M2 NCCP/HCP Covered Species	Comments
	USFWS	CDFW	CRPR		
<i>Calochortus weedii</i> var. <i>intermedius</i> Intermediate mariposa lily	None	None	1B.2	Yes	Suitable habitat present on site; species detected during baseline surveys on the ridgelines in sandy cobble, sandy, and cobbly sand soils.
<i>Nolina cismontane</i> Peninsular nolina	None	None	1B.2	No	Suitable habitat is present on the Hafen Preserve. Observed during baseline surveys along ridgeline.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank

Legend

CRPR

1B Plants Rare, Threatened, or Endangered in California and Elsewhere

CRPR Threat Code Extensions

.2 Fairly Threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)

Table 2-3. Special-Status Wildlife Species Observed On Site during 2012 Surveys

Species	Status			M2 NCCP/HCP Covered Species	Comments
	USFWS	CDFW			
<i>Accipiter cooperii</i> Cooper's hawk (nesting)	None	WL		No	Observed on the Preserve. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.
<i>Campylorhynchus brunneicapillus</i> Cactus wren	None	SSC		Yes	Observed on the Preserve.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife

LegendState (CDFW)

SSC Species of Special Concern

WL Watch List

SA Special Animal

Federal (USFWS)

Covered Species

The term “Covered Species” refers to the 13 species included in the permits issued to OCTA by State and Federal governments as part of the M2 NCCP/HCP. The locations of Covered Species known occurrences observed during the baseline surveys are displayed on Figure 9. For each Covered Species, a summary of whether the species has been observed/detected on site or has potential to occur, status of suitable habitat, and potential threats and stressors within the Preserve is included in Table 2-4.

Sensitive Vegetation Types

In addition to providing an inventory of special-status plant and wildlife species, the CNDDDB also provides an inventory of vegetation types that are considered special status by State and Federal Wildlife Agencies, academic institutions, and various conservation groups (such as the CNPS), giving them a high priority for conservation on the Preserve. Special-status vegetation types observed on the Preserve consist of the following.

- Sage scrub communities, including California sagebrush scrub and California Buckwheat scrub association.
- Chaparral communities, including scrub oak chaparral association.
- Woodland communities, including coast live oak woodland.
- Riparian communities, including California sycamore woodland.
- Jurisdictional areas, including non-wetlands Waters of the U.S. and Waters of the State.

Critical Habitat

All or a portion of the Preserve includes areas designated by the USFWS as critical habitat for the coastal California gnatcatcher, as summarized below (Figure 10).

- On December 19, 2007, the USFWS published a Final Rule revising critical habitat for the coastal California gnatcatcher. The revised critical habitat designates 197,303 acres of land in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties. The Preserve is within Unit 6 of the designated critical habitat for coastal California gnatcatcher.

2.4 Cultural Resources

An Archaeological Sensitivity Assessment (ASA) was conducted by LSA Associates, Inc. on the Preserve in winter 2014. The assessment included a records search, Native American coordination, field survey, and report, all of which were completed between September and December 2014. This information will be kept confidential and not included in this RMP. The ASA will be utilized in order to help ensure that activities on the Preserve do not impact any cultural resources.

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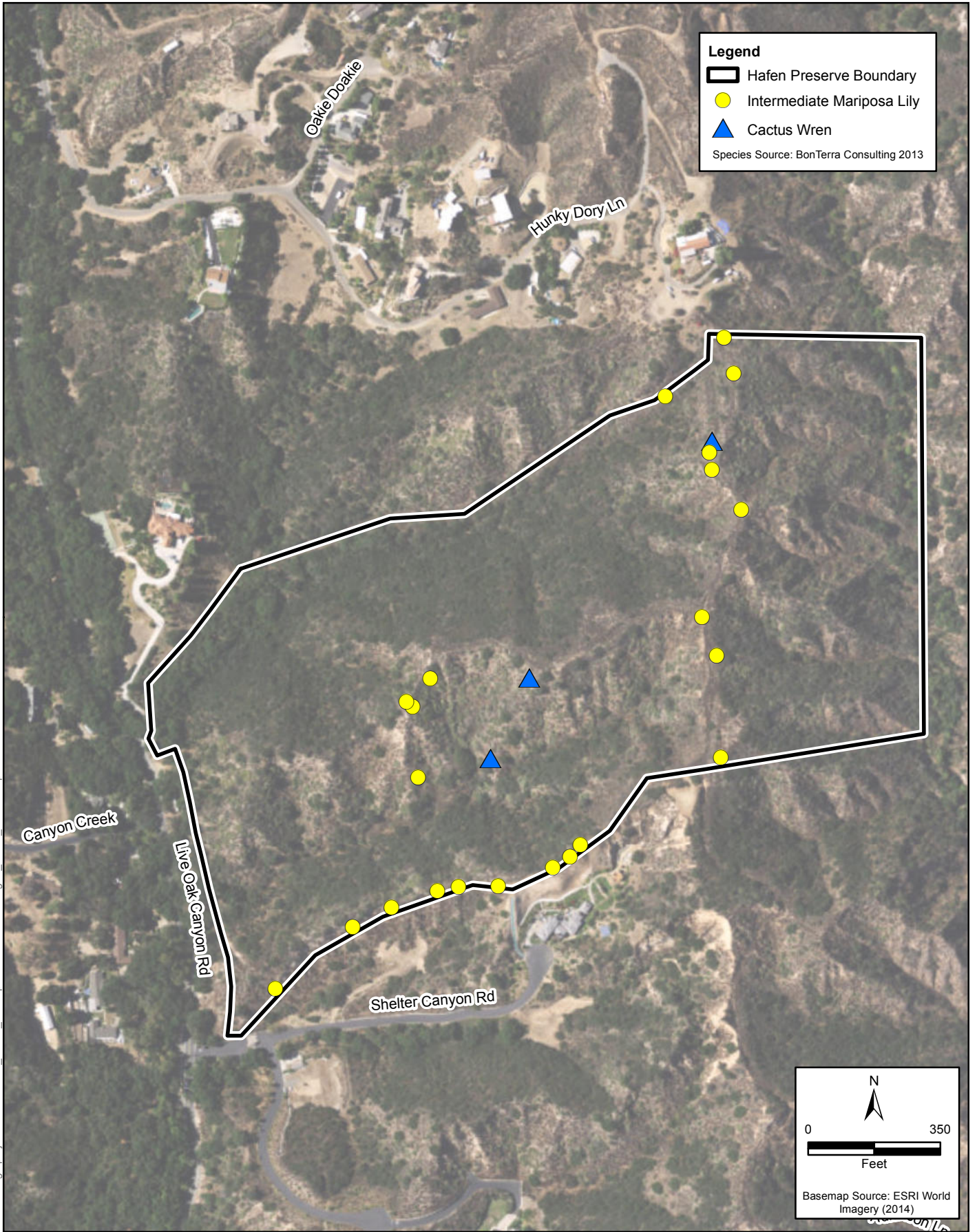
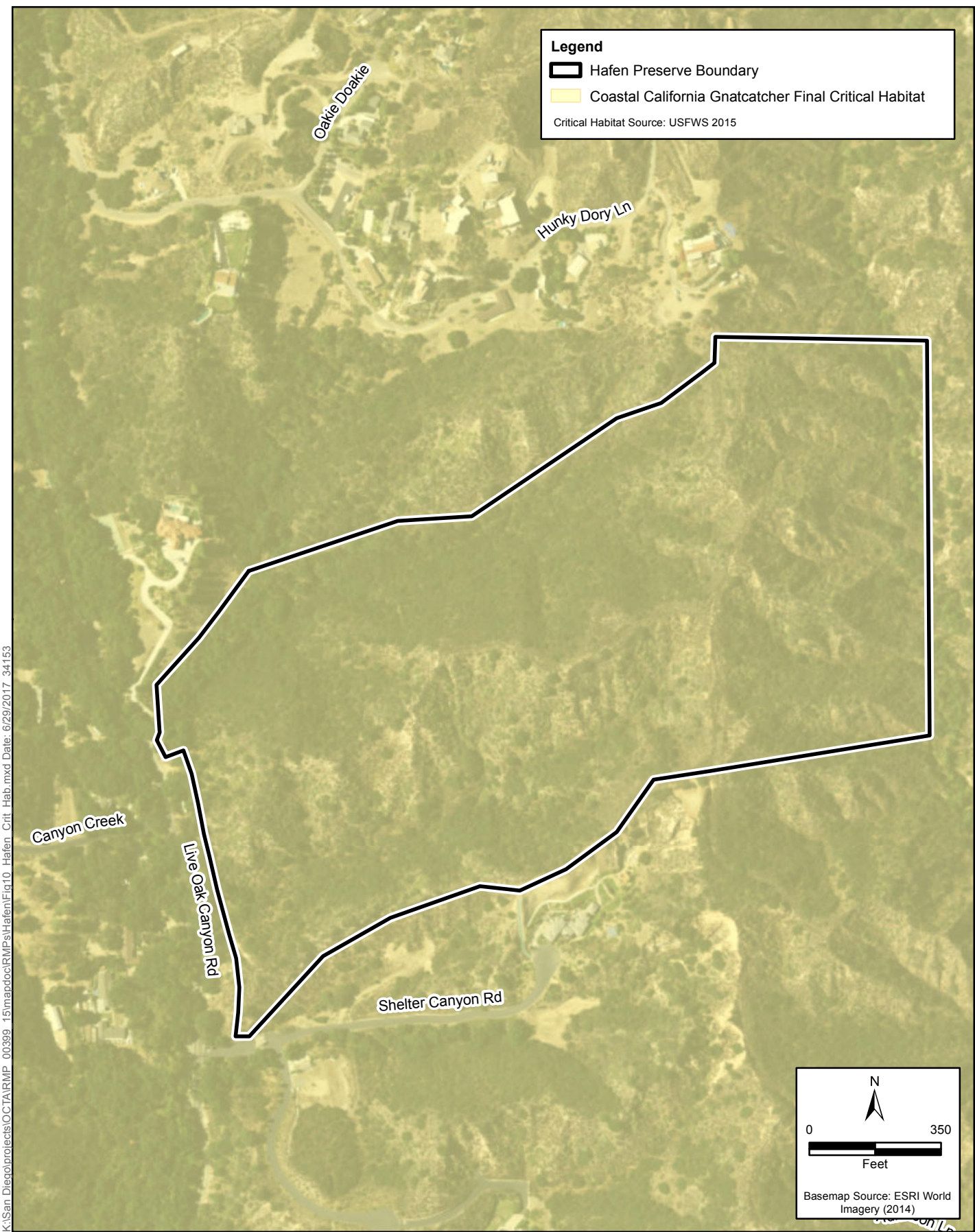


Figure 9
Covered Plants & Animals
Hafen Resource Management Plan



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Figure 10
USFWS Critical Habitat
Hafen Resource Management Plan

Table 2-4. M2 NCCP/HCP Covered Species

Common / Scientific Name	Observed/ Detected On Site	Potential to Occur/ Status of Suitable Habitat On Site	Potential Threats / Stressors within Preserve
Plants			
Intermediate mariposa lily / <i>Calochortus weedii</i> var. <i>intermedius</i>	Yes. Detected in 21 location during 2012 baseline surveys (74 individual plants).	High quality habitat within the Preserve with known occurrence. Additional individuals/populations may be present.	Response to fire and fire frequency, vegetation management along access roads, direct and indirect impacts (trampling, erosion) from public access and recreational trail use, competition from nonnative plant species.
Southern tarplant / <i>Centromadia parryi</i> ssp. <i>australis</i>	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	Not applicable.
Many-stemmed dudleya / <i>Dudleya multicaulis</i>	None detected during 2012 baseline surveys.	Marginal suitable habitat and not expected to occur on this Preserve.	Not applicable.
Fish			
Arroyo chub / <i>Gila orcutti</i>	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	Not applicable.
Amphibians and Reptiles			
Coast horned lizard / <i>Phrynosoma blainvillii</i>	None detected during 2012 baseline surveys.	Potential habitat on site but no observations of coast horned lizard to date. There are open areas with friable soils within grassland and scrub habitats. The scrub habitat is high quality and appears undisturbed with bare ground underneath (pers. comm. Sandy DeSimone, 2015).	Invasive species, direct impacts (trampling, disturbance) from recreational trail use, illegal off-road vehicle activity, Argentine ant infestations.

Common / Scientific Name	Observed/ Detected On Site	Potential to Occur/ Status of Suitable Habitat On Site	Potential Threats / Stressors within Preserve
Orangethroat whiptail / <i>Aspidoscelis hyperythra beldingi</i>	None detected during 2012 baseline surveys.	Potential habitat on site but no observations of orangethroat whiptail to date. There are open areas with friable soils within grassland and scrub habitats. The scrub habitat is high quality and appears undisturbed with bare ground underneath (pers. comm. Sandy DeSimone, 2015).	Invasive species, direct impacts (trampling, disturbance) from recreational trail use, illegal off-road vehicle activity, Argentine ant infestations.
Western pond turtle / <i>Emys marmorata</i>	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	Not applicable.
Birds			
Southwestern willow flycatcher / <i>Empidonax traillii extimus</i>	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	Not applicable.
Least Bell's vireo / <i>Vireo bellii pusillus</i>	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	Not applicable.
Cactus wren / <i>Campylorhynchus brunneicapillus sandiegensis</i>	Yes. Detected at 3 locations on site during baseline surveys in 2012.	Suitable and occupied habitat is within the Preserve. The coastal sage scrub habitat within the Preserve is high quality including mature cactus patches throughout the Preserve.	Response to fire and fire frequency (direct loss of cactus patches), invasive species (loss of foraging habitat), recreational trail use (flushing of nests), predation (nest predation facilitated by taller vegetation adjacent to cactus patches, Cooper's hawk).

Common / Scientific Name	Observed/ Detected On Site	Potential to Occur/ Status of Suitable Habitat On Site	Potential Threats / Stressors within Preserve
Coastal California gnatcatcher / <i>Polioptila californica californica</i>	None detected during 2012 baseline surveys.	Suitable habitat is within the Preserve. The coastal sage scrub habitat within the Preserve is high quality and appears undisturbed (pers. comm. Sandy DeSimone, 2015). However, this Preserve is near the edge of the elevation range of coastal California gnatcatcher. The location of this Preserve could serve as a habitat refugia from fire and/or a stepping stone for regional connectivity.	Type conversion (reduction of coastal sage scrub habitat due to fire and/or fire frequency), invasive species (out compete native coastal sage scrub), recreational trail use (flushing of nests), cowbird parasitism.
Mammals			
Bobcat / <i>Lynx rufus</i>	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve. Native habitat and topography of the Preserve provides cover for movement along drainages and ridgelines. The Preserve is connected to large blocks of surrounding habitat that function as movement corridors.	Fire and fire frequency (direct loss and loss of habitat cover), habitat fragmentation from fencing, human disturbances from onsite recreational trail use and preserve management activities.
Mountain lion / <i>Puma concolor</i>	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve. Native habitat and topography of the Preserve provides cover for movement along drainages and ridgelines. The Preserve is connected to large blocks of surrounding habitat that function as movement corridors.	Fire and fire frequency (direct loss and loss of habitat cover), habitat fragmentation from fencing, human disturbances from onsite recreational trail use and preserve management activities.

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Chapter 3

Preserve Management

The primary purpose of the Hafen Preserve is to help fulfill the preserve acquisition component of the M2 NCCP/HCP Plan conservation strategy. However, the Preserve may also provide recreational benefits and must accommodate site-specific operational and safety activities. This chapter provides information on the Preserve management activities for the following Preserve elements to ensure that biological resources are protected while allowing for compatible uses:

- Public Access (Section 3.1)
- Invasive Plant Species Control (Section 3.2)
- Habitat Restoration (Section 3.3)
- Vegetation Management (Section 3.4)
- Fire Management (Section 3.5)
- Nonnative Animal Species Management (Section 3.6)
- Property Management (Section 3.7)
- Land Uses within the Preserve (Section 3.8)
- Land Uses Adjacent to the Preserve (Section 3.9)
- Management of Cultural Resources (Section 3.10)
- Public Outreach and Education (Section 3.11)

Roles and Responsibilities

Successful RMP implementation will depend on the cooperation of several management and implementation entities, as outlined below.

- **Implementing Entity.** OCTA is the NCCP/HCP administrator and the entity that will oversee implementation of conservation measures required to offset impacts from M2 freeway improvement projects, including management of the Hafen Preserve. OCTA will identify a Preserve Manager who will serve as the long-term manager (and potential title holder) for the Preserve. OCTA will record a conservation easement or some other type of land protection instrument for the Preserve that will provide a legal mechanism to ensure each Preserve is maintained and managed in perpetuity as a habitat Preserve. The land protection instrument will be held by appropriate entities, depending upon the type of entity identified as the Preserve Manager.
- **Preserve Manager.** The Preserve Manager will consist of OCTA (interim) or an outside contractor or entity, as determined during RMP implementation. The Preserve Manager will be responsible for day-to-day Preserve management and operations. The Preserve Manager will coordinate with the OCTA NCCP/HCP Administrator and Wildlife Agencies regarding status and substantial changes to management activities. The Preserve Manager will prepare and submit Annual Progress Reports for the NCCP/HCP Administrator that summarize the results of research and monitoring activities, provide recommendations for future preserve management activities for the Preserve, and discuss anticipated activities for the upcoming year.

- **Monitoring Biologist.** The Monitoring Biologist may be a Preserve staff member or independent contractor. OCTA will select an individual or entity to fulfill this role. The Monitoring Biologist will be responsible for monitoring Covered Species and natural communities. The Monitoring Biologist role will be periodic based on the monitoring schedule established in the Plan. Data collection will follow accepted monitoring methods. The Monitoring Biologist will provide OCTA and Preserve Manager with monitoring reports that include data, results, and recommendations.
- **Orange County Fire Authority.** The Orange County Fire Authority (OCFA) will provide oversight regarding fire management activities, such as maintenance of fuel modification zones and fire access roads. OCFA will also respond to active fires to prevent the loss of human life and property and other resources. These activities fall into two categories, regular maintenance activities and emergency activities.
- **Supporting Entities.** Supporting entities may include technical consultants, contractors, and volunteers who will assist with implementing various elements of the RMP. Technical experts will include the following.
 - **Biological Research and Monitoring** – Wildlife biologists, botanists, and certified arborists with the appropriate expertise, licenses, and permits (depending on survey requirements).
 - **Restoration** – Restoration ecologists will assist with habitat restoration/enhancement planning and monitoring activities. Restoration ecologists and contractors will implement restoration/enhancement programs such as site preparation, plant establishment, and maintenance.
 - **General Maintenance** – Other types of contractors may be retained to implement maintenance activities, including minor road maintenance and erosion control.

Note that the Preserve Manager may use Preserve staff for restoration and general site maintenance tasks. Additionally, volunteers may be used to assist with monitoring and research tasks, specific restoration tasks (e.g., nonnative plant eradication, planting, site maintenance activities), educational and outreach activities, or site patrols, as appropriate.
- **Wildlife Agencies.** Both the USFWS and CDFW will review and approve the RMP and coordinate with OCTA, the Preserve Manager, and supporting biologists regarding the status of preserved natural resources, ongoing monitoring activities, and adjustments to the management program. The Wildlife Agencies will review and provide comments, if necessary, on Annual Progress Reports for the Preserve, which will be included in the NCCP/HCP annual report.

3.1 Public Access

This section includes a discussion of existing and historic public access on the Preserve, guiding principles for defining a public access plan, elements of the proposed trails system plans, and public education and enforcement guidelines.

3.1.1 History of Public Access on the Preserve

Prior to acquisition by OCTA, this Preserve was privately owned and contained two dirt trails (Figure 11) which were used by the previous property owner for routine management of the property. One of the trails jogs back and forth between OCTA owned property and property owned by State of California (CDFW). The other trail is found along the ridge line of the Hafen Preserve.

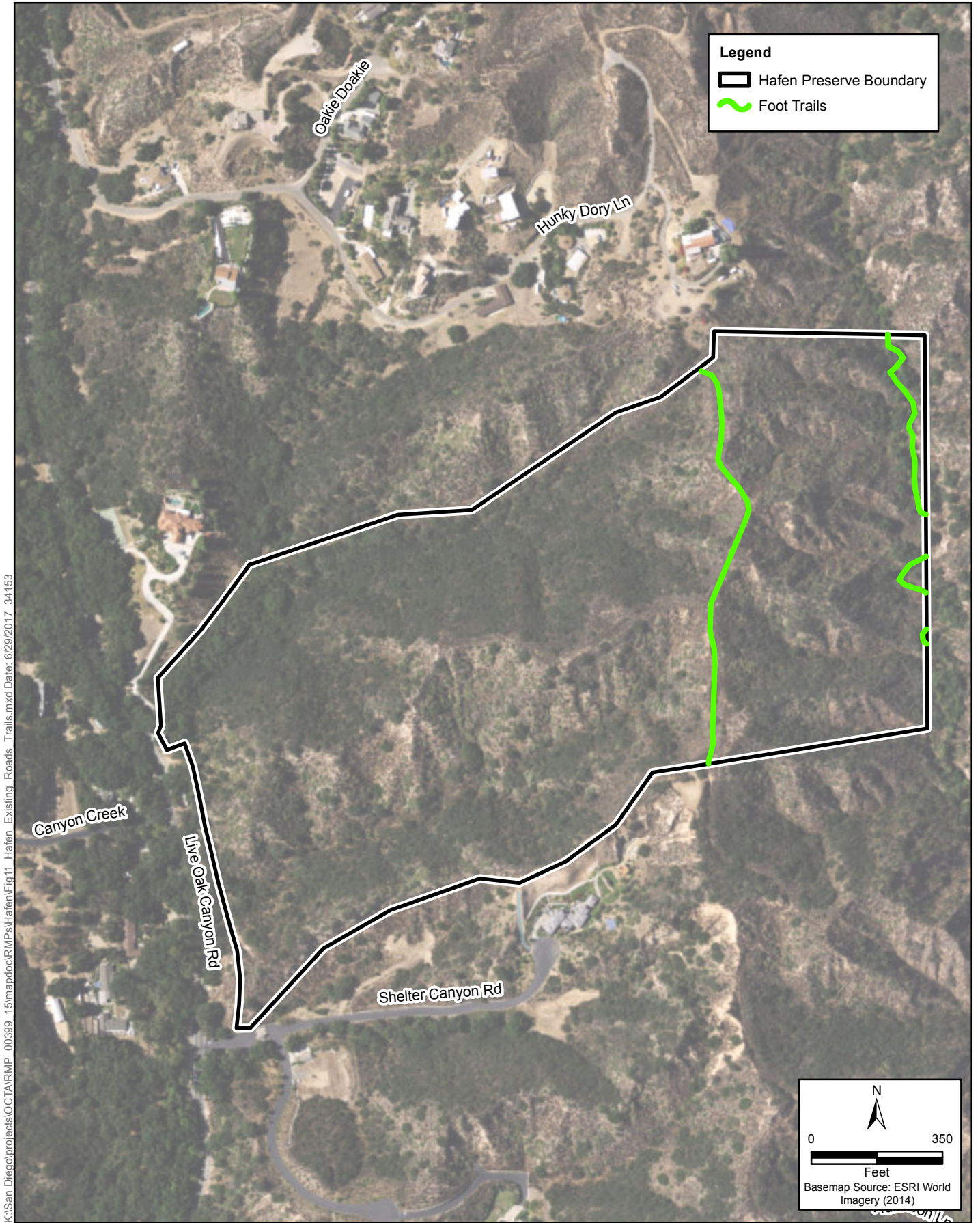


Figure 11
Existing Roads and Trails
Hafen Resource Management Plan

The Preserve is located between two rural residential neighborhoods. One neighborhood is located to the north of the Preserve off of a private paved road (Hunky Dory Lane) and the other neighborhood is located to the south of the Preserve off of a private paved road (Shelter Canyon Road). Live Oak Canyon Road is a paved County road and is found directly west of the Preserve. The CDFW manages land to the east of the Preserve and currently does not authorize public access.

There are no staging or legal safe parking areas on or near this Preserve. The closest public staging area is located at O'Neill Regional Park approximately 1.5 miles away. However, non-vehicular access from O'Neill Regional Park to the Preserve is not recommended due to the amount and speed of traffic that occurs on Live Oak Canyon Road. There is little to no shoulder along this portion of the roadway. Prior to OCTA acquiring this Preserve in December 2011, public access to the Hafen property was prohibited.

3.1.2 Guiding Principles for Defining a Public Access Plan

During the OCTA M2 NCCP/HCP Draft Environmental Impact Report/Environmental Impact Statement public comment period between November 2014 and February 2015, OCTA received specific comments relating to public access to the Preserves. In order to develop a public access program that took these public comments into consideration, OCTA convened three stakeholder focus group meetings. These focus group meetings resulted in feedback from regional land managers, Preserve neighbors, user groups and environmental stakeholders. General principles for public access were drafted that adhered to the M2 EMP objectives and addressed the need to provide complementary access opportunities. A general framework for public access on the OCTA Preserves was established as part of this outreach effort. These general principles and framework are outlined below.

Adhere to M2 EMP Objectives

- a. The M2 freeway projects will potentially impact protected biological resources. State and Federal laws require that impacts on these resources be mitigated. The M2 sales tax includes funding to mitigate for these impacts. In order to provide this mitigation, OCTA is coordinating with the Wildlife Agencies and developing an NCCP/HCP. Undeveloped properties that possess habitat and biological resources that are similar to those potentially affected by the construction of the M2 freeway projects have been purchased and are integrated into the NCCP/HCP¹ as Preserves. These Preserves will remain undeveloped and will be protected in perpetuity.
- b. OCTA Preserves are conservation properties (required mitigation) that are integrated into the Wildlife Agencies' and regulatory agencies' permitting process to facilitate issuance of permits for the M2 freeway projects.
- c. The Preserves will be conserved in perpetuity. The NCCP/HCP permits will require that these Preserves have a biologist review the condition of the biological resources (including wildlife movement) on a regular basis to ensure that the resources are protected and that threats are adequately addressed. The biologist will make management recommendations and work with the Wildlife Agencies and Preserve Manager to ensure the resources are not degrading. These required conditions will remain in perpetuity.

¹ The M2 EMP has also funded multiple restoration projects. These public access principles and guidelines do not apply to the restoration project areas as they are owned and managed by separate entities.

Provide Complementary Access Opportunities

- Recreational access is an important co-benefit but not the principle public purpose for which properties are acquired by OCTA under the EMP. Access must be established and managed so as to ensure the permit conditions of the NCCP/HCP and Implementing Agreement are adhered to in perpetuity. The NCCP/HCP stipulates that recreational access be limited to passive activities such as walking, jogging, hiking, bird watching, non-competitive mountain biking, equestrian use, and limited picnicking. Certain inherent dangers exist on the Preserves and include; mountain lions, rattlesnakes, poisonous insects, poison oak, extremes in weather, loose rocks, and steep/rugged terrain.
- Access (including public access programs) should be provided consistent with the constraints of protecting habitat and species resources, historical resources, terrain, surrounding land uses, limits of allowable impacts within Preserves, parking and/or staging area opportunities, suitable trails, access points, management costs, and community support.
- Where public access can be provided while adhering to the goals of the NCCP/HCP, existing fire and utility roads should initially form the core trail system within Preserves while making best efforts to maintain consistency and compatibility with regional trail systems. Trails should be minimized where possible to preserve intact and naturally functioning habitat. Minimizing the amount of trails on the Preserves is important as this will limit the edge effects and the proportion of the property that is exposed to potential disturbance. Single track trails may be utilized if the trail helps to form a core system and/or complete a loop within the Preserve and the use of the trail does not negatively affect sensitive resources. OCTA will be required to ensure that the number, size, and location of the trail system does not increase to more than what is approved by the Wildlife Agencies. Installation of fencing or other barriers may also be necessary along certain trails to discourage off-trail activities. All trails will require maintenance to keep them safe. These tasks will be more realistic to manage if the trail system is smaller and well-defined.
- Partnerships with community and user groups should be developed to help manage and staff access as well as docent activities and responsibilities.
- A robust and sustained public education program should be established to communicate and regularly reinforce the history, purpose and value of the Preserve system. The message should include that preserving these lands in perpetuity not only benefits biological resources, but also provides protection of historical vacant lands and view sheds which add value to the community.

The following is a **Draft Model Public Access Framework** for OCTA Preserves.

1. The default form of public access is managed or structured access by the Preserve Manager which may include limits on the dates, times, purpose, and amount of access, including some degree of supervision, potentially augmented, as conditions warrant, by:
 - a. Docent-led managed access through partnerships with community and user groups;
 - b. Self-managed access through partnerships with community and user groups;
 - c. A permit system; and/or
 - d. Open access days and locations.

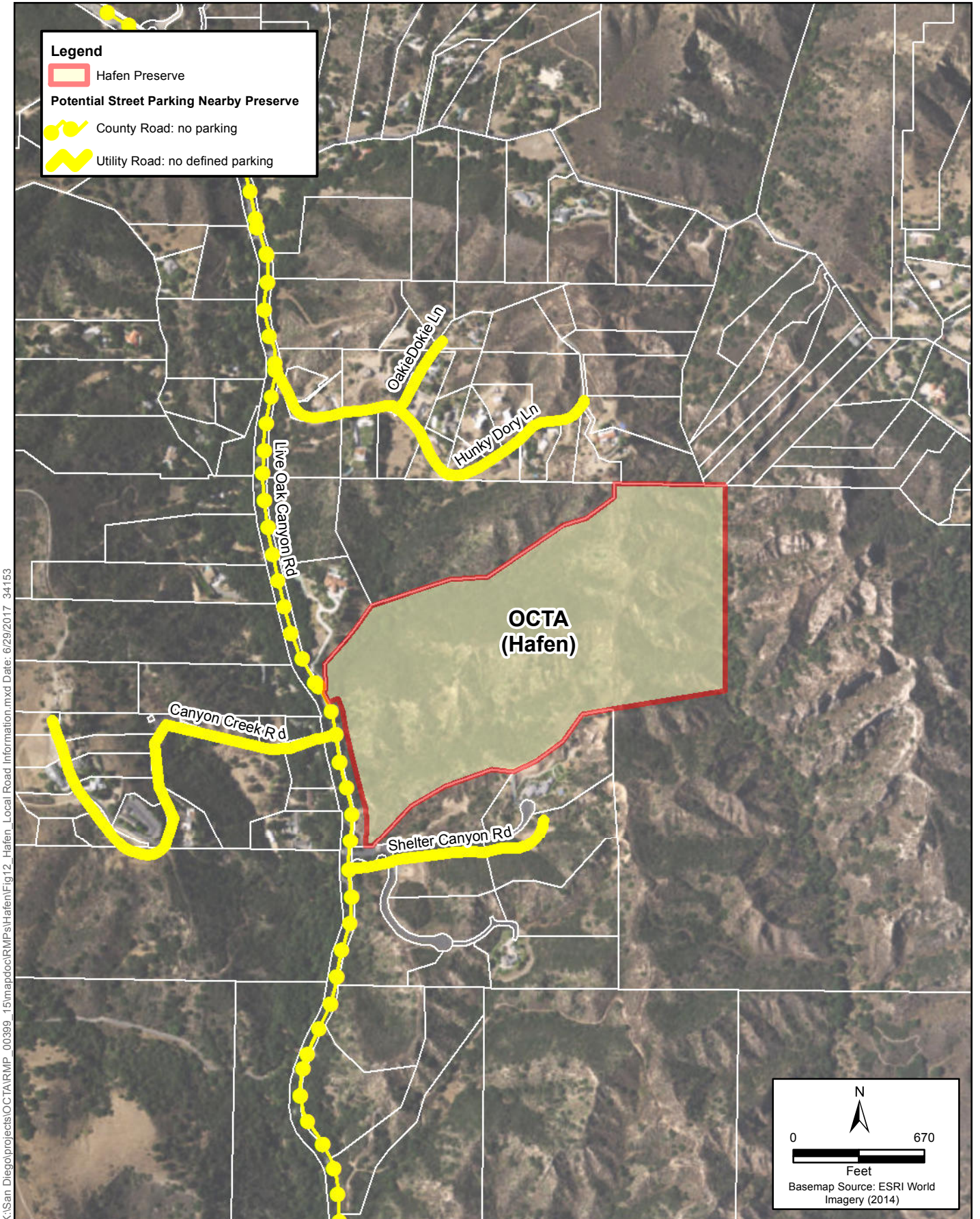
2. Public access is scalable and can be actively and adaptively managed by changing the form, frequency, numbers, times of day, days of week and month, and season that activities are conducted depending upon circumstances and status of resource protection, observed impacts, and compatibility of different user groups.
3. Some Preserves may have extremely limited or no public access opportunities because of significant habitat value², safety concerns, relative isolation, lack of trails or trail connections, and/or conflicts with surrounding land uses.
4. Enforcement of public access limitations and violations of access rules and policies is progressive and aimed at education and diversion of the activity to other more suitable locations rather than punishment.
5. Repeated violation of access rules and policies and/or evidence of damage or harm to the Preserves may result in fines significant enough to force change in behavior and restricted public access or closures until resource protection can be assured. Fines may vary and, depending on the type and severity of the impact, could result in a per acre cost to restore and offset damage to a Preserve. The Preserve Manager should have the capacity to actively cite repeat violators and pursue damage reimbursements.

3.1.3 Hafen Public Access Plan

In order to properly assess if access is appropriate, each Preserve needs to be individually analyzed to determine what type(s) of access would be compatible. The intention is that each of the OCTA M2 Preserves would result in a specific access program based on the Draft Model Public Access Framework developed as a result of public input and the public outreach focus groups. The framework needs to be applied to each individual Preserve as each Preserve has its own set of limitations and resources. These considerations were factored into the development of the managed access plan as described in this section.

The Hafen Preserve is located directly east of Live Oak Canyon Road and between two private roads within unincorporated Orange County. These roads were not designed for higher volumes of traffic, which are anticipated if public access is allowed. The Preserve does not currently include the necessary space for adequate staging areas (parking/restroom facilities) to facilitate public access. Signs are posted along Live Oak Canyon Road (from Santiago Canyon Road to Trabuco Canyon Road) communicating that this portion of the road does not allow parking at any time and that vehicles will be towed if parked along this road (Figure 12). In addition, the Preserve is surrounded by private property or public lands that currently do not allow public access (Figure 13). For example, the Hafen Preserve is partially surrounded by rural residential development. In addition, land managed by CDFW is located directly to the east and currently does not allow public access. Due to these constraints, public access on the Preserve is prohibited.

² Significant habitat value can be defined as habitat that imperiled species are reliant upon in order to help prevent their extinction, fragmentation or reduction in range.



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Figure 12
Local Road Information
Hafen Resource Management Plan

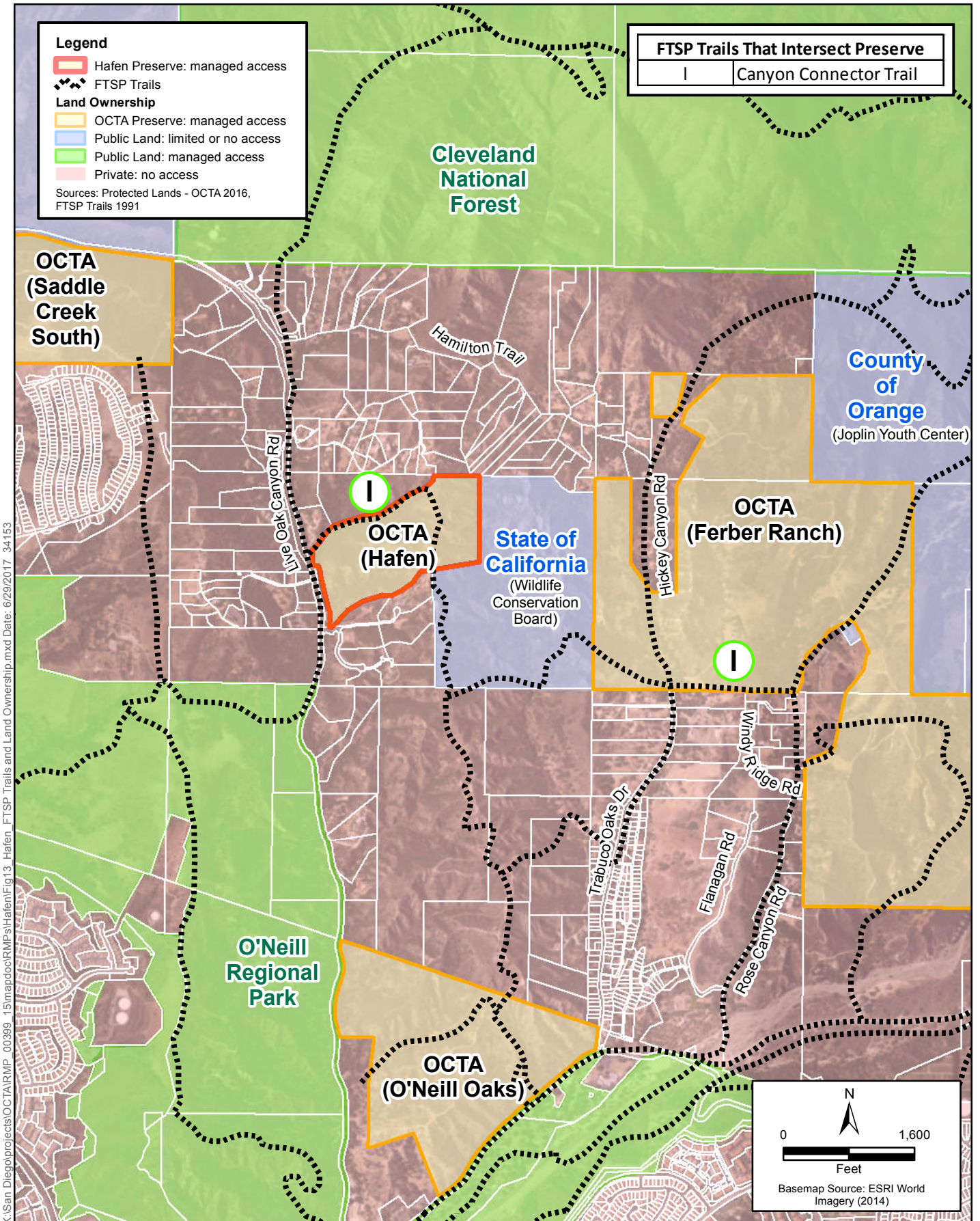


Figure 13
Foothill/Trabuco Specific Plan Trails (FTSP) and Surrounding Land Ownership
Hafen Resource Management Plan

Trails

The final design of the Hafen trails was determined based on avoidance and minimization of impacts to sensitive biological resources as well as coordination with the Wildlife Agencies. Based on a review and analysis of the existing trails and biological constraints on the Hafen Preserve, the trails depicted on Figure 14 will be designated as approved trails for preserve management only. These trails will be maintained, but will not be open for recreational use. These trails are very narrow and dangerous (eroded ruts and drop offs) in many locations. Only experienced Preserve management staff will be permitted to utilize these trails. If new members of the Preserve management team access this Preserve, they should be accompanied by experienced field personnel.

An increase in monitoring of this Preserve has occurred due to the cutting of an illegal trail adjacent to the Preserve (Photo 1). In the summer of 2014, the OCTA biological monitor documented an expansive new unauthorized trail that had been cut adjacent to the Hafen Preserve. This unauthorized trail destroyed high quality coastal sage scrub habitat and was considered a threat to the Preserve. A continuation of this trail would damage habitat currently being utilized by protected species. Due to this threat, there is a heightened awareness and a need for regular monitoring and protection for the Hafen Preserve.



(Photo 1: Unauthorized trail cut adjacent to the Hafen Preserve)

Foothill/Trabuco Specific Plan Trails

The FTSP was adopted in 1991 and has had a number of amendments approved over the years. The Recreational Element of the FTSP includes a map (Exhibit II-8 of the FTSP) showing local trails with the FTSP boundary. A number of these trails intersect with the OCTA Preserves (see Figure 13). The FTSP identifies policies for local riding and hiking trails (Section 5.0 of the FTSP) that occur on private property. If a property is planned for residential development and has a local trail shown in Exhibit II-8 of the FTSP adjacent to or within its boundaries, the FTSP outlines a set of conditions that would be applied during the development approval process to address implementation of local trails. The acquisition and establishment of the OCTA Preserves under the Plan does not trigger the residential development approval process as set forth in the FTSP. However, the identification of local riding and hiking trails in the FTSP emphasizes the need for OCTA to participate in ongoing regional trails planning in this region.

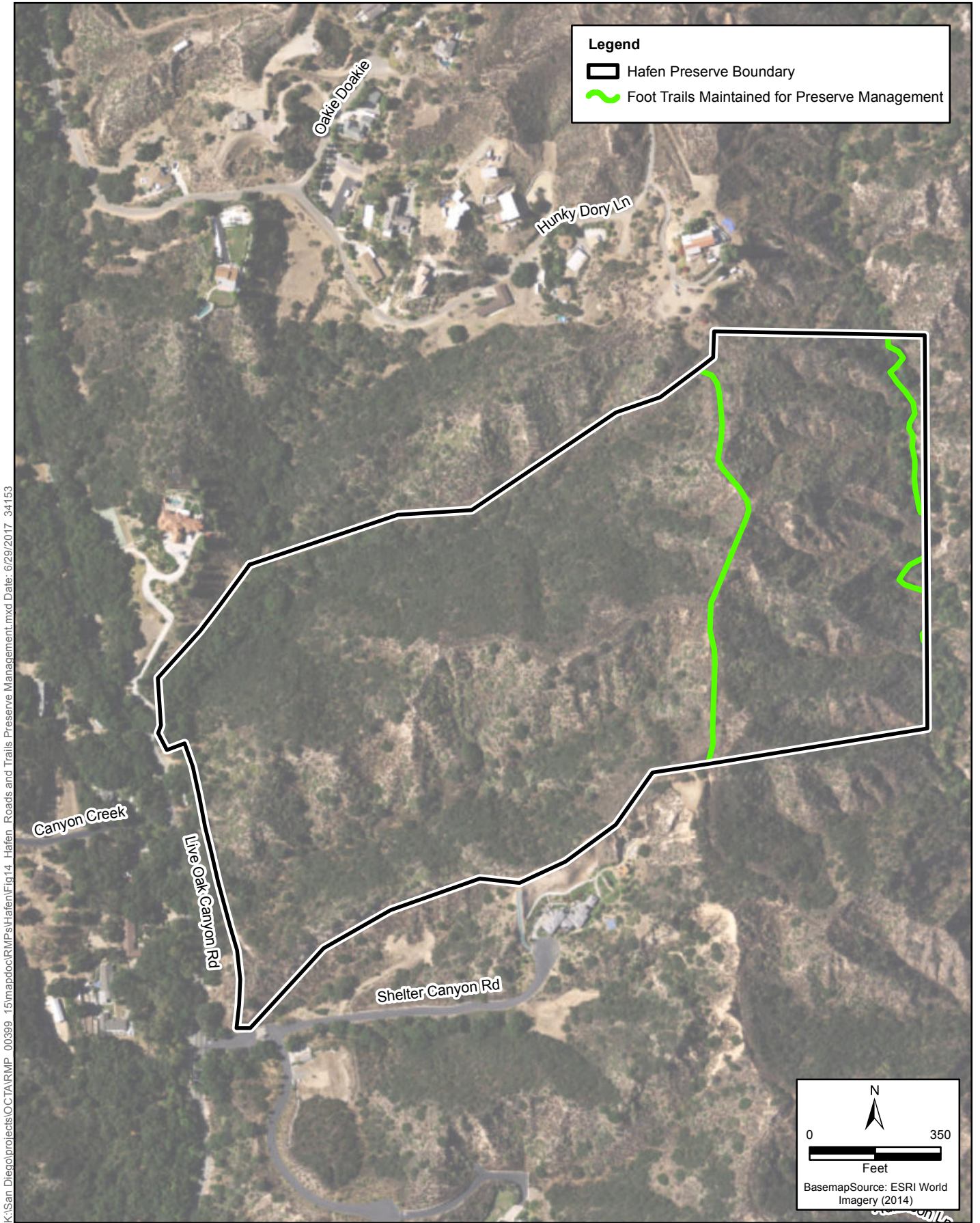


Figure 14
Roads/Trails for Preserve Management
Hafen Resource Management Plan

The FTSP identified one trail, the Canyon Connector Trail (I), within the boundaries of the Hafen Preserve. This trail traverses the Hafen Preserve and then continues on to publicly owned lands that do not currently allow public access and then on to privately owned lands (see Figure 13).

The Canyon Connector trail depicted in the FTSP and how it relates to the management of the Hafen Preserve is discussed in further detail below.

- **Canyon Connector Trail (I)** - The Canyon Connector Trail makes a sharp turn to the east off of Live Oak Canyon Road and follows the northern boundary of the Hafen Preserve. This segment of the trail has gone unmaintained for many years and is unsafe to utilize. This portion of the Preserve is heavily vegetated, steep and contains many eroded ruts creating an unsafe area for access. The Trail then turns south and follows the existing ridge line trail across the Preserve and continues south to the CDFW managed land. CDFW currently does not allow public access. In the future, if CDFW allows public use of this trail, OCTA would be willing to coordinate and discuss granting additional use of this trail within the Preserve. It should be noted that there have been very little signs of public use of this trail for many years. The trail is very narrow in most locations and signs show that it is utilized more by wildlife than by humans.

OCTA recognizes that regional trails planning evolves and changes over time. OCTA will participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made. This requirement will be extended to the Preserve Managers if and when OCTA transfers ownership and responsibility for managing a Preserve to another entity.

Staging and Parking Areas

Staging and/or parking areas do not exist at the Hafen Preserve. O'Neill Regional Park is approximately 1.5 miles south of the Hafen Preserve and offers adequate staging areas as well as more than 23 miles of trails that are open to the public (during park operating hours). The park also accommodates overnight camping including equestrian campsites.

Street parking near the Hafen Preserve is prohibited (see Figure 12). Signs are posted along Live Oak Canyon Road (from Santiago Canyon Road to Trabuco Canyon Road) communicating that this portion of the road does not allow parking at any time and that vehicles will be towed if found parked along this road. Other streets in the vicinity (Hunky Dory Lane, Oakie Doakie Road, and Shelter Canyon Road) are private roadways with no defined parking status. These private roads are narrow and in general shoulders do not exist that would enable parking on these streets. In addition, access to the Hafen Preserve would require trespassing/unauthorized access through private property (see Figure 13).

3.1.4 Public Education and Enforcement of Public Access

Public education and involvement are critical components for ensuring successful management and public support of the Preserve System. If the public is properly informed of the biological values, goals, and activity restrictions within the Preserve, it is more likely that management goals and guidelines will be respected and followed. The OCTA NCCP/HCP Administrator and Preserve Managers will coordinate to determine the most effective methods and materials for educating the public. They may include the following:

- Hold annual public meetings to present information regarding Preserve goals, guidelines, restrictions, and compatible uses. These meetings may be held concurrently with the annual NCCP/HCP reporting meeting and a regularly scheduled Environmental Oversight Committee meeting and will be announced with the property public notice.
- Establish information on OCTA's website that provides information on the Preserve, Preserve Manager contact information, and links to additional information on Preserve goals and guidelines.
- Provide signs, displays, and pamphlets that explain Preserve rules and management goals.
- Develop a volunteer program that addresses a variety of education and management issues, including, but not limited to, preparation of educational materials, trail repair, erosion control, invasive species removal, native habitat and plant restoration, trash removal, biological monitoring, and management patrols.
- Prevent and remove illegal trails, trail modifications (e.g., bike jumps), and other intrusions into the Preserve, and enforce land use and recreational activity restrictions.
- Encourage two-way communication with adjacent residents to collect and disseminate Preserve information.

Ongoing management of the Preserve must monitor and control permitted activities and unauthorized activities (e.g., public access, illegal dumping of waste materials and debris, and encroachment). Damage caused by unauthorized access is potentially one of the greatest threats to Preserves near urban population centers. Without enforcement, it is often difficult to change human behavior, especially in areas that have been used historically for activities that are not compatible with biological resource protection (e.g., off-road vehicle use).

Preserve monitoring and enforcement will consist of regular patrols of the Preserve by the Preserve Manager and staff. Public outreach and education, including educational materials may be necessary to supplement Preserve patrol efforts.

The Preserve Manager will be responsible for enforcing public access guidelines and ensuring that only preserve management activities occur within the Preserve. Enforcement of Preserve guidelines falls into two categories of offenses: minor and major infractions.

- **Minor infractions** (e.g., public access, excess irrigation running onto the Preserve from an adjacent property) shall be handled by the Preserve Manager through discussion and education of the offending party and a warning process. The Preserve Manager can work with other Preserve Managers and local community groups on a public education program to explain goals and regulations as well as educate the public on the area's resources (see Section 3.11, "Public Outreach and Education").
- **Major infractions** (e.g., illegal off-road vehicle use, cutting new trails, illegal dumping, vandalism, illegal encampments [itinerant workers and transients], illegal hunting, and excessive repeat offenders of minor infractions) may require coordination between the Preserve Manager and law enforcement officials. Perpetrators of major infractions are often not caught due to the delay in response time.

If allowed by State and local regulations, the Preserve Manager and staff should be given the authority to issue citations and impose fines for misuse of trails and other Preserve facilities, trespassing, and other unauthorized or illegal activities. Alternatively, the Preserve Manager may

involve local law enforcement agencies to enforce biological protection measures and to restrict prohibited activities, including issuing citations and fines. Fines levied for abuse of Preserve facilities resulting in harm to species or sensitive habitat will be sufficient to discourage repeat occurrences (subject to existing laws and regulations).

The Preserve Manager will install and/or maintain fencing, barriers, or signage at key access points, as necessary, to restrict unauthorized access and limit unauthorized activities thereby protecting resources and facilitating public safety.

3.2 Invasive Plant Species Control

The Hafen Preserve has a low percentage of invasive plant species and is generally undisturbed from surrounding development or historical agricultural activities. Some pockets of invasive species were identified during baseline surveys and the potential for invasive plants have been identified as a threat to natural communities and species on the Preserve. Invasive plant control is expected to be a long-term, ongoing management issue.

OCTA has contracted with a Restoration Ecologist to prepare an invasive species management plan for this Preserve. This management plan is currently under development. Mapping of the invasive species has been conducted and is shown in Figure 15. The management plan will prioritize invasive species for control; specify goals (eradication versus control); identify treatment locations, timelines (including potential re-treatments), and removal methods; provide realistic, measurable success criteria and monitoring methodology; and identify areas that may need post-treatment restoration. The treatment plan will set forth target-specific control strategies for invasive species control, using an integrated pest management (IPM) approach. The IPM approach uses the least biologically intrusive control methods and is applied at the most appropriate period in the growth cycle to achieve desired control goals. Invasive control strategies may include mechanical and chemical methods.

The invasive plant management plan will be reviewed and approved by the Wildlife Agencies. The management plan should include the following measures.

- Development of an accurate mapping of invasive plant species. The Preserve Manager in coordination with the Monitoring Biologist and Restoration Ecologist will map priority invasive species and create a spatial dataset of invasive species locations. The mapping of invasive plant species will be maintained over time through surveys completed by the Preserve Manager, or Monitoring Biologist, focusing on areas that function as natural conduits for dispersal (trails, streams, disturbed areas). Surveys will be conducted during general stewardship monitoring or biological monitoring. The invasive species map will be updated yearly based on mapping results.
- If necessary, chemical control will be conducted using herbicides compatible with biological goals and objectives. Pest control applicators qualified and licensed under the California Department of Pesticide Regulations will provide recommendations for chemical control.
- Best Management Practices (BMPs) will be identified for the disposal of invasive plant materials removed from the Preserve at a landfill or secure, onsite location to avoid spreading invasive seeds or propagules. Onsite storage may include chipping, mulching, and periodic spot-treatment of compost piles with herbicide to kill any germinating or re-sprouting invasive plants.

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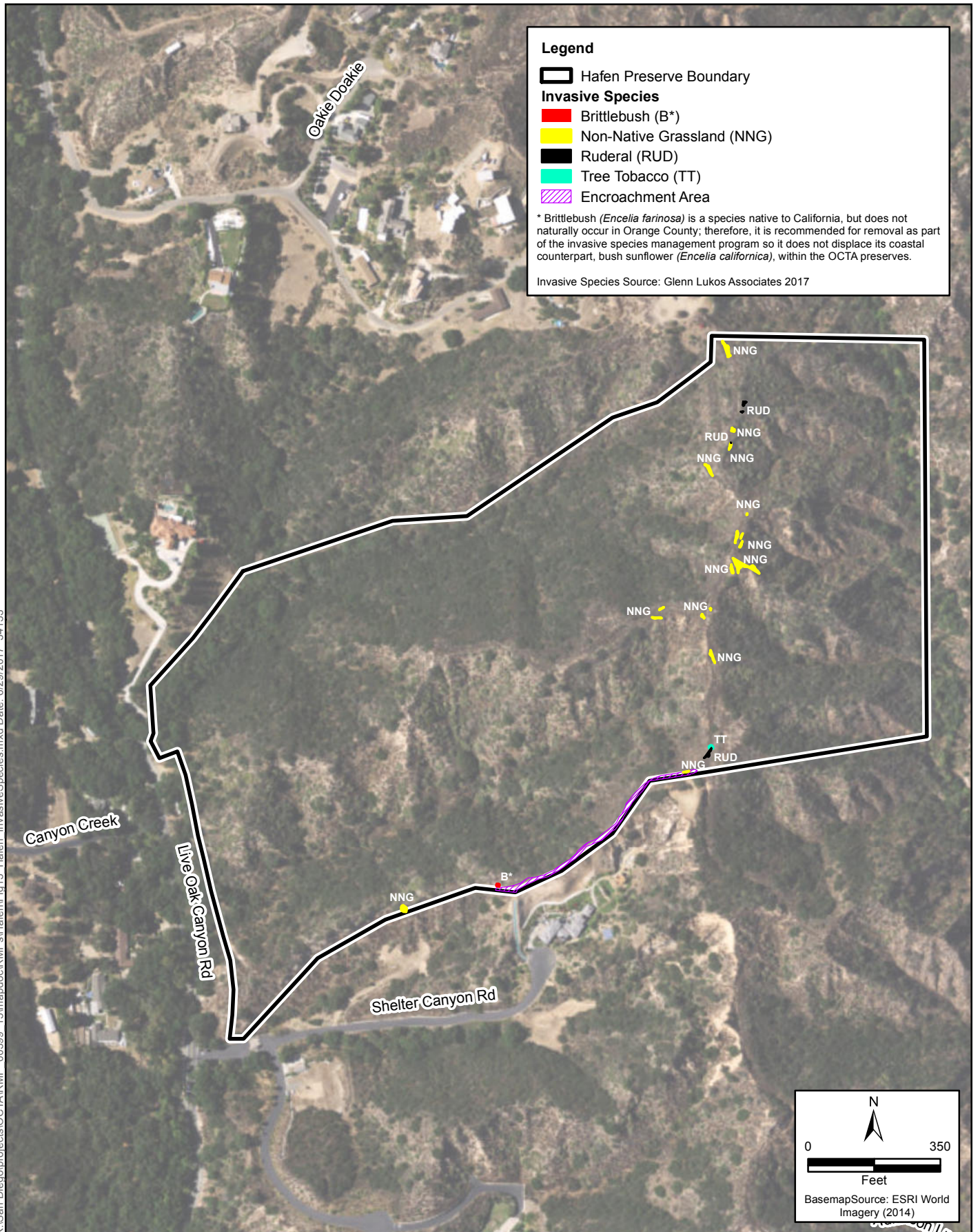


Figure 15
Invasive Species
Hafen Resource Management Plan

- A monitoring schedule will be established to evaluate the success of invasive plant control efforts for five years following implementation or until eradication is maintained for one year without follow-up control activities. Monitoring will be conducted by the Preserve Manager during stewardship monitoring and by the Restoration Ecologist during initial removal activities and then annually for up to five years following initial activities. Regular monitoring and annual assessments will evaluate re-growth of target species, unauthorized encroachment, and related vandalism and damage.
- Situations where the implementation of habitat restoration should be implemented in conjunction with invasive plant removal to improve native habitat cover and quality will be identified.

The Preserve Manager will implement remedial actions where necessary, based on monitoring results. These may include re-treatments, adjustments to invasive plant control methods or timing, and modifications to site protection measures. The Preserve Manager will continue to collaborate with the Restoration Ecologist to receive input regarding site conditions, changes in control methods or timing of actions, and adjustments to monitoring frequencies. Results of the implementation and monitoring of the invasive plant species control plan will be included in the Annual Reports.

3.3 Habitat Restoration

Habitat restoration activities may be required and/or desirable in response to different threats, stressors, and habitat conditions. This RMP identifies habitat restoration as a potential activity within the Hafen Preserve associated with invasive plant species control (Section 3.1), response to fire events (Section 3.5.3), and biological monitoring and management (Chapter 4). Additional restoration activities associated with other priorities may be warranted in the future based on monitoring and future conditions.

3.4 Vegetation Management

Pruning, cutting, or clearing of native vegetation will generally be avoided except for possible maintenance along trails and installation of erosion control measures, if necessary. The clearing of natural vegetation on the Preserve will be required to comply with the Nesting Bird Policy included in the OCTA M2 NCCP/HCP (a version of the policy has been slightly edited to be applicable for preserve management and is included as Appendix C). In addition, Preserve vegetation management activities will be implemented consistent with Sections 3.3 and 3.4 of the FTSP. The Preserve Manager will be responsible for ensuring all staff working within the Preserve understands and follow procedures set forth for vegetation management.

3.5 Fire Management

The OCFA is responsible for fire control within the Preserve, and their first priority will be to protect life and property. OCTA will continue to work closely with the OCFA to identify fire management guidelines, including specific fire and brush maintenance zone specifications and access route

locations that minimize impacts on sensitive biological resources, and will identify areas that should be avoided to preserve sensitive biological resources.

3.5.1 Fire Management Plan

Within two years from adoption of the RMP, the Preserve Manager, in coordination with OCTA and OCFA, will develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. The FMP will identify environmentally sensitive lands (ESLs) that should be avoided to minimize irreparable impacts on biological and cultural resources during fire suppression activities. The ESLs will include Covered Species locations and sensitive natural communities. A map will be prepared that shows fire management and ESLs consistent with the OCFA regional fire management program and will include the following, as applicable.

- Preferred access points and access routes on the Preserve, fire hydrants, and potential staging areas for fire suppression activities.
- Covered Species, sensitive species, and sensitive natural communities that are highly susceptible to fire or fire suppression activities (e.g., coast prickly pear scrub, and locations of previously recorded cactus wren and rare plant observations). The ESL map should distinguish between areas that should be protected from fire versus areas that should be protected from surface disturbance (e.g., grading) based on the ability of target resources to recover from these impacts.
- Location of bulldozer lines, if these are a potential component of the fire suppression strategy for the Preserve.
- Emergency access procedures.

3.5.2 Strategy and Approach

The FMP will emphasize a fire suppression strategy of controlling any smaller fires on site, where feasible. Larger fires that originate outside the Preserve and move across the Preserve may require suppression tactics within the Preserve. In these cases, OCFA will establish defenses within and nearby any adjacent homes to protect life and property. The final suppression tactics will be derived from current or predicted fire weather, topography, fuels (fire behavior), and the surrounding resources (lives and property) that are at risk. Once these have been identified OCFA will develop a strategy for suppressing the fire and will coordinate with OCTA and keep OCTA informed as to the course of action necessary. OCFA will engage OCTA to gain concurrence or an understanding of what actions are necessary. The Preserve Manager, OCTA, and OCFA will collaborate to define the least damaging suppression strategies within the FMP and delineate this preferred area(s) graphically. Strategies should avoid ESLs during fire suppression activities, to the degree feasible.

Public and firefighter safety will be the primary consideration before and during a wildfire. Accordingly, the following measures will be implemented at the Preserve.

- Prohibit all public access during a red flag warning or when an active fire threatens the Preserve.
- Post fire danger signs at trail heads.
- Post signs with phone numbers for Preserve neighbors to call and report suspicious activity or fires to the 911 dispatch center.

- Post signs instructing Preserve neighbors to immediately report fire activity to the 911 dispatch center or fire agency. The contact information for OCFA headquarters is (714) 573-6000.
- In the event of a fire on the Preserve or a fire approaching the Preserve, the Preserve Manager will provide assistance to OCFA, as necessary.

3.5.3 Post-Fire Response

The Preserve Manager will inventory the condition of natural communities following a fire on the Preserve, and will coordinate with the Monitoring Biologist and Wildlife Agencies as necessary, to determine if habitat restoration is warranted. The OCTA NCCP/HCP Administrator and Preserve Manager will work with the Wildlife Agencies and OCFA, as necessary, to determine if fire severity and frequency meet the requirements of a Changed Circumstance as defined in the NCCP/HCP and utilize funding as appropriate to implement post-fire restoration. Options for funding this restoration include (1) using funds allocated for adaptive management, (2) reallocating funds from existing management priorities, as appropriate, (3) pursuing outside funding sources, or (4) seeking authorization to use Changed Circumstance funding.

Post-fire management activities may include, but are not limited to the following.

- Conduct emergency post-fire erosion control, where necessary.
- Repair/restore damaged fences, roads, or other official Preserve structures to pre-fire conditions.
- Monitor post-fire recovery closely. Implement control measures to remediate any resulting erosion, sedimentation, and invasion by nonnative plant species.
- Coordinate with OCFA to recontour any dozer lines created within the Preserve. Restoration or dozer lines by OCFA will include, but not be limited to, recontouring lines, removing berms, scattering previously cut brush over lines, and potentially replanting available cactus pads. These activities will be agreed upon and coordinated between OCFA and Preserve Manager.
- Plan all post-fire actions (e.g., habitat restoration, invasive species removal, erosion control, or trail stabilization) in consultation with the Wildlife Agencies prior to project initiation and permitted if necessary by State and Federal regulation programs. The Preserve Manager will use current information on best approaches and strategies for post-fire restoration, including erosion control, seeding, and success criteria.

3.6 Nonnative Animal Species Management

Nonnative animal species are potential threats and stressors to wildlife protection and productivity on the Preserve. The Preserve Manager will be responsible for the following measures specific to nonnative animal species management, including nonnative species control and feral and domestic animal restrictions and control.

3.6.1 Invasive Nonnative Species Control

The Preserve Manager will work towards controlling the spread of invasive ant species as follows.

- Inspect irrigation/supplemental water runoff from adjacent landowners onto the Preserve and taking steps to educate landowners or rectify the problems by other means such as coordination

with local governments regarding irrigation or other urban runoff ordinances or capturing runoff in a vegetated swale on site to contain and limit adverse effects on the Preserve.

- Control irrigation/supplemental water application used for onsite restoration activities to avoid any overflow, which may attract and sustain nonnative ants by increasing soil moisture.
- Ensure that native plant materials used for habitat restoration do not contain invasive ant or other species by inspecting all container stock before it enters the Preserve.

The Preserve Manager will also need to monitor and address other potential infestations of invasive insects and other pathogens that can threaten native habitat. The Preserve Manager will stay current on the latest information and science of invasive insects or other pathogens (e.g. goldspotted oak borer) and monitor for signs of infestations as part of general stewardship monitoring. If an infestation is identified, the Preserve Manager will coordinate with the OCTA NCCP/HCP Administrator and the Wildlife Agencies on any appropriate control actions.

3.6.2 Feral and Domestic Animal Restrictions and Control

With the exception of service animals, all dogs are prohibited within the Preserve. In general, control of feral and domestic animals will consist of the following.

- Documentation of feral or domestic animal activity.
- Establishment of a removal program or refer the infraction to the local animal control agency if a problem with feral animals or animal control is identified.
- Prohibit Preserve Management personnel from housing or allowing domestic pets on the Preserve.

3.7 Property Management

Property management includes routine and ongoing property management activities conducted by the Preserve Manager and staff or contractors to ensure that the Preserve is maintained in good condition.

3.7.1 Trash and Debris

The Preserve Manager will be responsible for collecting and disposing of trash and debris regularly to maintain the Preserve in good condition and minimize impacts on Covered Species and natural communities.

3.7.2 Lighting and Noise

The Preserve Manager will be responsible for implementation of the public access plan and ensuring operational activities within the Preserve avoid or minimize impacts on Covered Species and natural communities from lighting or noise. To the degree feasible, lighting in or adjacent to the Preserve will be eliminated except where essential for roadway use, facility use, safety, or security purposes. The Preserve Manager will work with adjacent land owners and the County of Orange to shield light sources adjacent to conserved habitat so that lighting is focused downward. The Preserve will be closed during nighttime hours, which will reduce the need for additional lighting within the Preserve. As part of the public outreach efforts, the Preserve Manager will prepare and disseminate

informational materials to adjacent neighbors to educate the public about the importance of minimizing edge effects such as nighttime lighting and noise.

3.7.3 Fencing

The Preserve Manager will be responsible for monitoring and installing fencing and gates as necessary to control unauthorized access and trespassing. If installed, fencing and locks should be inspected on a regular basis (a minimum of two times per year). Damaged or missing fencing or locks should be replaced as soon as possible, but not more than one month after detection.

The Preserve Manager will identify situations that warrant the installation of additional fencing or natural barriers within the Preserve around areas that require enhancement control of unauthorized access. Natural barriers may include dense plantings of prickly, thorny, or rash-inducing plant species such as California wild rose (*Rosa californica*), cactus (*Opuntia* sp.), or poison oak (*Toxicodendron diversilobum*), as well as large rocks or logs.

3.7.4 Signage

The Preserve Manager should install signs at Preserve boundaries, selected roads, and natural features to indicate permitted and prohibited uses in the Preserve, including Rules and regulations signs that indicate prohibited activities including (but not necessarily limited to) unauthorized access, hunting, dumping, and dog walking.

The Preserve Manager should inspect all signage on a regular basis to ensure that signs are still in place and not damaged. Damaged or missing signs should be replaced as soon as possible after detection.

3.7.5 Hydrology and Erosion Control

The Preserve Manager will complete all management and operations of the Preserve in a manner designed to maintain natural hydrologic processes to the extent possible. This includes avoiding water contamination or excessive erosion that could affect hydrological systems. Minimizing impacts on hydrological systems will preserve natural ecosystem structure and function.

The Preserve Manager will inspect and identify situations requiring erosion control. Using erosion control BMPs, the Preserve Manager will install appropriate erosion control measures during regular maintenance and operation activities. These may include rice straw wattles, hay bales, silt fencing, sediment traps, and/or sandbags. These devices will be used on slopes below newly graded roads or fuel management/fire control areas to prevent erosion and deposition of materials in sensitive habitat areas, as necessary. These BMPs will also be used as necessary to reduce bank erosion (excess scour and undercutting) or sedimentation in existing streams or aquatic resources caused by changes in hydrology due to upstream/off-Preserve development activities. These activities will utilize stream bioengineering practices utilizing native materials and biodegradable structures with the goal of achieving long-term self-sustainable conditions or dynamic equilibrium.

The Preserve Manager will inspect vulnerable areas (e.g., trails, streams or aquatic resources, and fuel maintenance areas) immediately after a heavy rain storm to identify problems with erosion and sedimentation. Where erosion or sedimentation is identified, the Preserve Manager will follow BMPs

(e.g., install control devices) as soon as possible to avoid further damage. In addition, access will be restricted to limit further damage or where required for safety purposes.

3.8 Land Uses within the Preserve

Permitted activities include those shown to have a minimal impact on biological resources and ecosystem functions, while prohibited activities are those expected to have a detrimental effect on those resources.

3.8.1 Allowed Uses

The following land uses are conditionally allowed if it can be assured that the activity minimizes or avoids impacts on biological resources and ecosystem functions, while allowing certain operational and safety uses within the Preserve.

- Provide access onto the Preserve for Preserve management, public services (e.g., fire management to prevent the loss of human life or property), or law enforcement in response to violations of Preserve rules and regulations.
- Allow restoration and enhancement of native plant communities, including the removal of nonnative species, planting or seeding native trees, shrubs and herbaceous vegetation.
- Allow for the restoration and stabilization of streambeds and banks using native bio-engineering practices using natural and biodegradable material if necessary following fire, flood, or other natural disaster or unauthorized anthropogenic activities causing unnatural degradation.
- Allow for the maintenance of trails with the least environmentally damaging practices.

3.8.2 Prohibited Uses

The following activities are prohibited in the Preserve because they are not compatible with Preserve management, necessitate a much more rigorous level of Preserve management, present a liability to OCTA, and/or have a high potential to adversely affect biological resources.

- Residential, commercial, industrial, institutional, or landfill development; agricultural uses such as row crops, orchards, improved pastures, nurseries, greenhouses, and feedlots; livestock grazing (unless part of a habitat management strategy); itinerant worker camps; and mineral extraction.
- The creation of new trails or roads for the purposes of off-road vehicle use, mountain biking, or other recreational or other uses without prior authorization by the Wildlife Agencies.
- Recreational activities within the Preserve such as the following:
 - Passive (including hiking, running, mountain biking, and equestrian use) and active recreation, including ball fields, golf courses, improved park facilities, off-road vehicle use, or any other recreational activity that requires conversion of native habitats (e.g., clearing, grubbing, or planting of nonnative vegetation or turf grasses), facility construction (e.g., equestrian facilities, buildings, or paved pathways), or that otherwise negatively affects natural vegetation or wildlife habitat values.

- Shooting, target practice, hunting.
- Paint-ball.
- Off-road vehicle use.
- Dog walking, whether leashed or unleashed.
- Geocaching.
- Unmanned aerial vehicle (recreational drones).

3.9 Land Uses Adjacent to the Preserve

The Preserve Manager will monitor land uses adjacent to the Preserve to identify situations in which edge effects can negatively affect biological resources within the Preserve. The types of adjacency issues that will be monitored will include, but are not limited to, trespassing, drainage, lighting, noise, invasive planting, pet and livestock control, and fuel modification zones. The Preserve Manager will enforce trespassing regulations and prevent and remove illegal intrusions into the Preserve. Barriers (fencing, rocks/boulders, appropriate vegetation) and/or signage will be installed where necessary to protect the Preserve's sensitive biological resources and direct public access to appropriate locations. Additionally, educational information will be disseminated to adjacent residents and landowners to heighten their awareness of the Preserve's role in achieving the M2 NCCP/HCP biological goals, and provide information regarding approved access, fire management, and other adjacency issues.

OCTA will coordinate with adjacent landowners and local jurisdictions to address edge effect issues primarily through public outreach, education, and dialogue. OCTA does not have land use authority, and if legal or enforcement actions are deemed necessary, OCTA and/or the Preserve Manager will coordinate with the local jurisdictions or enforcement entities as appropriate. For new development adjacent to the Preserve, OCTA and/or the Preserve Manager will, to the extent practicable, provide input and direction through the public review process (e.g., the California Environmental Quality Act [CEQA] and permitting process) on appropriate adjacency guidelines.

3.9.1 Existing Land Use

The Preserve Manager will develop and implement a public awareness program within two years of the RMP approval to educate existing property owners in the vicinity of the Preserve of the Preserve's goals and objectives and steps they can take to protect the biological resources. In coordination with the OCTA NCCP/HCP Administrator, the Preserve Manager will develop flyers and other education materials that describe the types of activities that can occur on an adjacent property that can have negative effects on biological resources. OCTA will provide information on how an adjacent property owner can minimize these impacts. The types of issues that will be addressed will include, but not be limited to the following.

- Drainage – adjacent property owners will be encouraged to monitor drainage and irrigation that flows from their property onto the Preserve. Excessive irrigation can promote invasive plant and animal species (e.g., Argentine ants) to expand into the Preserve.

- Lighting – lighting of properties adjacent to the Preserve should be directed away from the Preserve wherever feasible and consistent with public safety. Adjacent property owners will be encouraged to use low-pressure sodium lighting whenever possible.
- Invasive plant species – certain types of landscaping can introduce invasive nonnative plant species into the Preserve. Adjacent property owners will be provided with information on ways that they can landscape with species less likely to negatively impact the Preserve or use native species that reflect the adjacent native habitat.
- Invasive pests – recently coast live oak and sycamore trees within the Trabuco Canyon area were identified as being affected by the pest invasive shot hole borer (ISHB; *Euwallacea* sp.). In addition, the invasive goldspotted oak borer beetle was also found within the county. These pests and diseases damage trees and shrubs and are a serious threat to the Preserve ecosystem. OCTA will continue to partner with other land managers in the region for the latest survey methodology to help ensure early detection of these species. OCTA is currently a member of the Orange County Invasive Tree Pests group administered by the University of California system. This multi-agency group shares information and resources related to the ongoing research, education, and outreach activities for the ISHB, goldspotted oak borer beetle, and other invasive pest/pathogen tree mortality issues specific to Orange County. In addition, OCTA will include information about these pests as part of the public outreach program.

As part of general stewardship monitoring, the Preserve Manager will regularly monitor the interface of the Preserve with urban/residential areas. The Preserve Manager will identify situations in which adjacent land uses create negative effects on biological resources and will identify possible solutions. The Preserve Manager will maintain a dialogue with adjacent landowners to discuss and address edge effect issues. The Preserve Manager may make suggestions on ways to minimize effects, but OCTA does not have land use authority of the adjacent properties and cannot directly enforce actions on the adjacent properties. If circumstances arise where legal or enforcement actions are deemed necessary, OCTA and/or the Preserve Manager will coordinate with the local jurisdictions or enforcement entities as appropriate.

3.9.2 Future Land Use

To the extent practicable, the Preserve Manager and OCTA will coordinate with local land use authorities (e.g., for the CEQA public review process) to ensure that new developments adjacent to the Preserve adhere to the following adjacency guidelines.

- Drainage – all developed and paved areas must prevent the release of toxins, chemicals, petroleum products, excess water, exotic plant materials, and other elements that might degrade or harm the natural environment or ecosystem processes within the Preserve. This will be accomplished using a variety of methods, including natural detention basins, grass swales, or mechanical trapping devices.
- Lighting – lighting of all developed areas adjacent to the Preserve should be directed away from the Preserve wherever feasible and consistent with public safety. Low-pressure sodium lighting should be used whenever possible.
- Noise – uses adjacent to the Preserve should be designed to minimize noise impacts. Berms or walls should be constructed adjacent to commercial areas and any other use that may introduce noises that could affect or interfere with wildlife utilization of the Preserve.

- Invasive species – invasive nonnative plant or animal species should not be introduced into areas immediately adjacent to the Preserve. All open space slopes immediately adjacent to the Preserve should be planted with native species that reflect the adjacent native habitat.
- Fuel modification zones – fuel modification zones should be fully contained on adjacent properties for all new development. Prior to implementing new developments adjacent to the Preserve, the local fire authority should review and approve proposed fuel modification treatments to ensure that no new fuel modification will be required within the Preserve.

3.10 Management of Cultural Resources

An ASA was conducted by LSA Associates, Inc. on the Preserve in winter 2014. The assessment included a records search, Native American coordination, field survey, and report, all of which were completed between September and December 2014. The Preserve Manager will use this information to help ensure that activities on the Preserve do not impact any sensitive cultural resources. These include, but not limited to, monitoring by a qualified archaeologist for any ground-disturbing activities within 100 feet of culturally sensitive areas; and if significant portions of the Preserve are ever burned by a wildfire, sensitive areas will be resurveyed for archaeological resources.

3.11 Public Outreach and Education

Public outreach and education are critical components to ensuring successful management and public support of the Preserve. A public that is informed of the Preserve's biological values, goals, and activity restrictions is more likely to respect and follow Preserve guidelines. The OCTA NCCP/HCP Administrator and Preserve Manager will coordinate the most effective methods and materials for educating the public, which may include management tasks described below.

- Hold Public Meetings – the Preserve Manager will hold annual public meetings to present goals, guidelines, restrictions, and compatible uses. These meetings may be held concurrently with the annual M2 NCCP/HCP reporting meeting and a regularly scheduled Environmental Oversight Committee meeting.
- Develop and Maintain Website – the Preserve Manager, in coordination with OCTA, will post information on the OCTA website regarding Preserve goals and guidelines, public outreach and volunteer activities, contact information, and links to other relevant Preserve information.
- Provide Educational and Interpretive Materials – the Preserve Manager will provide signs, displays, and pamphlets that explain Preserve rules and management goals and provide interpretive information on the natural resources found onsite.
- Develop Outreach and Volunteer Programs – the Preserve Manager will, to the extent feasible, develop a volunteer program that addresses education and management needs including (but not limited to) preparation of educational materials, trail repair, erosion control, invasive species removal, habitat restoration and enhancement, trash removal, biological monitoring, and management patrols.
- Develop an Educational/Outreach Program to Inform the Public and Adjacent Landowners – the Preserve Manager will implement a program that may include distributing brochures in

surrounding neighborhoods, working with homeowner's associations in the vicinity, and developing an informational website.

The Preserve Manager will also collaborate with local entities to encourage scientific research on the Preserve and accommodate scientific research within the Preserve by allowing limited and supervised access to researchers, students, and other external conservation entities. Scientific research projects are subject to approval by the Preserve Manager, who will informally discuss the costs and benefits of the proposed work with the Wildlife Agencies as necessary. Potential research includes (but is not limited to) Covered Species biological or ecological studies, wildlife movement studies, climate change studies, habitat restoration, or nonnative species control.

Chapter 4

Biological Monitoring and Management

The primary purpose of the Preserve is to meet biological preservation requirements of the M2 NCCP/HCP Plan. However, the Preserve must accommodate site-specific operational and safety activities. This section provides goals, objectives, and management tasks to ensure that biological resources are protected.

Types of Monitoring

There are several types of monitoring that may potentially occur on the Preserve. Refer to the M2 NCCP/HCP Plan (Sections 7.1 and 7.2.7.4) for a full discussion of monitoring types. These types are summarized below.

- **Baseline (Inventory) Monitoring.** Identifies and characterizes the status of conserved resources, including threats and stressors, for management planning and future comparisons (e.g., trend analysis). Baseline surveys of the Hafen Preserve were completed in 2013, and the results are summarized in Appendix B (BonTerra Consulting 2013).
- **General Stewardship Monitoring.** Identifies general management issues and documents whether management actions are completed. This monitoring is conducted in perpetuity by the Preserve Manager during regular monitoring visits (monthly or as appropriate). The Preserve Manager may be assisted by biologists and other technical experts, as needed; monitoring personnel may record incidental data on observations, status, and threats to biological resources.
- **Effectiveness Monitoring.** Assesses status, trends, and threats to biological resources. This monitoring is conducted by the Monitoring Biologist(s) in perpetuity, according to the frequency and protocols in Table 4-1, and requires expertise in wildlife biology, botany, and, possibly, restoration ecology (Table 4-2).
- **Targeted Monitoring.** Answers specific management questions (hypotheses) and determines the effect of management actions on Covered Species and natural communities. Targeted monitoring is conducted by the Preserve Manager and/or Monitoring Biologist with input from outside sources (e.g., sampling design, data collection, analyses), as needed. Results are used to develop or refine management actions and BMPs. Targeted monitoring needs will be identified and prioritized as a result of baseline, stewardship, or effectiveness monitoring.
- **Regional Monitoring.** Identifies threats and trends to biological resources at the regional or landscape-level. OCTA may contribute Preserve monitoring data to regional assessments, as appropriate/feasible, but will not collect data outside the Preserve. OCTA will coordinate data collection methods with the Wildlife Agencies and other regional land managers to facilitate regional comparisons. OCTA will provide access for other entities to collect biological monitoring data on the Preserve, as appropriate, and will submit Preserve data to an appropriate data repository, such as the Biogeographic Information and Observation System, CNDDDB, or other regional databases. OCTA will encourage scientific studies and surveys on the Preserve by academic institutions and other external conservation entities where these activities contribute to the understanding and management of Covered Species and natural communities.

Monitoring Methods

Monitoring and adaptive management on the Preserve will ensure that OCTA is in compliance with M2 NCCP/HCP Plan requirements. Monitoring establishes baseline conditions, identifies threats and trends, measures the effectiveness of conservation and management actions, and provides information to adaptively manage biological resources and improve the health and stewardship of the Preserve. Refer to the M2 NCCP/HCP Plan (Section 7.2.7.4) for an expanded discussion of monitoring guidelines. Modifications to monitoring methods will require consultation with the Wildlife Agencies as necessary, and will be documented in Annual Reports.

Adaptive management provides a strategy to improve future management actions through monitoring to evaluate management effectiveness. Where success criteria are not met, adaptive management provides a structured approach to improve management outcomes. Monitoring and adaptive management on the Preserve will be a cooperative effort between OCTA, the Preserve Manager, Monitoring Biologist and other supporting biologists, external entities conducting research on the Preserve, and the Wildlife Agencies. Refer to the M2 NCCP/HCP Plan (Sections 7.2.7.2 and 7.2.7.3) for an expanded discussion of the adaptive management approach and guidelines. Adaptive management is built into Preserve management through the use of phased monitoring and evaluation to modify management actions based on monitoring results. Adaptive management measures will be coordinated with the Wildlife Agencies for approval prior to implementation.

Management Goals, Objectives, and Implementation Strategies

Goals and objectives guide decision-making and provide a standard for measuring management effectiveness and, ultimately, the biological success of the M2 NCCP/HCP Plan (Atkinson et al. 2004, Lewison and Deutschman 2014). Goals are “broad, concise visionary statements that set the overall direction for monitoring and management, while objectives are concrete, measurable statements that detail how a specific goal can be attained” (Lewison et al. 2011). A single goal may have multiple objectives. Further, each objective may require one or more implementation strategies (management tasks) (Lewison et al. 2011).

Plan goals and objectives applicable to the Preserve are presented in Section 1.4.1, while Preserve-specific goals, objectives, and management tasks are summarized in Table 1-1 and detailed in Sections 3.1 to 3.11. Preserve-level objectives are based on current information (Chapter 2, “Site Description”). Additional refinement of objectives to ensure they meet SMART criteria (see below) should be included in Annual Work Plans, based on site evaluations and monitoring results. SMART criteria (Adamcik et al. 2004, Lewison et al. 2011, SDMMMP 2013, Lewison and Deutschman 2014) are defined as follows.

- **Specific** – objectives will be detailed, clear, concise, and unambiguous.
- **Measurable** – objectives will include criteria for measuring progress.
- **Achievable** – objectives will not be unrealistic to achieve nor below acceptable standards.
- **Results-oriented** – objectives will specify an end result.
- **Time-fixed** – objectives will specify an end-point for being met.

Management Prioritization

All management actions will be identified as either Priority 1 or Priority 2 objectives. Priority designations establish a logical stepwise process and do not necessarily infer differences in importance, as described below. Refer to the M2 NCCP/HCP Plan (Section 7.2.7.3, “Adaptive Management Guidelines”) for additional information on prioritization of management actions.

- **Priority 1 Actions.** These actions identify threats and negative trends that may require management and are, thus, a predecessor to Priority 2 (management) actions. Priority 1 objectives are ongoing and generally accomplished through stewardship monitoring, effectiveness monitoring, and general Preserve management. These actions are funded through the established Preserve management budget.
- **Priority 2 Actions.** These actions identify specific management actions identified through Priority 1 actions. Priority 2 actions will be implemented in consultation with the Wildlife Agencies as necessary, and will be further prioritized based on (1) alignment with Plan goals and objectives, (2) regional context (e.g., value or importance of a Preserve for a given resource), (3) level of threat, (4) expected effectiveness of proposed action (e.g., availability of proven methods to effect change), (5) logical sequencing (e.g., invasive species control may precede restoration), (6) catastrophic events (e.g., wildfire may necessitate a shift in priorities), (7) funding and staffing, and (8) SMARTness of objectives (i.e., well-defined objectives are easier to achieve than poorly defined objectives). In general, Priority 2 actions will be funded by using adaptive management funds, reallocating stewardship monitoring and Preserve management funds, or obtaining outside funding (e.g., grants).

4.1 Biological Monitoring and Management

Biological monitoring and management are critical to protection and long-term viability of biological resources and ecosystem functions on the Preserve, and are guided by all management goals (Table 1-1). Monitoring indicates status, threats, and trends of biological resources, including Covered Species and natural communities, while management provides measures to minimize adverse impacts on these resources. Monitoring and management objectives and management tasks for Covered Species and natural communities are described below. Table 4-1 indicates frequency and methods for monitoring Covered Species on the Preserve, while Table 4-2 indicates required qualifications for monitoring personnel.

Monitoring and management objectives and tasks that influence biological resources occur under other Preserve management elements, as well. These elements are referenced in the following sections, as appropriate.

Pursuant to Chapter 7 of the OCTA NCCP/HCP, OCTA will not be responsible for collecting additional biological monitoring data (outside of their Preserves) for regional assessments but may contribute to such efforts, as appropriate/feasible, through the collection of comparable data. Data comparability will be facilitated through regular interaction with the Wildlife Agencies and Preserve Managers in other NCCP/HCP areas to support the use of similar methods, coordination of survey schedules, and other relevant efforts regarding monitoring issues. OCTA will provide access to Preserves for other entities to collect regional biological monitoring data, as appropriate, and will submit Preserve data to an appropriate data repository, such as the Biogeographic Information and

Observation System (BIOS), California Natural Diversity Database (CNDDDB), or other regional databases.

Table 4-1 provides protocols and a timeline for effectiveness monitoring of biological resources on the Preserve. Protocols may be refined or updated based on new information or to ensure consistency with regional monitoring efforts. OCTA will coordinate regularly with the Wildlife Agencies and Preserve Managers in other NCCP/HCP areas to ensure the most current, established protocols are used. The Preserve Manager and Monitoring Biologist, in consultation with the Wildlife Agencies and other species experts, will review and select the most appropriate monitoring method(s) to address resource-specific management questions. Targeted monitoring will likely require development of an experimental approach and quantitative or semi-quantitative sampling, and will be designed on an as-needed basis.

Table 4-1. Effectiveness Monitoring for Hafen Preserve

Type	Frequency	Protocols/Methods
Vegetation		
Comprehensive	10 Years	Conduct comprehensive vegetation mapping using the classification system from <i>A Manual of California Vegetation</i> , second edition, ^a and <i>Vegetation Classification Manual for Orange County</i> (release pending).
Invasive Species	Annually	Conduct invasive plant surveys along natural conduits for dispersal (trails, creeks and streams, disturbed areas) during general stewardship or biological monitoring, or through volunteer patrols.
Statistical Sampling	4 years	Conduct quantitative vegetation sampling to detect changes in species composition, cover, and structure using a sampling design and data collection protocols developed in conjunction with the Natural Communities Coalition (formerly known as Nature Reserve of Orange County [NROC]). ^b Sampling design will include stratified random sampling that considers habitat of various types and sizes, and includes adequate replication for statistical analyses.
Covered Species		
<i>Plants</i>		
Rare Plant Surveys	3 to 5 years, depending on precipitation conditions	Conduct special-status plant surveys following CNPS and CDFW survey guidelines. ^c In addition to population counts or estimates, collect covariate data on vegetation composition and cover, invasive nonnative plants and other threats, and map the perimeter of the population or suitable habitat. Conduct surveys during the appropriate blooming periods for each target plant species, which will vary depending on rainfall and temperature. Monitor reference populations to determine appropriate survey times (generally between March and July).

Type	Frequency	Protocols/Methods
<i>Reptiles</i>		
Coast horned lizard	4 years	Conduct focused visual encounter surveys for terrestrial reptiles during the peak activity period for the species, following the time-constrained search methodology. ^d Devote enough time to each survey area to allow for complete coverage. Expend equal effort (staff hours) in each search area.
Orangethroat whiptail	4 years	Conduct focused visual encounter surveys for terrestrial reptiles during the peak activity period for the species, following the time-constrained search methodology. ^d Devote enough time to each survey area to allow for complete coverage. Expend equal effort (staff hours) in each search area.
<i>Birds</i>		
Cactus wren	4 years	Because of similar habitat requirements, surveys for cactus wren will be conducted simultaneously with coastal California gnatcatcher surveys, using the same protocols. ^e
Coastal California gnatcatcher	4 years	Conduct two surveys in suitable habitats with at least one week between site visits; conduct surveys in late winter/early spring. Conduct all visits during the morning hours, and survey no more than 100 acres of suitable habitat per visit. With the exception of timing and number of visits, surveys will follow USFWS coastal California gnatcatcher protocol, which includes playing tape vocalizations. ^e
<i>Mammals</i>		
Bobcat	4 years	Set up and monitor wildlife movement cameras for at least six months prior to effectiveness monitoring to document wildlife movement on the Preserve. A qualified wildlife biologist will assess camera results to determine wildlife movement and connectivity.
Mountain lion	4 years	Set up and monitor wildlife movement cameras for at least six months prior to effectiveness monitoring to document wildlife movement on the Preserve. A qualified wildlife biologist will assess camera results to determine wildlife movement and connectivity.
<p>^a Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens 2009. <i>A Manual of California Vegetation</i>, second edition. California Native Plant Society. Sacramento CA.</p> <p>^b Deutschman, D., S. Strahm, D. Bailey, J. Franklin and R. Lewison 2008. <i>Improving Statistical Sampling and Vegetation Monitoring for Open Space in Central Orange County</i>. Prepared for The Nature Reserve of Orange County (NROC).</p> <p>^c California Native Plant Society (CNPS). 2001. <i>CNPS Botanical Survey Guidelines</i>. Sacramento CA. Available: <http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf>. Accessed: August 29 2012.</p> <p>^d Corn, P. S., and R. B. Bury. 1990. <i>Sampling Methods for Terrestrial Amphibians and Reptiles</i>. USDA Forest Service, General and Technical Report PNW-GTR-256, 34 pp.</p> <p>^e USFWS. 1997. <i>Coastal California Gnatcatcher (Poliopitila californica californica) Presence/Absence Survey Guidelines</i>. Report from Carlsbad, California, Field Office, Dated July 28, 1997.</p>		

Table 4-2 defines the skills and experience for qualified biologists to complete effectiveness monitoring. Baseline monitoring will require a biologist with at least three years of experience with the general biological resources of Orange County to identify and evaluate threat to Covered Species and habitats.

Table 4-2. Qualified Biologist Skills and Expertise Requirements

Type	Task	Skills and Expertise
Vegetation		
	Comprehensive Mapping, Invasive Species Mapping, Statistical Sampling	Botanist with at least three years of experience mapping southern California vegetation communities; working knowledge of the classification system used in <i>A Manual of California Vegetation</i> , second edition. ^a and <i>Vegetation Classification Manual for Orange County</i> (release pending).
Covered Species		
<i>Plants</i>		
Rare Plant Surveys	Effectiveness Monitoring	Botanist with experience conducting floristic field surveys; knowledge of plant taxonomy and plant community ecology and classification; familiarity with plants of the area, including special-status and locally significant plants; familiarity with appropriate State and Federal statutes related to plants and plant collecting; and experience analyzing impacts of a project on native plants. ^b
<i>Reptiles</i>		
Coast horned lizard	Effectiveness Monitoring	Biologist with at least two years of independent experience conducting herpetological surveys; should have demonstrated experience in handling coast horned lizard.
Orangethroat whiptail	Effectiveness Monitoring	Biologist with at least two years of independent experience conducting herpetological surveys; should have demonstrated experience in handling orangethroat whiptail.
<i>Birds</i>		
Cactus wren	Effectiveness Monitoring	Trained ornithologist with at least 40 hours of observation in the field of the target species and documented experience locating and monitoring nests of the target species.
Coastal California gnatcatcher	Effectiveness Monitoring	Trained ornithologist with at least 40 hours of observation in the field of the target species and documented experience locating and monitoring nests of the target species; must have a current a USFWS Section 10(a)(1)(A) permit for coastal California Gnatcatcher.
<i>Mammals</i>		
Bobcat	Effectiveness Monitoring	Trained wildlife biologist with at least five years of independent experience evaluating wildlife movement and habitat connectivity.
Mountain lion	Effectiveness Monitoring	Trained wildlife biologist with at least five years of independent experience evaluating wildlife movement and habitat connectivity.

Type	Task	Skills and Expertise
^a	Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens 2009. <i>A Manual of California Vegetation</i> , second edition. California Native Plant Society. Sacramento CA.	
^b	California Native Plant Society (CNPS). 2001. <i>CNPS Botanical Survey Guidelines</i> . Sacramento CA. Available: < http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf > Accessed: August 29 2012.	

4.1.1 Covered Plant Species

Covered Plant Species considered in this section includes intermediate mariposa lily, which has been detected on the Preserve. Southern tarplant and many-stemmed dudleya were determined to have no or marginal suitable habitat on this Preserve and are not expected to occur at the Hafen Preserve. Identified threats include illegal off-road activity and trail use (Appendix B); additional threats may include invasive plant species. Refer to Section 2.3.4 (Table 2-4), Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.1) for additional information on the onsite status, habitat requirements, and threats to these species.

The following preserve-specific management objectives and tasks have been developed to address Species Goal 1 and Species Objective 1.1 from the M2 NCCP/HCP (see Section 1.4.1).

Management Objective: Ensure the long-term viability of Covered Plants by protecting, managing, and enhancing populations and suitable habitat on the Preserve.

Management Task 4.1.1.a: Identify Status, Threats, and Population Trends (Priority 1)

- Utilize baseline surveys to identify and map Covered Plants on the Preserve.
- Conduct effectiveness monitoring every three to five years to determine status and threats to Covered Plants, using survey methodology outlined in Table 4-1. Refine the Covered Species map based on survey results.
- In addition to population counts or estimates, collect covariate data on vegetation composition and cover and invasive plants and other threats. Map the perimeter of the population or suitable habitat.
- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Model (M2 NCCP/HCP, Section 7.2.8.1), as appropriate.

Management Task 4.1.1.b: Identify Anthropogenic Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on Covered Plants from potential disturbance activities. Record incidental observations of Covered Plants.
- Refine Covered Species map, based on monitoring results.

Management Task 4.1.1.c: Maintain Database of Population Size of Covered Plants on Preserve (Priority 1)

- Per requirements outlined in Section 5.6.2.2 of the M2 NCCP/HCP, "Covered Plant Species Policy," the OCTA NCCP/HCP Administrator is responsible for maintaining a ledger-type accounting system to track credits and debits for Covered Plants conservation and impacts. Using the results from the baseline surveys and subsequent surveys as part of general

stewardship and/or effectiveness monitoring, the Preserve Manager will maintain a database of Covered Plant occurrences (locations) and population (number of individuals). Surveys must be completed by a qualified biologist (see Table 4-2) and include appropriate documentation (e.g., completing form for CNDDDB). The Preserve Manager will keep track of the data of each observation and make sure surveys are not double-counting previous observations. Whenever there are updates to this dataset, the Preserve Manager will provide the information to the OCTA NCCP/HCP Administrator, who will provide documentation to the Wildlife Agencies (during submission of the Annual Report) for review and approval to receive additional credits under the Covered Plant Species Policy.

Management Task 4.1.1.d: Protect Covered Plants during Property Maintenance (Priority 1)

- Implement specific management actions where baseline surveys indicate Covered Plant populations are directly or indirectly impacted by anthropogenic (operational) threats. Specific management actions may include (but are not limited to) invasive plant control and trail use for preserve management.
- Within five years of RMP adoption, implement targeted monitoring to assess potential conflicts with Preserve management. Monitoring targets may include (but are not limited to) vegetation cover and composition and invasive species cover. Monitoring may include quantitative methods (e.g., point-intercept, quadrats) and an experimental design (Chapter 3, “Preserve Management”).
- Where impacts are detected, protect Covered Plant populations by fencing, signage, or possibly, trail closures or realignment, as appropriate

Management Task 4.1.1.e: Protect Covered Plants during Fire Suppression Activities (Priority 1)

- Include Covered Plant populations on the ESL map to ensure that impacts are avoided or minimized during fire suppression activities. Update the ESL map based on stewardship or effectiveness monitoring.
- Include strategies to minimize direct impacts on Covered Plants in the FMP.

Management Task 4.1.1.f: Augment Populations (Priority 2)

- Restore/expand Covered Plant populations where monitoring indicates declines due to fire, disturbance, or other factors. Methods may include population augmentation through introduction of propagules (e.g., seed, bulb) collected on site or from a site in proximity, and invasive plant control. Site selection for population expansion should consider suitable habitat parameters (vegetation, soils, topography), as determined through monitoring or focused studies (e.g., soil sampling).
- The Preserve Manager will coordinate with the Monitoring Biologist and Restoration Ecologist to determine feasibility of augmentation and BMPs for implementation.
- Develop a species-specific restoration plan that specifies propagule source, augmentation methods, monitoring methods, and success criteria.
- Implement targeted monitoring to determine success of restoration/expansion efforts. Monitoring may include quantitative methods, an experimental design, and success criteria.
- Implement adaptive management (e.g., remedial measures, alternative introduction strategies) where success criteria are not met.

- Fund restoration efforts through (1) funds allocated for adaptive management, (2) reallocation of existing management priorities as appropriate, and/or (3) funds set aside for Changed Circumstances, if appropriate.

4.1.2 Covered Animal Species

Reptiles

Covered Reptile Species considered in this section include coast horned lizard and orangethroat whiptail, both species have suitable habitat on the Preserve but were not detected during the baseline surveys. These species have similar habitat requirements, threats, and management needs and, thus, are addressed together. Identified threats include mortality and habitat destruction from vehicle use, equestrian activity, and nonnative ant species (coast horned lizard) (Appendix B); additional threats may include invasive plant species. Refer to Section 2.3.4 (Table 2-4), Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.4) for additional information on status, habitat requirements, and threats.

The following preserve-specific management objectives and tasks have been developed to address Species Goal 5 and Species Objective 5.1 and Species Goal 6 and Species Objective 6.1 from the M2 NCCP/HCP (see Section 1.4.1).

Management Objective: Ensure the long-term viability of Covered Reptiles by protecting, managing, and enhancing suitable habitat on the Preserve.

Management Task 4.1.2.1.a: Identify Status, Threats, and Population Trends (Priority 1)

- Utilize baseline surveys to identify and map Covered Reptiles on the Preserve.
- Conduct effectiveness monitoring surveys once every 4 years, using survey methodology outlined in Table 4-1. Develop or refine the Covered Species map based on survey results.
- In addition to population counts or estimates, collect covariate data on vegetation composition and cover and invasive plants and other threats.
- Refer to vegetation mapping and invasive species mapping to inform the assessment of habitat condition for Covered Reptiles.
- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Model (M2 NCCP/HCP Plan, Sections 7.2.8.4), as appropriate.

Management Task 4.1.2.1.b: Identify Anthropogenic Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on Covered Reptile habitat from trail use, illegal off-road vehicle activity, and other potential disturbance activity. Record incidental observations of Covered Reptile Species.
- Refine Covered Species map, based on monitoring results.

Management Task 4.1.2.1.c: Protect Covered Reptiles and Habitat during Property Maintenance Activities (Priority 1)

- Evaluate vegetation management methods along access roads within five years of RMP adoption to determine if modifications are needed to protect Covered Reptiles.
- Evaluate preserve management activities along trails within five years of RMP adoption to determine if modifications are needed to protect Covered Reptiles.
- Implement specific management actions where surveys indicate anthropogenic threats in or adjacent to suitable habitat. Specific management actions may include (but are not limited to) invasive plant and animal control, trail use management, and habitat restoration.
- Where impacts are detected, protect Covered Reptiles and habitat by fencing, signage, or possibly, trail closures or realignment, as appropriate.

Birds

Covered Bird Species considered in this section include cactus wren (detected) and coastal California gnatcatcher (potentially occurring). Because these species have similar habitat requirements, threats, and management needs, they are addressed together in this section. Identified threats include habitat loss, degradation, and fragmentation (Appendix B); additional threats may include altered fire regime, invasive plant and animal species, edge effects, small population size, drought, and pesticides. Refer to Section 2.3.4 (Table 2-3), Appendix B, and the M2 NCCP/HCP Plan (Sections 7.2.8.5 and 7.2.8.6) for additional information on status, habitat requirements, and threats for these species.

Other Covered Bird Species (least Bell's vireo and southwestern willow flycatcher) are not addressed in this RMP because these species were not detected during baseline surveys and it was determined that there is no potential habitat on the Preserve. If these species are observed on the Preserve, it will necessitate development of species-specific management objectives and management tasks; guidance for these additional species, if necessary, is provided in the M2 NCCP/HCP Plan (Section 7.2.8.7).

The following preserve-specific management objectives and tasks have been developed to address Species Goal 8 and Species Objective 8.1 and 8.3, and Species Goal 9 and Species Objective 9.1 and 9.3 from the M2 NCCP/HCP (see Section 1.4.1).

Management Objective: Ensure the long-term viability of Covered Birds by protecting, managing, and enhancing populations and suitable habitat on the Preserve.

Management Task 4.1.2.2.a: Determine Status, Threats and Population Trends (Priority 1)

- Utilize baseline surveys to identify and map Covered Birds and habitat on the Preserve.
- Conduct effectiveness monitoring every four years to determine Covered Bird population status (size, distribution) and threats, using survey methodology outlined in Table 4-1. In addition to population counts, collect covariate data on threats. Refine Covered Species map based on survey results.
- Map and inventory cactus patches on the Preserve within two years of RMP adoption following protocols used by the Natural Communities Coalition on other Orange County preserves.

- Refer to vegetation mapping and invasive species mapping to inform the assessment of coastal sage scrub habitat.
- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Models (M2 NCCP/HCP, Sections 7.2.8.5 and 7.2.8.6), as appropriate.

Management Task 4.1.2.2.b: Identify Anthropogenic Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on coastal sage scrub habitat from trail use and other potential disturbance activity. In addition, record incidental observations of Covered Birds.
- Refine Covered Species map, based on monitoring results.

Management Task 4.1.2.2.c: Protect Covered Birds and Habitat during Property Maintenance Activities (Priority 1)

- Implement specific management actions where surveys indicate anthropogenic threats in or adjacent to suitable habitat or where surveys show a decline in Covered Bird populations or habitat; assess attribute and climatic data for potential causal effects (e.g., type conversion of coastal sage scrub to another vegetation type, surface disturbance). Specific management actions may include (but are not limited to) invasive plant and animal control, trail use management, and habitat restoration.
- Evaluate vegetation management methods along trails used for preserve management within five years of RMP adoption to determine if modifications are needed to protect Covered Birds and habitat.
- Evaluate the need of targeted monitoring to identify significant impacts on bird populations or habitat from invasive animal species (e.g. cowbirds), vegetation management along trails used for preserve management. Monitoring targets may include (but are not limited to) vegetation cover and composition, invasive species cover, bird presence or absence, or nesting success. Monitoring may include quantitative methods and an experimental design.
- Where impacts are detected, protect Covered Birds and habitat by fencing, signage, or, possibly, trail closures or realignment, as appropriate.

Management Task 4.1.2.2.d: Protect Covered Birds and Habitat during Fire Suppression Activities (Priority 1)

- Include Covered Bird locations and cactus patches (once they are mapped) on the ESL map to ensure that impacts are avoided or minimized during fire suppression activities. Update the ESL map based on stewardship or effectiveness monitoring.
- Include strategies to minimize direct impacts on Covered Birds in the Fire Management Plan.

Mammals

Covered Mammal Species considered in this section include bobcat and mountain lion; both species have the potential and are assumed to occur on the Preserve. Because these species have similar habitat requirements, threats, and management needs, they are addressed together in this section. Identified threats include habitat loss and illegal hunting (Appendix B); additional threats may include vehicular mortality, altered fire regime, invasive plant and animal species, pesticides, and

edge effects. Refer to Section 2.3.4 (Table 2-4), Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.8) for additional information on status, habitat requirements, and threats.

The following Preserve-specific management objectives and tasks have been developed to address Species Goal 12 and Species Objective 12.1 and Species Goal 13 and Species Objective 13.1 from the M2 NCCP/HCP (see Section 1.4.1).

Management Objective: Ensure the long-term viability of Covered Mammals by protecting, managing, and enhancing populations and suitable habitat on the Preserve.

Management Task 4.1.2.3.a: Determine Status, Threats, and Population Trends (Priority 1)

- Evaluate the need for ongoing photo monitoring surveys to identify sign of bobcat and mountain lion use on the Preserve.
- Conduct effectiveness monitoring every four years to assess wildlife movement and connectivity, using survey methodology outlined in Table 4-1. Coordinate results with researchers conducting regional wildlife movement assessments (e.g., Dr. Winston Vickers, mountain lion radio-collar tracking) as well as other regional land managers (i.e., Natural Communities Coalition and Irvine Ranch Conservancy) to evaluate the role of the Preserve in facilitating large mammal presence and movement.
- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Models (M2 NCCP/HCP, Section 7.2.8.8), as appropriate.

Management Task 4.1.2.3.b: Identify Anthropogenic Threats (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on natural habitat used by Covered Mammals from trail use, vegetation management, and other potential disturbance activity. In addition, record incidental observations of Covered Mammals.
- Refine Covered Species map, based on monitoring results.

Management Task 4.1.2.3.c: If Warranted, Develop a Fencing Plan that Protects the Preserve While Facilitating Wildlife Movement (Priority 1)

- Inventory and map existing fencing as part of baseline surveys or general stewardship monitoring and identify future fencing needs. Use fencing mapping and signs of wildlife trail use (general stewardship monitoring) to determine if fencing modifications are needed for the Preserve within two years of the adoption of the RMP.
- Ensure that all installed fencing is wildlife friendly (i.e., allows for wildlife movement; e.g., remove bottom strand of exterior fence along key areas of the Preserve that are actively used by wildlife, thereby improving wildlife movement while retaining access control functions). Monitor to ensure that the fencing remains in good condition and is tight.

Management Task 4.1.2.3.d: Protect Covered Mammals from Hunting (Priority 1)

- Implement patrols and enforcement measures within the first year of Preserve management to ensure hunting is not occurring within the Preserve. Hunting is an illegal activity within the Preserve. The Preserve Manager will install appropriate signage that clearly indicates that hunting is not permitted on the Preserve.

- The Preserve Manager will establish a patrol and enforcement schedule to ensure that hunting restrictions are actively enforced within the Preserve. Patrol frequency will depend on the level of unauthorized access on the Preserve.

Management Task 4.1.2.3.e: Protect Covered Mammals from Unauthorized Access or Preserve Management Activities (Priority 1)

- Implement specific management actions where surveys indicate anthropogenic threats in or adjacent to movement corridors or when coordination shows a decline in Covered Mammal presence or movement within the region. Specific management actions may include (but are not limited to) property management (increased enforcement), adjustment to preserve management activities, and habitat restoration.

4.1.3 Natural Communities

Natural communities considered in this section include scrub, chaparral, woodland, and riparian habitats. Threats to these communities are varied and include invasive species, pests and disease, habitat degradation (altered fire regime, drought), public uses (including recreation), erosion, and edge effects. This section provides guidelines for monitoring and managing these communities. Refer to Section 2.3.4, Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.9) for additional information on sensitive natural communities.

The following Preserve-specific management objectives and tasks have been developed to address Natural Communities Goal 1 and Natural Communities Objective (1.1-1.5) and Natural Communities Goal 2 and Natural Communities Objective 2.1 from the M2 NCCP/HCP (see Section 1.4.1).

Management Objective: Ensure the long-term viability of natural communities by protecting, managing, and enhancing these resources on the Preserve.

Management Task 4.1.3.a: Update Vegetation Map (Priority 1)

- Utilize vegetation map developed during baseline surveys (2012) as initial vegetation map for management and monitoring.
- Conduct comprehensive vegetation mapping according to the schedule and methods in Table 4-1 as part of effectiveness monitoring. Refine a vegetation map for the Preserve.
- Compare updated vegetation mapping results with the vegetation baseline or most recent vegetation map to identify vegetation changes, including natural communities in decline. Assess the Preserves for threats to natural communities during vegetation mapping and updates.
- Include vegetation mapping results and management recommendations in the Annual Report; incorporate management recommendations into Annual Work Plans, as appropriate.

Management Task 4.1.3.b: Identify Operational or Public Use Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g. monthly, quarterly) to record and/or track impacts on natural communities from trail use, erosion, invasive species, or unauthorized activities.
- Implement management actions to offset impacts, as appropriate. Where impacts are extensive, develop detailed plans (e.g., restoration, invasive plant eradication, erosion control) prior to implementation, in consultation with the Wildlife Agencies.

Management Task 4.1.3.c: Establish Long-term Monitoring Plots to Identify Vegetation Condition and Trends (Priority 1)

- Supplement vegetation mapping with quantitative data collection to assess vegetation condition and habitat quality for Covered Species. Within two years from the adoption of the RMP, identify vegetation survey locations and implement baseline surveys. Conduct quantitative vegetation monitoring in established plots every four years to detect changes in species composition, cover, and structure (Table 4-1). Conduct monitoring using a sampling design and data collection protocols developed in conjunction with Natural Communities Coalition. Sampling design will include stratified random sampling that considers habitat of various types and sizes, and includes adequate replication for statistical analyses.
- Use sampling results to detect vegetation trends on the Preserve by habitat type, and assess habitat conditions for Covered Species. Assess attribute and climatic data for potential causal effects. Where sampling indicates a decline in habitat quality that can be attributed to anthropogenic threats, identify and implement specific management actions including (but not limited to) vegetation management, invasive species control, habitat restoration, erosion control, trail use management, fire management, and enforcement of policies related to the wildland/urban interface.
- Share data with other regional Preserve Managers to help decipher regional trends. Regional results will inform status and management priorities for natural communities at the Plan level.

Management Task 4.1.3.d: Monitor Nonnative Invasive Species Eradication Efforts and/or Enhancement/Restoration Actions (Priority 1)

- Monitor nonnative invasive species efforts to ensure that success criteria (as specified in the eradication plans) are met (Section 3.2). Additional eradication effort and/or enhancement/restoration actions will be recommended in Annual Reports, as warranted. Eradication and restoration plans will be developed and implemented by a qualified Restoration Ecologist.
- The Restoration Ecologist will be responsible for coordinating with the Preserve Manager or staff members and Restoration Contractor regarding site conditions and required remedial measures. It is anticipated that habitat enhancement/restoration monitoring activities may include monitoring one or more of the following activities:
 - Site preparation
 - Weed control
 - Plant establishment
 - General site conditions
- Specific monitoring activities and frequencies will be identified in site-specific restoration/enhancement plans and Annual Reports (management recommendations) in coordination with the Wildlife Agencies. It is anticipated that monitoring for some activities will occur only in the early phases of implementation, and others will occur throughout the restoration program.
- Implement targeted monitoring to evaluate habitat restoration success. Success criteria may include habitat structure, cover, and composition. Where success criteria are not met, modified or alternative management strategies may be required.

Management Task 4.1.3.e: Control Invasive Pests or Disease (Priority 1)

- The Preserve Manager or Monitoring Biologist will inventory natural communities at risk from invasive pests or disease (e.g., oak woodlands), and will coordinate with the Wildlife Agencies, Monitoring Biologist, and other entities to identify appropriate actions and BMPs to eliminate or reduce the threat from these species (e.g., treatment, removal, and restoration).
- OCTA and the Preserve Manager will work with the Wildlife Agencies to develop and implement an invasive species pest/disease control plan that includes both treatment and post-treatment restoration, if needed. Treatment and restoration will be funded by (1) using funds allocated for adaptive management, (2) reallocating funds from existing management priorities as appropriate, (3) pursuing outside funding sources, or (4) seeking authorization to use Changed Circumstance funding. Habitat restoration will be implemented using current information on best approaches and strategies for restoration.
- Implement targeted monitoring to evaluate the success of pest or disease control actions. Success criteria may include number of trees without disease. Where success criteria are not met, modified or alternative management strategies may be required.

Management Task 4.1.3.f: Restore Natural Communities Impacted by Altered Fire Regime or Climate Change (Priority 2)

- The Preserve Manager will coordinate with the Monitoring Biologist and Wildlife Agencies to determine if habitat restoration is warranted for natural communities that have been altered due to habitat type conversion or prolonged drought to the degree that they can no longer support Covered Species at levels that existed at Preserve acquisition. Where restoration is warranted, implement per guidelines in Section 3.3, "Habitat Restoration", as appropriate.
- The Preserve Manager and OCTA will work with the Wildlife Agencies to conduct restoration efforts where determined necessary and appropriate by (1) using funds allocated for adaptive management, (2) reallocating funds from existing management priorities as appropriate, (3) pursuing outside funding sources, or (4) seeking authorization to use Changed Circumstance funding. Habitat restoration will be implemented using current information on best approaches and strategies for restoration, and restoration will be appropriate for current climatic conditions.

Management Task 4.1.3.g: Protect Natural Communities from Erosion (Priority 1)

- The Preserve Manager will inspect and identify areas vulnerable to erosion within two years of RMP adoption.
- The Preserve Manager and Restoration Contractor will identify and implement management actions to reduce erosion, including erosion control BMPs (e.g., sand bags, swales), closure of trails within and adjacent to creeks and streams, and improvements to flood control features.

Management Task 4.1.3.h: Protect Natural Communities from Edge Effects (Priority 1)

- The Preserve Manager will implement policies to minimize edge effects and encroachment from urban development to the Preserve. These include feral and domestic animal restrictions and control, trespassing, illegal intrusions, illegal off-road vehicle use, runoff, and vegetation management.
- The Preserve Manager will install signage and implement monitoring, patrols, and enforcement within the first year of Preserve management and in perpetuity thereafter to reduce impacts on natural communities at the wildland-urban interface. The frequency of patrols will depend upon the level and type of disturbances in and adjacent to the Preserve.

4.2 Adaptive Management

Adaptive management provides a strategy to improve future management actions through monitoring to evaluate management effectiveness. Where success criteria are not met, adaptive management provides a structured approach to improve management outcomes. Monitoring and adaptive management on the Preserve will be a cooperative effort between OCTA, the Preserve Manager, Monitoring Biologist and other supporting biologists, external entities conducting research on the Preserve, and the Wildlife Agencies. Refer to the M2 NCCP/HCP Plan (Sections 7.2.7.2 and 7.2.7.3) for an expanded discussion of the adaptive management approach and guidelines. Adaptive management is built into Preserve management through the use of phased monitoring and evaluation to modify management actions based on monitoring results.

Adaptive management deals with reducing uncertainty and improving management effectiveness through iterative monitoring and evaluation. Some of the key issues for a focused adaptive management approach to address uncertainties of preserve management on the Hafen Preserve include the following.

- **Vegetation Control around Cactus Patches.** Research current approaches for vegetation management around cactus patches to determine if this is needed at the Hafen Preserve to protect and/or improve cactus wren populations.

The accumulation of understanding and subsequent adaptation of a management strategy depends on feeding information obtained from monitoring results back into the decision-making process. The link between the technical and decision-making steps requires regular interaction and an exchange of information between the technical staff and decision-makers. This will be accomplished by bi-annual meetings involving the Preserve Managers from each of the OCTA M2 Preserves, Monitoring Biologists, NCCP/HCP Administrator, and the Wildlife Agencies where both policy and technical expertise can be integrated into revising goals and objectives, refining conceptual models, adjusting management and/or monitoring activities, or allocating funding. Meetings should be timed such that any new information discussed assists with the planning of upcoming seasonal work (i.e., invasive species control, vegetation management, or biological surveys). Timing some meetings to coordinate with other regional conservation planning meetings is encouraged to maximize communication and cooperation in the region.

4.3 Annual Progress Reports

The M2 NCCP/HCP requires that Annual Progress Reports documenting the status of the EMP open space properties be submitted to the NCCP/HCP Administrator for incorporation into the M2 NCCP/HCP annual report each year. The Preserve Manager will prepare an Annual Progress Report that summarizes the results of research and monitoring activities, provides recommendations for future preserve management activities for the Preserve, and discusses anticipated activities for the upcoming year. It is anticipated that the Annual Progress Report will be completed by the end of February each year. This report will be shared with the Wildlife Agencies and/or will be available upon request. Status updates and anticipated activities for the upcoming year will be provided for one or more of the following, depending on specific activities performed each year.

- Monitoring of preserved biological resources, including natural communities and Covered Species.

- Fire management and control, access, general site maintenance, and encroachment issues.
- Habitat restoration and enhancement.
- Education and outreach.

Depending on the results of monitoring activities, recommendations for adjustments to the management of resources and activities will be summarized in the Annual Progress Reports. Any adjustments to the management of resources and activities will be identified in coordination with supporting biologists, and Wildlife Agencies. Depending on the results of ongoing management and evaluations, adjustments to annual management activities may include, but are not limited to, the following:

- Modifications of existing, or the addition of new, monitoring and survey activities.
- Site-specific habitat restoration and enhancement activities, including restoration of disturbed areas and control of specific invasive plant species.
- Control of nonnative animal species.
- Specific fire-management activities, including site-specific fuel-modification efforts, staging areas, and access.
- As-needed site-maintenance activities, including site-specific erosion control, and debris clean-up, among other activities.
- Modification of educational and outreach activities, including new signage, interpretive handout materials, and additional community coordination and outreach efforts.

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5.1 Financial Requirements

As described and outlined in this RMP, OCTA will be required to fund the following types of management and monitoring activities on Hafen.

- **Start-up Expenditures.** These will include preparation of Invasive Plant Species Treatment Plan, preparation of a Fire Management Plan, and additional installation and/or removal of fencing for unauthorized access control and wildlife movement.
- **Preserve Management.** This includes all general Preserve management activities such as access control, enforcement, fencing, maintenance, signage, public outreach, vegetation management, invasive species control, erosion control, and fire management. In addition, this includes periodic and ongoing biological assessments, a comprehensive annual assessment to identify major threats, Preserve-specific biological monitoring above and beyond effectiveness biological monitoring, Preserve-level data management, and Preserve-level annual reporting.
- **Adaptive Management.** The Preserve Manager will be expected to manage, and be responsible for managing, the Hafen Preserve following the principles and procedures of adaptive management. A separate budget line-item will be set aside to fund additional and specific adaptive management actions that are above and beyond the general adaptive management steps undertaken by the Preserve Manager. The adaptive management funding is estimated to be 5 percent of the Preserve Management budget.
- **Effectiveness Biological Monitoring.** Comprehensive biological monitoring (following established protocols) will occur every four years for Covered Species and every 10 years for comprehensive vegetation mapping.
- **Changed Circumstances.** Events that meet the triggers of a Changed Circumstance as set forth in the M2 NCCP/HCP will be managed as they arise.

OCTA has developed initial estimates of the financial requirements for the long-term Preserve management and monitoring based on an accumulated experience with the costs and responsibilities associated with OCTA's interim management role for the Hafen Preserve. Using these initial estimates, OCTA has developed an initial estimate of the endowment funding requirements. The final endowment funding requirements will be based on a Property Analysis Report (PAR) or PAR-like analysis that will be completed by OCTA. This analysis will itemize and define the long-term obligations using the Preserve-specific information detailed in this RMP. It is expected that additional years of interim habitat management would provide a database and sounder basis for estimating the cost of long-term management costs. The final endowment funding level will be based upon actual negotiated long-term management contracts for the Preserve. OCTA will coordinate with the Wildlife Agencies, as necessary, for the review and approval for the PAR analysis and determination of the permanent endowment funding requirements.

5.2 Funding Sources

OCTA will establish and manage a permanent, non-wasting endowment to provide funding for the long-term commitments of Preserve management and monitoring. There will be an endowment that will cover the annual expenses for all Preserve management and monitoring, and program management. OCTA will, most likely, contract with local management entities and biological firms for Preserve management and biological monitoring services.

OCTA will accumulate funding for the endowment using the ongoing revenue generated for the M2 EMP. OCTA estimates it will take approximately 10 years, but no longer than 15 years, from the signing of the Implementing Agreement (IA) to accumulate sufficient funding for the endowment using unappropriated funds from the annual revenue stream.

Once OCTA has established a permanent, non-wasting endowment and the endowment has been reviewed and approved by the Wildlife Agencies, the endowment will be deemed as adequate funding to carry out the obligations under the Plan, and the Wildlife Agencies will not require additional funding from OCTA.

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Appendix A

**Checklist and Annual Schedule of Ongoing Preserve
Management and Biological Monitoring Actions**

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Appendix A – Checklist for Ongoing Preserve Management and Biological Monitoring Actions

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
<i>Preserve Management (Chapter 3)</i>						
Public Access (Section 3.1)	Install, monitor, and maintain gates, signage, and obstructions, as appropriate, to control unauthorized access.	Part of monthly visits		<input type="radio"/>		
	Monitor and control permitted activities and unauthorized activities (e.g., use or creation of unauthorized trails).	Part of monthly visits		<input type="radio"/>		
		Ad hoc	<input type="radio"/>			
Invasive Species Control Plan (Section 3.2)	Prior to implementation of the invasive plant treatment plan, the Preserve Manager will map priority invasive species during general stewardship monitoring efforts.	Part of monthly visits		<input type="radio"/>		
	Evaluate the success of invasive plant control efforts for five years following implementation of invasive species control treatment plan or until eradication is maintained for one year without follow-up control activities.	Per invasive species control treatment plan				<input type="radio"/>
Vegetation Management (Section 3.4)	Pruning, cutting, or clearing of native vegetation will generally be avoided except for possible maintenance along trails and installation of erosion control measures, if necessary.	As needed, but following nesting bird policy and seasonal restrictions	<input type="radio"/>			
Nonnative Animal Species Management (Section 3.6)	The Preserve Manager will work towards controlling the spread of invasive ant species.	Part of monthly visits		<input type="radio"/>		
	The Preserve Manager will monitor and address other potential infestations of invasive insects and other pathogens that can threaten native habitat.	Part of monthly visits		<input type="radio"/>		
	Implement and enforce feral and domestic animal restrictions and control.	Part of monthly visits		<input type="radio"/>		

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
Property Management (Section 3.7)	Implement routine and ongoing property management activities to ensure that the Preserve is maintained in good condition.	Ad hoc and part of monthly visits	<input type="radio"/>	<input type="radio"/>		
Land Uses within the Preserve (Section 3.8)	Conduct monitoring of the Preserve to ensure prohibited uses are not occurring with the Preserve.	Part of monthly visits and enforcement patrols	<input type="radio"/>	<input type="radio"/>		
Lands Uses Adjacent to the Preserve (Section 3.9)	The Preserve Manager will monitor land uses adjacent to the Preserve to identify situations in which edge effects can negatively affect biological resources within the Preserve.	Part of monthly visits		<input type="radio"/>		
	Prior to implementation of the public awareness program, the Preserve Manager will regularly monitor the interface of the Preserve with urban/residential areas. The Preserve Manager will identify situations in which adjacent land uses create negative effects on biological resources and maintain a dialogue with adjacent landowners to discuss and address edge effect issues.	Ad hoc and part of monthly visits	<input type="radio"/>	<input type="radio"/>		
	To the extent practicable, the Preserve Manager and OCTA will coordinate with local land use authorities (e.g., for the CEQA public review process) to ensure that new developments adjacent to the Preserve adhere to the following adjacency guidelines.	Ad hoc	<input type="radio"/>			
Management of Cultural Resources (Section 3.10)	Manage the Preserve in a manner that does not impact sensitive archeological resources.	Ad hoc	<input type="radio"/>			
Public Outreach and Education (Section 3.11)	Hold public meetings.	Annual	<input type="radio"/>			
	Provide educational and interpretative materials and maintain website.	Ongoing	<input type="radio"/>			
	Implement outreach.	Ongoing	<input type="radio"/>			

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
<i>Biological Monitoring and Management (Chapter 4)</i>						
Covered Plant Species (Section 4.1.1)	Conduct periodic monitoring and assessment of Covered Plant Species known populations and search for new occurrences.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Plant Species.	Every 3-5 years, depending on rainfall			○	
	Update and maintain database of population size of Covered Plants on Preserve.	Annual	○			
Covered Reptile Species (Section 4.1.2)	Conduct periodic monitoring and assessment of Covered Reptile Species and their habitat.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Reptile Species.	Every 4 years			○	
	Update and maintain database of cactus patches and cactus wren nest.	Annual	○	○		
Covered Bird Species (Section 4.1.2)	Conduct periodic monitoring and assessment of Covered Reptile Species and their habitat.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Bird Species.	Every 4 years			○	
	Conduct periodic monitoring and assessment of Covered Mammal Species and their habitat.	Part of monthly visits		○		
Covered Mammal Species (Section 4.1.2)	Conduct protocols surveys of Covered Mammal Species.	Every 4 years			○	
	Conduct comprehensive update of vegetation map.	Every 10 years			○	
Natural Communities (Section 4.1.3)	Monitor vegetation plots/transects to identify vegetation condition and trends.	Every 4 years			○	

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
	Monitor threats to natural communities from non-native species, invasive pests or disease, unauthorized public access, erosion, and/or edge effects.	Part of monthly visits		○		
Adaptive Management (Section 4.2)	Evaluate vegetation growth surrounding cactus patches to determine if vegetation control is warranted.	Annual				○
Annual Progress Reports (Section 4.3)	The Preserve Manager will prepare an Annual Progress Report that summarizes the results of research and monitoring activities, provides recommendations for future preserve management activities for the Preserve, and discusses anticipated activities for the upcoming year.	Annual	○			

Table A-2 – Annual Schedule for Preserve Management and Biological Monitoring Actions

Action	Frequency / Schedule	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Adopt RMP						X																								
Preserve Management																														
Prepare Invasive Species Control Plan	Within two years of RMP adoption							X																						
Implement and monitor success of invasive species control actions	Five years after invasive species control plan								X	X	X	X	X																	
Prepare Fire Management Plan	Within two years of RMP adoption							X																						
Effectiveness Monitoring																														
- Rare Plants	Three to five years	B								X				X				X				X				X				X
- Reptiles	Four years	B								X				X				X				X				X				X
- Birds	Four years	B				X				X				X				X				X				X				X
- Mammals	Four years	B								X				X				X				X				X				X
- Natural Communities Quantitative	Four years					B				X				X				X				X				X				X
- Natural Communities Comprehensive ¹	10 years	B										X										X								
Targeted Monitoring																														
Evaluate vegetation growth surrounding cactus patches to determine if vegetation management is warranted	Every few years after RMP adoption						X		X																					

B = Baseline Survey

¹ Methodologies to complete quantitative monitoring of natural communities are currently being reviewed with the other regional conservation entities and the Wildlife Agencies. Pilots programs have been initiated at other OCTA Preserves. This monitoring will initiated at the Hayashi Preserve once methodologies are finalized.

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Appendix B

**Baseline Biological Surveys Technical Report for the
South County Properties. Measure M2 Freeway
Environmental Mitigation Program Acquisition
Properties Evaluation in Orange County, California**

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BASELINE BIOLOGICAL SURVEYS TECHNICAL REPORT FOR THE SOUTH COUNTY PROPERTIES

MEASURE M2 FREEWAY ENVIRONMENTAL MITIGATION PROGRAM ACQUISITION PROPERTIES EVALUATION IN ORANGE COUNTY, CALIFORNIA

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December 2013

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ATTACHMENTS

- A Plant and Wildlife Compendia

1.0 INTRODUCTION

This Biological Technical Report has been prepared to support California Environmental Quality Act (CEQA) documentation and resource management planning for the Measure M2 Freeway Environmental Mitigation Program (EMP) Acquisition Properties Evaluation Project. The EMP project includes five separate Orange County Transportation Authority (OCTA) acquisition properties (Hayashi, Ferber Ranch, O'Neill Oaks, Hafen, and Saddle Creek South), located in unincorporated Orange County, California (Exhibit 1). Due to the regional separation between the Hayashi property (located in northeast Orange County) and the remaining four properties (located in southeast Orange County), this report only covers the four properties in southeast Orange County (hereinafter collectively referred to as the "south county properties"). A separate Biological Technical Report has been prepared for the Hayashi property.

This information has been reported in accordance with accepted scientific and technical standards that are consistent with the requirements of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW¹).

1.1 BACKGROUND

1.1.1 Project Description

In 2006, Orange County voters approved the renewal of Measure M, effectively extending the half-cent sales tax in the County from April 2011 to March 2041. Renewed Measure M (or Measure M2) will continue to provide funding for transportation projects and programs in the County, including select freeway and roadway improvements, transit programs, and two environmental programs.

OCTA's M2 Freeway EMP provides comprehensive mitigation to offset the environmental impacts of the 13 Measure M2-funded freeway projects. The EMP is spearheaded by the Environmental Oversight Committee (EOC), which is made up of OCTA Board members and representatives from the California Department of Transportation (Caltrans), resource agencies, environmental groups, and the public.


Instead of mitigating the natural resource impacts of Measure M2 freeway projects on a project-by-project basis, the EMP presents a comprehensive mitigation approach that not only replaces habitat, but also provides the opportunity to improve the overall functions and value of sensitive biological resources throughout Orange County. Working collaboratively with the resource and regulatory agencies, OCTA ultimately decided that creation of a Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP) and programmatic wetland permitting would best serve as the main implementation tools for the EMP.

As one of the key components of the conservation strategy for the NCCP/HCP and wetlands permitting, OCTA has undertaken a systematic approach to identifying and acquiring habitat preserves to meet the goals and objectives of the NCCP/HCP and wetland mitigation programs. A formal conservation assessment was completed by Conservation Biology Institute (CBI) for Orange County that resulted in the identification of Priority Conservation Areas (PCA), which included candidate parcels and properties that could be considered for habitat and wildlife conservation purposes. OCTA solicited willing sellers and evaluated each property using standardized criteria and a prioritization process to rank properties for purchase. Properties for

¹ The California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW) effective January 1, 2013.



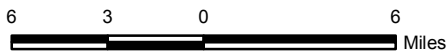
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 Project Boundary

Regional Location

Exhibit 1

Measure M2 Acquisition Properties/Ferber Ranch, O'Neill Oaks, Hafen, and Saddle Creek South Properties



acquisition were selected based on conservation values, policy considerations, mitigation credits, mitigation plan review, and adoption and real estate value/economics.

The south county properties were selected and acquired in 2011. Baseline biological surveys were completed in 2012 with the following goals:

- A general biological assessment of the Preserve was completed to establish the baseline biological value of the property and identify any biological threats that have the potential to reduce the long-term biological value. In addition, information on the overall condition of the properties will guide the development of a site-specific Resource Management Plan (RMP).
- Comprehensive surveys of vegetation types and jurisdictional resources were completed to provide detailed knowledge of the natural habitat and a quantification of habitat type credits within the Preserve.
- Focused surveys for OCTA M2 NCCP/HCP Covered Species and their habitats were completed to establish a baseline of the Preserve status and conditions. Results of future biological monitoring will be compared to the baseline results to evaluate habitat and Covered Species trends.

1.2 PROJECT LOCATION AND PHYSICAL ENVIRONMENTAL SETTING

1.2.1 Property Locations and Physical Conditions

The south county properties are generally located in the community of Trabuco Canyon in unincorporated Orange County, California. All four properties are located on the U.S. Geological Survey's (USGS') Santiago Peak 7.5-minute topographic quadrangle (Exhibit 2). Ephemeral drainages are present on each property and may provide marginally suitable habitat for species such as western spadefoot (*Spea hammondi*) and Coast Range newt (*Taricha torosa*). Various soils on the properties may provide suitable habitat for different special status plant species. Soils on alluvial fans and floodplains may provide suitable habitat for species such as white rabbit-tobacco; granitic soils may provide habitat for species such as felt-leaved monardella; and alkaline soils may provide suitable habitat for species such as Coulter's saltbush and chaparral ragwort.

Ferber Ranch

The approximate 399-acre Ferber Ranch property extends to the north and east of the terminus of Trabuco Oaks Drive; Rose Canyon Road crosses the middle of the property. The southern boundary of the property is approximately one mile north of Trabuco Canyon Road. A small parcel at the northwestern corner of the property is separated from the main body of the property by Hickey Spur. The property is located at Township 6 South, Range 7 West, Section 3. Elevation on this property ranges from approximately 1,110 to 1,800 feet above mean sea level (msl). Several ephemeral drainages that flow in a southerly direction are located on this property. Three of these—Hickey Creek, Rose Canyon Creek, and an unnamed stream—appear on the USGS quadrangle as blue line streams. Soil types mapped on Ferber Ranch consist of Alo clay (15 to 30 percent slopes; 30 to 50 percent slopes), Alo variant clay (15 to 30 percent slopes), Blasingame stony loam (9 to 30 percent slopes), Bosanko clay (15 to 30 percent slopes), Calleguas clay loam (50 to 75 percent slopes, eroded), Capistrano sandy loam (2 to 9 percent slopes; 9 to 15 percent slopes), Cieneba sandy loam (30 to 75 percent slopes, eroded), Exchequer-rock outcrop complex (30 to 75 percent slopes), Modjeska gravelly loam (15 to 30 percent slopes), Myford sandy loam (2 to 9 percent slopes; 9 to 15 percent slopes; 15 to 30 percent slopes), riverwash, rock outcrop-Cieneba complex (30 to 75 percent

slopes), Soboba cobbly loamy sand (0 to 15 percent slopes), Soper loam (30 to 50 percent slopes), and Yorba gravelly sandy loam (9 to 15 percent slopes) (Exhibit 3).

O'Neill Oaks

The approximate 119-acre O'Neill Oaks property occurs north of the point where Live Oak Canyon Road becomes Trabuco Canyon Road. This property is located at Township 6 South, Range 7 West, Section 10. Elevation on this property ranges from approximately 950 to 1,250 feet above msl. Three ephemeral drainages that flow in a westerly direction are located in the western half of the site and several small, southeast-flowing ephemeral drainages occur along the southeastern boundary of the site. Soil types mapped on the O'Neill Oaks property consist of Botella clay loam (9 to 15 percent slopes), Cieneba sandy loam (30 to 75 percent slopes, eroded), Soboba cobbly loamy sand (0 to 15 percent slopes), and Yorba gravelly sandy loam (15 to 30 percent slopes) (Exhibit 3).

Hafen

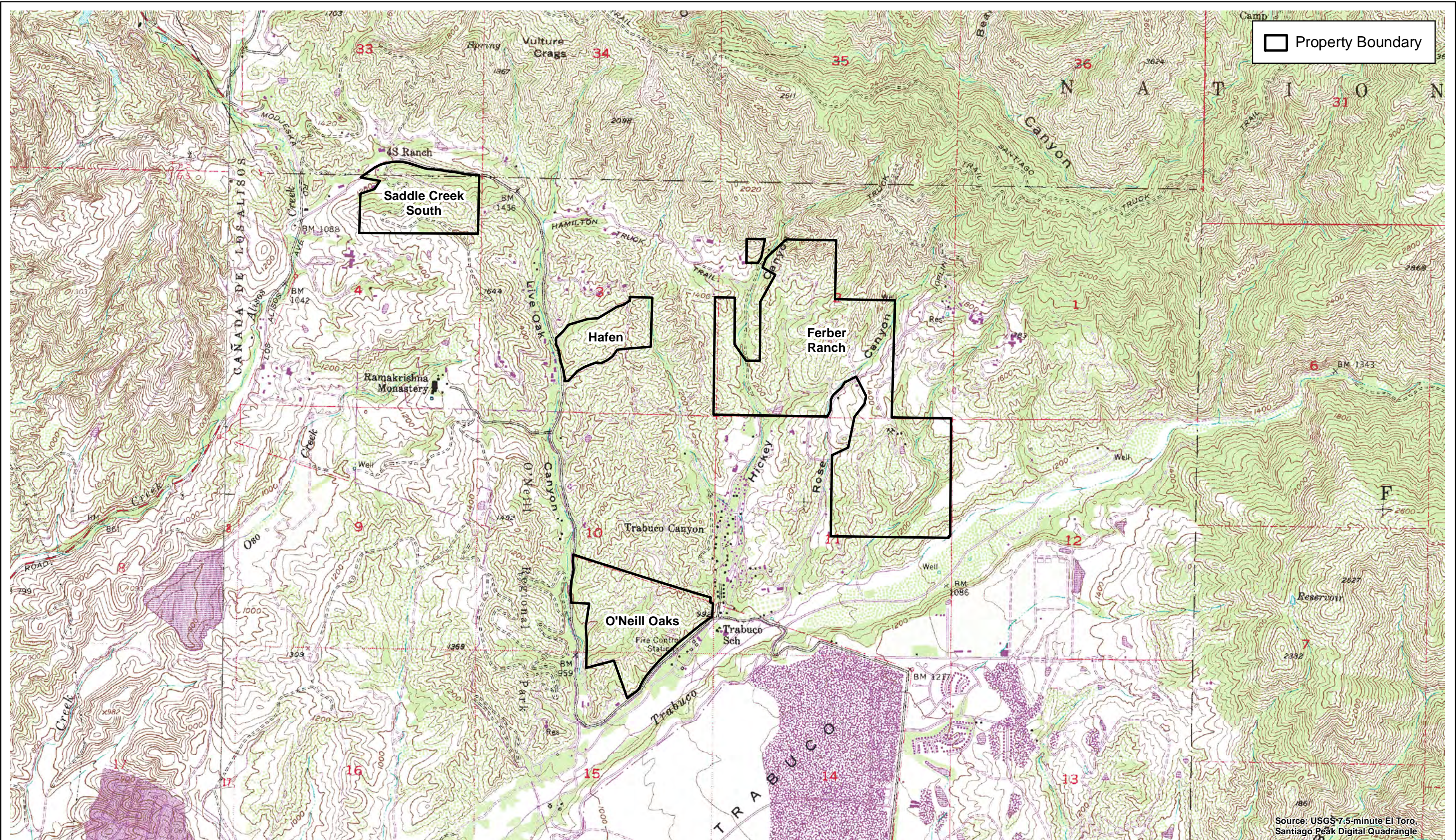
The approximate 48-acre Hafen property is immediately adjacent to the east side of Live Oak Canyon Road, north of its intersection with Shelter Canyon Road. This property is located at Township 6 South, Range 7 West, Section 3. Elevation on this property ranges from approximately 1,190 to 1,450 feet above msl. Two ephemeral drainages that flow in a westerly direction are located in the western half of this property. A larger ephemeral drainage is located along the eastern boundary of the property and appears on the USGS quadrangle as a blueline stream; several small ephemeral drainages flow into this drainage from within the property limits. Soil types mapped on the Hafen property consist of Botella clay loam (9 to 15 percent slopes), Cieneba sandy loam (30 to 75 percent slopes, eroded), and Soboba cobbly loamy sand (0 to 15 percent slopes) (Exhibit 3).

Saddle Creek South

The approximate 84-acre Saddle Creek South property is immediately adjacent to the south side of Live Oak Canyon Road, approximately 0.3 mile from its intersection with El Toro Road/Santiago Canyon Road. This property is located at Township 6 South, Range 7 West, Section 4. Elevation on this property ranges from approximately 1,160 to 1,600 feet above msl. Two principal ephemeral drainages that flow in a westerly direction occur on the property: one adjacent to Live Oak Canyon Road and the other in the center of the property. Soil types mapped on the Saddle Creek South property consist of Alo clay (15 to 30 percent slopes; 30 to 50 percent slopes), Balcom clay loam (15 to 30 percent slopes; 30 to 50 percent slopes), Botella clay loam (9 to 15 percent slopes), Calleguas clay loam (50 to 75 percent slopes, eroded), Cieneba sandy loam (30 to 75 percent slopes, eroded), and Sorrento loam (2 to 9 percent slopes) (Exhibit 3).

1.2.2 Regional Environmental Setting

The south county properties are located in the cismontane foothills of the Santa Ana Mountains. They are located between the large blocks of undeveloped land of O'Neill Regional Park to the west and the Cleveland National Forest to the east (Exhibit 4). This area is part of a 31-mile swath of continuous wildlife habitat that spans from the National Forest in the south to the west end of the Puente Hills, above Whittier Narrows, in the north. This represents the "last major natural open space resource connecting Los Angeles, Orange, San Bernardino, and Riverside Counties" (Los Angeles County et al. 2003). Specifically, the properties occur near the intersection of Trabuco Canyon with Live Oak Canyon, Hickey Canyon, and Rose Canyon. These canyons are part of the San Juan Hydrologic Unit of the Aliso-San Onofre Watershed. Drainages on Saddle Creek South property convey flow into Aliso Creek, which discharges into



Local Vicinity

Measure M2 Acquisition Properties/Ferber Ranch, O'Neill Oaks, Hafen, and Saddle Creek South Properties

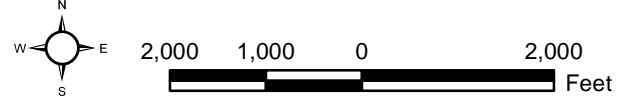
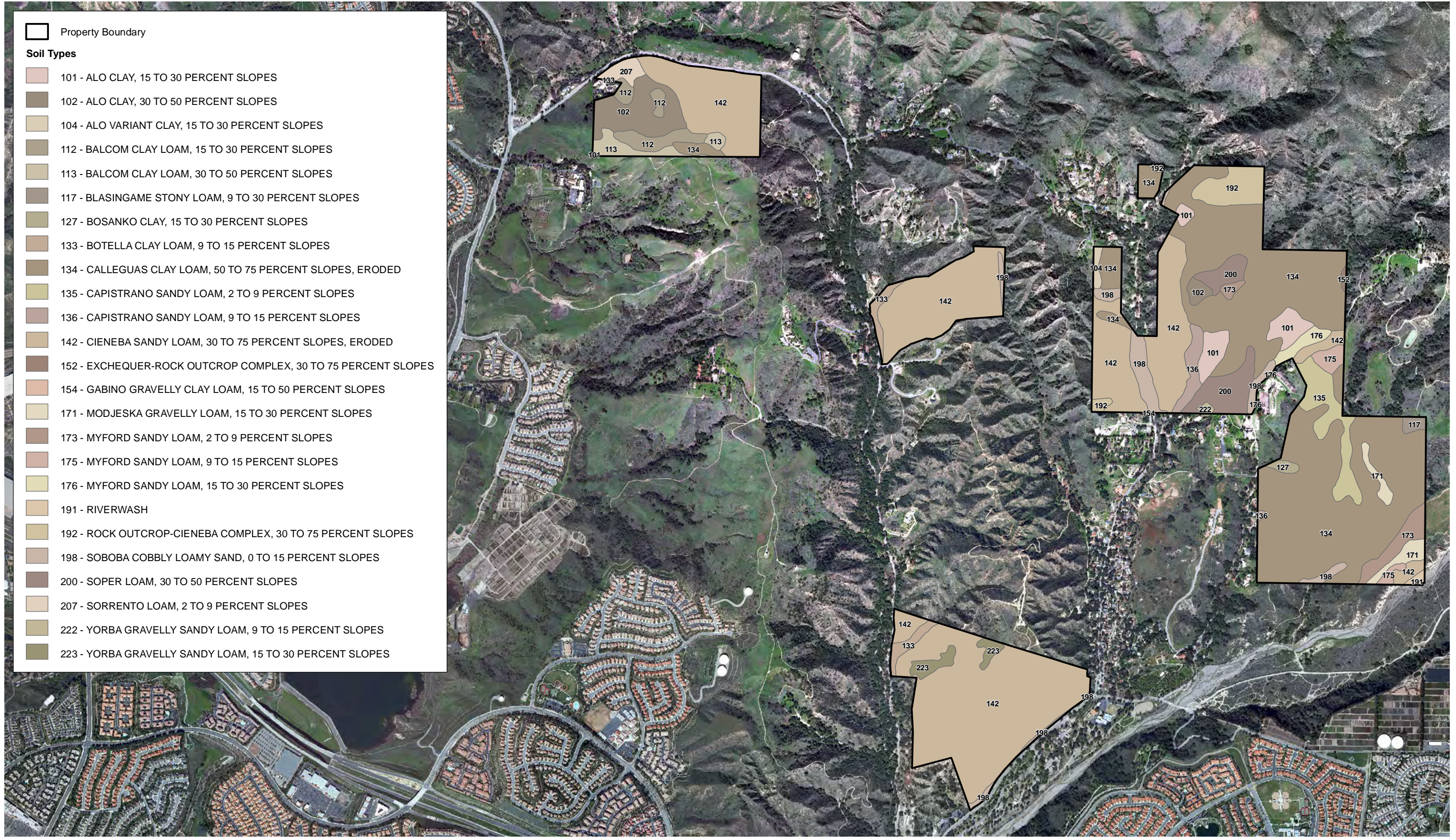


Exhibit 2



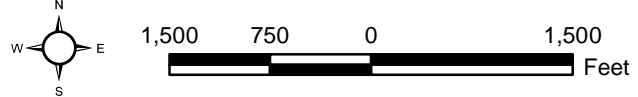
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- Property Boundary
- Soil Types**
- 101 - ALO CLAY, 15 TO 30 PERCENT SLOPES
 - 102 - ALO CLAY, 30 TO 50 PERCENT SLOPES
 - 104 - ALO VARIANT CLAY, 15 TO 30 PERCENT SLOPES
 - 112 - BALCOM CLAY LOAM, 15 TO 30 PERCENT SLOPES
 - 113 - BALCOM CLAY LOAM, 30 TO 50 PERCENT SLOPES
 - 117 - BLASINGAME STONY LOAM, 9 TO 30 PERCENT SLOPES
 - 127 - BOSANKO CLAY, 15 TO 30 PERCENT SLOPES
 - 133 - BOTELLA CLAY LOAM, 9 TO 15 PERCENT SLOPES
 - 134 - CALLEGUAS CLAY LOAM, 50 TO 75 PERCENT SLOPES, ERODED
 - 135 - CAPISTRANO SANDY LOAM, 2 TO 9 PERCENT SLOPES
 - 136 - CAPISTRANO SANDY LOAM, 9 TO 15 PERCENT SLOPES
 - 142 - CIENEBA SANDY LOAM, 30 TO 75 PERCENT SLOPES, ERODED
 - 152 - EXCHEQUER-ROCK OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
 - 154 - GABINO GRAVELLY CLAY LOAM, 15 TO 50 PERCENT SLOPES
 - 171 - MODJESKA GRAVELLY LOAM, 15 TO 30 PERCENT SLOPES
 - 173 - MYFORD SANDY LOAM, 2 TO 9 PERCENT SLOPES
 - 175 - MYFORD SANDY LOAM, 9 TO 15 PERCENT SLOPES
 - 176 - MYFORD SANDY LOAM, 15 TO 30 PERCENT SLOPES
 - 191 - RIVERWASH
 - 192 - ROCK OUTCROP-CIENEBA COMPLEX, 30 TO 75 PERCENT SLOPES
 - 198 - SOBOBA COBBLY LOAMY SAND, 0 TO 15 PERCENT SLOPES
 - 200 - SOPER LOAM, 30 TO 50 PERCENT SLOPES
 - 207 - SORRENTO LOAM, 2 TO 9 PERCENT SLOPES
 - 222 - YORBA GRAVELLY SANDY LOAM, 9 TO 15 PERCENT SLOPES
 - 223 - YORBA GRAVELLY SANDY LOAM, 15 TO 30 PERCENT SLOPES

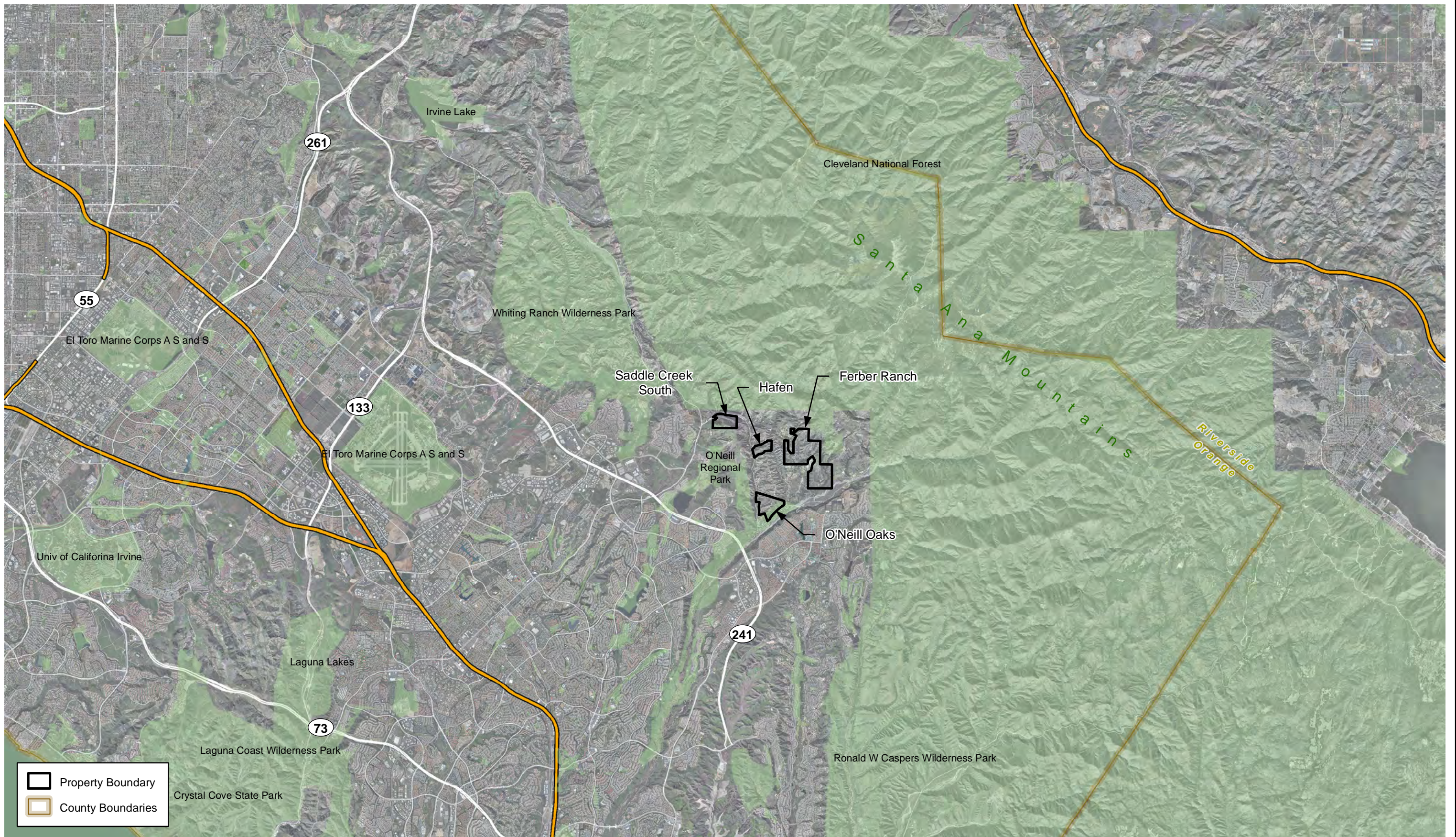


Soil Types

Measure M2 Acquisition Properties/Ferber Ranch, O'Neill Oaks, Hafen, and Saddle Creek South Properties

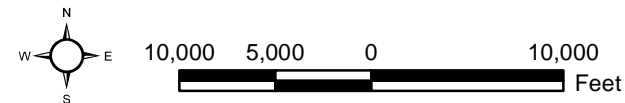


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Regional Environmental Setting

Measure M2 Acquisition Properties/Ferber Ranch, O'Neill Oaks, Hafen, and Saddle Creek South Properties



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the Pacific Ocean in the City of Laguna Beach approximately 14 miles away. Drainages on the Hafen, O'Neill Oaks and Ferber Ranch properties convey flow either directly into Trabuco Creek or first into Live Oak Canyon Creek; Trabuco Creek joins San Juan Creek approximately 12 miles away, which discharges into the Pacific Ocean in the City of Dana Point. A grant from the Wildlife Conservation Board (WCB), which provides funding for watershed-wide habitat enhancement, may be available.

The properties are all within the Foothill/Trabuco Specific Plan area. The purpose of the Foothill/Trabuco Specific Plan was to “set forth goals, policies, land use district regulations, development guidelines, and implementation programs in order to preserve the area’s rural character and to guide future development in the Foothill/Trabuco area” (Orange County 1991). The Specific Plan identifies significant regional resources, such as wildlife corridors, oak woodlands, and streambeds in the planning area. Multiple designated wildlife corridors cross the Ferber Ranch property and a wildlife corridor, located along Live Oak Canyon Road, runs along the western edge of the O'Neill Oaks and Hafen properties. All of the properties contain designated oak woodlands. Designated streambeds cross the Ferber Ranch property and run along the western edge of the O'Neill Oaks and Hafen properties.

1.2.3 Fire History

There are various hypotheses regarding the fire history of Southern California, what constitutes a “natural” fire regime, and the role of fire for chaparral plant species. Traditionally, the fire season in Southern California is from May through September (OCFA 2007). In the past, fires were started by lightning and typically moved down slopes due to falling brands and coals. According to one school of thought, fires only occasionally formed the hot runs on steep slopes that are typical of today’s fires and large, intense fires were uncommon (Howard 1992). This fire regime resulted in a mosaic of numerous small burns. New fires were limited by recently burned regions with very little fuel; dead wood and other fuels could not accumulate for long. However, an opposing hypothesis is that large, high-intensity chaparral fires were regular occurrences in the 19th century, often driven by severe weather that involved high temperatures, low humidity, and high winds (Keeley and Zedler 2009).

Mediterranean shrub communities, including those types found on the properties, are resilient to infrequent wildfires and historically burned at a frequency of every 30 to 150 years (Halsey 2005). Many plant species associated with chaparral and scrub communities exhibit characteristics that constitute adaptations to fire. A new fire will then typically burn hot and high into the canopy, killing much of the aboveground biomass. These canopy fires facilitate seed establishment by removing shrub cover and eliminating competitors. In the first few years after a fire, herbs and herbaceous shrubs—such as deerweed (*Acmispon glaber* [*Lotus scoparius*]), lupines (*Lupinus* spp.), paintbrushes (*Castilleja* spp.), and phacelias (*Phacelia* spp.)—are abundant. Because chaparral fires burn nitrogenous compounds in plant tissues and detritus, there is a large loss of nitrogen from the ecosystem. This allows species equipped with nitrogen-fixing bacteria to grow quickly after a fire.

While herbaceous species are establishing, the previously dominant chaparral species are also returning. Many chaparral species rely on fire to release and germinate seeds. Others resprout from roots or buds at the base of the stem. As the shrub canopy closes, whether due to resprouting of individuals burned by the fire or due to seedling growth, these herbaceous species decrease in abundance.

Fire is also a natural element of oak ecosystems and a decreasing fire frequency tends to favor development of oak woodland over scrub or chaparral. Coast live oak is especially fire resistant; trees can survive and resprout even after severe burning due to food reserves stored in the extensive root system (Steinberg 2002). Adaptations to fire include evergreen leaves, thick bark,

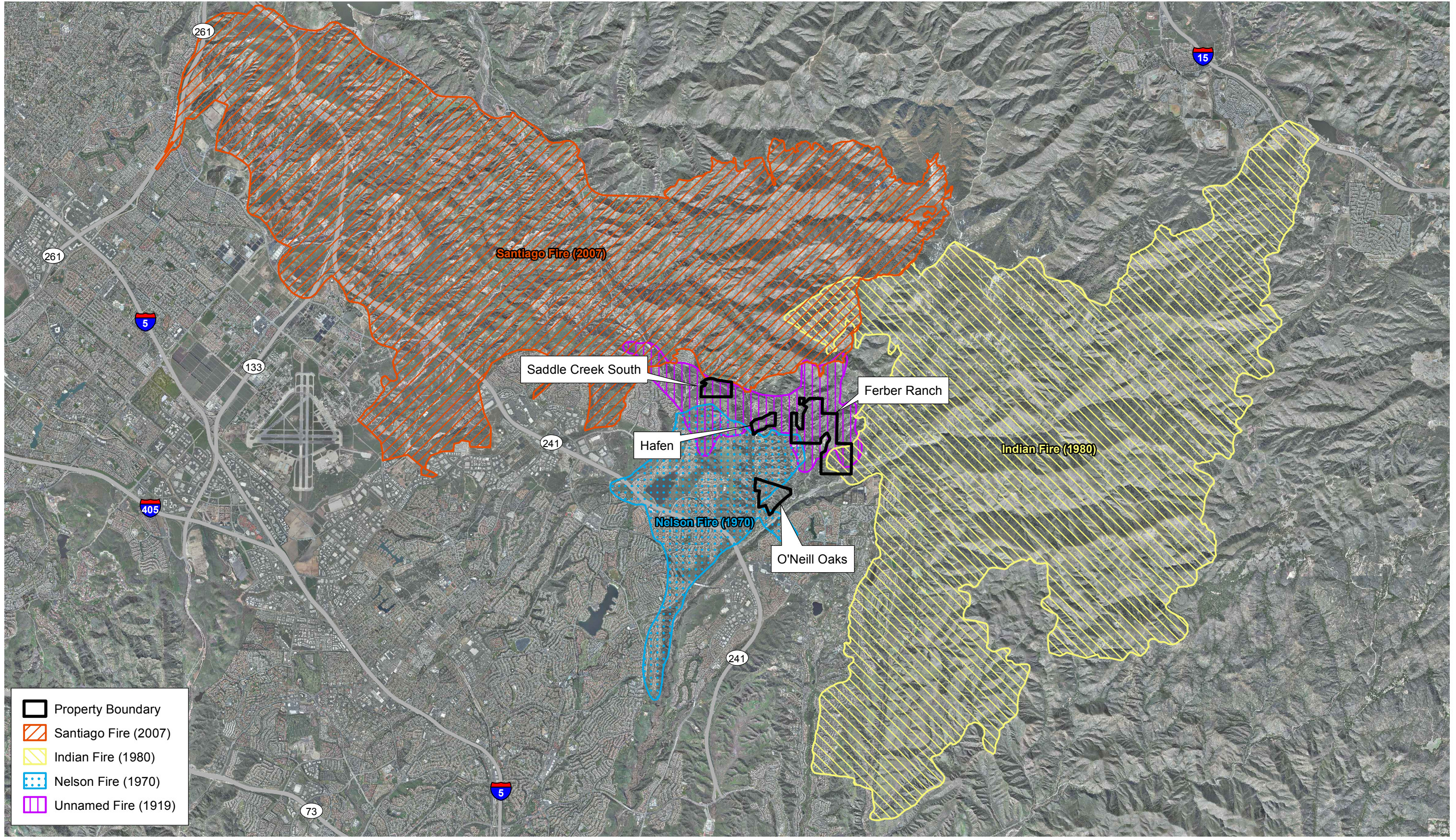
and the ability to resprout (Steinberg 2002). Trees resprout from the main trunk and upper crown, but also from the root crown; resprouting may result in a multi-trunk tree. While acorns on the soil are killed, animal-buried acorns usually survive moderately severe fire which allows for high rates of post-fire establishment. Post-fire establishment may also be facilitated by western scrub-jays (*Aphelocoma californica*), which prefer burned areas for caching sites (Steinberg 2002). The frequent, low-intensity burning by Native Americans likely resulted in cohorts of large oak trees growing in open, savannah-like stands (McCreary 2004).






Although fires are a natural part of chaparral, scrub, and oak communities, both unnatural increases and decreases in fire frequency can have a negative impact. Now, nearly all wildfires are started by humans, either through arson or accidents (Schoenherr 1992). While the fire season traditionally occurred from May through September, in the past 15 years, Orange County has experienced its most devastating wildfires from October through April (OCFA 2008). Drought conditions contribute to an increase in dead fuels; drier and more explosive fuels; and more intense fire behavior. In addition, sustained Santa Ana Winds increase the speed of fire and magnify the effects on the available fuel bed. Santa Ana Winds are strong, warm, and dry winds that flow down into the valleys when stable; during these conditions, high pressure air is forced across and then down the lee-side slopes of a mountain range. The descending air is warmed and dried, which produces critical fire weather conditions.

Anthropogenic increases in fire frequency can change the natural resilience of native communities. With a high frequency of fires, plants may not store enough energy between fires to resprout from roots or buds. In general, when an area burns too often for the community to mature, native plants may not be able to maintain dominance, often resulting in a habitat type conversion. Ruderal species, including annual grasses and invasive forbs, often thrive in post-fire conditions. As a result, fires often promote the spread of non-native species into native habitats. In turn, this high degree of non-native grass and forb cover can lead to more frequent fire return intervals (e.g., intervals of less than eight years have been reported) (Minnich and Dezzani 1998).

A decrease in fire frequency may also hinder reproduction of fire-adapted species. In the past, government agencies tried to prevent and stop the spread of wildfires through a policy of fire suppression. These efforts were found to be unsuccessful; they occasionally resulted in larger and more catastrophic fires. While they are less frequent, unnaturally large fires may burn so hot and intense that the canopy, roots, and even the seeds of fire-adapted plants are destroyed. Habitat type conversion may occur in scrub and chaparral communities where fire suppression allows oaks to increase in density (McCreary 2004). When fire isn't allowed to regenerate the understory of oak savannahs, the shrub component increases and more severe, crown-consuming fires may result.

Over the past 60 years, Orange County has experienced a number of major (i.e., burned greater than 2,000 acres, burned for an extended period or time, and/or resulted in extraordinary property loss) wildland fires, including 20 that burned over 2,000 acres (OCFA 2008). According to the Orange County Fire Authority (OCFA), this area has experienced 25 separate wildland fires since 1980, resulting in a total of 82,734 acres burned (OCFA 2008). The OCFA has identified Trabuco Canyon as being at high risk of a conflagration-type fire (i.e., large and destructive) due to construction of homes, lack of fuel modification protecting the community, and type of fuel and topography (OCFA 2007). The California Department of Forestry and Fire Protection (CAL FIRE) has also tracked significant fire events on the south county properties. Exhibit 5 shows the fire history of the properties. Ferber Ranch experienced an unnamed fire in 1919 (319.6 acres burned on site), the Nelson Fire in 1970 (12.5 acres burned on site), and the Indian Fire in 1980 (96.0 acres burned on site). The Nelson Fire also burned 55.1 acres on the O'Neill Oaks property. The unnamed 1919 fire and the Nelson Fire burned 45.4 acres and



-  Property Boundary
-  Santiago Fire (2007)
-  Indian Fire (1980)
-  Nelson Fire (1970)
-  Unnamed Fire (1919)

Fire History

Measure M2 Acquisition Properties Evaluation/Ferber Ranch, O'Neill Oaks, Hafen, and Saddle Creek South Properties



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0.3 acres on the Hafen property, respectively. The unnamed 1919 fire and the Santiago Fire of 2007 burned 79.3 and 0.3 acres of the Saddle Creek South property, respectively (CAL FIRE 2011).

1.2.4 Climate

Southern California experiences a Mediterranean climate characterized by mild, rainy winters and hot, dry summers. There can also be dramatic differences in rainfall from year to year. Consequently, the vegetation types in the Southern California area consist of drought-tolerant, woody shrubs and trees and annual, fall/winter-sprouting grasses.

The temperature in Southern California is moderated by the coastal influence of the Pacific Ocean, which creates mild conditions throughout most of the year. The stable atmosphere creates cloudless conditions, producing dry summers and a subtropical climate with many days of sunshine (Ritter 2006). The most distinguishing characteristic of a Mediterranean climate is its seasonal precipitation. In Southern California, precipitation is characterized by brief, intense storms generally between November and March. It is not unusual for a majority of the annual precipitation to fall during a few storms over a close span of time. Rainfall patterns are subject to extreme variations from year to year and longer-term wet and dry cycles.

In the region, the average daily temperature in the summer is approximately 72 degrees Fahrenheit (°F) (measured at 71.6 °F in July between 1961 and 1990 [U.S. Bureau of Labor Statistics et al. 2009] and at 72.0 °F in the summer² between 2001 and 2011 [WRCC 2012]). The average daily temperature in the winter is approximately 54 °F (measured at 54.5 °F in January between 1961 and 1990 [U.S. Bureau of Labor Statistics et al. 2009] and at 54.0 °F in the summer between 2001 and 2011 [WRCC 2012]). The region receives an average of 11.8 inches of rain a year (U.S. Bureau of Labor Statistics et al. 2009). The majority of this rain falls in the winter months, which receive an average of 8.61 inches; summer rain is approximately 0.12 inch (WRCC 2012).

1.2.5 Anthropogenic Uses of the Property

According to the U.S. Forest Service (USFS), the area was inhabited by the Kumeyaay, Luiseño, Cahuilla, and Cupeño Native Americans, who would burn the brushlands along the coast and in the mountains. Juan Rodriguez Cabrillo arrived in 1542, but the land did not undergo significant change until the establishment of the California missions by Junipero Serra and a ranching culture. Trabuco Canyon was named in 1769 during a Spanish expedition led by Gaspar de Portolá. In 1846, the area became “Rancho Trabuco” under a Mexican land grant. Then, in the early 1900s, Trabuco Canyon was the site of a failed tin mine. Over this time, the landscape was altered by overgrazing, the invasion of exotic plant species, vegetation clearing, and widespread fire (USFS 2013).

Ferber Ranch

A review of historic aerial photographs of the property shows that, in general, vegetation communities have not significantly altered since 1946. Evidence of grazing is visible at that time. Low density development along Rose Canyon Road is present in aerial photographs as early as 1946, though development along Trabuco Oaks Drive has occurred since 1953.

² Seasons are climatological; winter is considered to be December, January, and February and summer is considered to be June, July, and August.

Horse stables are located immediately adjacent to the property; OCTA has been granted access through this private property. The property currently experiences equestrian use and horses and their sign were observed throughout the property during the 2012 biological surveys. The dirt trails on the property are also used by hikers and likely mountain bikers.

An old structure, built between 1946 and 1953, was observed near the center of the property, with an adjacent planting of ornamental gum trees (*Eucalyptus* sp.). A can/bottle scatter (see photograph) was observed near the canyon in the southern portion of the property. In addition, a radio antenna is present adjacent to a dirt road in the northern portion of the property.



O'Neill Oaks

A review of historic aerial photographs of the property shows that, in general, vegetation communities have not significantly altered since 1938. Buildings or otherwise significant structures are not identified in the historic aerials. The first dirt roads on the property were graded between 1938 and 1946. Additional roads in the northern portion of the property were graded by 1953, but these are largely overgrown at present.

While not formally used for cattle grazing at this time, cattle are known to cross the property boundary and were observed during the 2012 biological surveys. Derelict fencing runs across the middle of the property. Existing fencing on and around the property has not been adequate at preventing cattle encroachment.

Hafen

A review of historic aerial photographs of the property shows that, in general, vegetation communities have not been altered significantly since 1946. Buildings or otherwise significant structures are not identified in the historic aerials. Low density residential development is present immediately north and south of the property, with the latest house built within the past two years. An unpaved road on the property was graded some time between 1953 and 1975, though it is now largely overgrown. Evidence of grazing is not present on this property.

Saddle Creek South

A review of historic aerial photographs of the property shows that, in general, vegetation communities have not significantly altered since 1946. Buildings or otherwise significant structures are not identified in the historic aerials. Residential development in the immediate area (e.g., Portola Hills) was absent until the late 1980s and early 1990s.

While not formally used for cattle grazing at this time, the southern portion of the site appears grazed, and evidence of cattle was observed during the 2012 biological surveys. Existing fencing around the property has not been adequate at preventing cattle encroachment. Old ranch buildings and wooden utility poles are present on the property.

2.0 SURVEY METHODOLOGIES

This section describes the methodology used to conduct the literature review; perform general biological surveys and vegetation mapping, focused biological surveys, jurisdictional delineations, and California Rapid Assessment Method (CRAM) analyses; and assess the properties' potential to support special status species. A cumulative list of all plant and wildlife species observed on each property is included as Attachments A-1 and A-2, respectively.

2.1 LITERATURE REVIEW

BonTerra Consulting conducted a literature search to identify special status plants, wildlife, and habitats known to occur in the vicinity of the south county properties. This search included a review of the USGS' Black Star Canyon, Cañada Gobernadora, El Toro, and Santiago Peak quadrangles in the California Native Plant Society's (CNPS') Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2012) and the California Natural Diversity Database (CNDDDB) (CDFG 2012a). In addition, a species list was obtained from the USFWS' Information, Planning, and Conservation System (IPaC) for the properties.

2.2 VEGETATION MAPPING AND GENERAL SURVEYS

BonTerra Consulting Biologists David Hughes and Allison Rudalevige conducted general surveys to describe and map the vegetation types on the properties on May 25 and July 17, 2012 (Ferber Ranch); May 30, 2012 (O'Neill Oaks); May 31, 2012 (Hafen); and May 31, 2012 (Saddle Creek South). Nomenclature for vegetation types generally follows *A Manual of California Vegetation* (Sawyer et al. 2009). Areas designated as a "sub-association" of a vegetation type contain a relatively high percentage of a particular species (e.g., chaparral nolina [*Nolina cismontana*] or coast prickly pear [*Opuntia littoralis*]), but the species composition is not formally recognized as an Alliance³ or Association⁴ in Sawyer et al. (2009). Vegetation was mapped in the field on an aerial photograph at a scale of 1 inch equals 200 feet (1"=200').

The general surveys included an evaluation of the potential of each property to support special-status plant and wildlife species, with special focus on M2 NCCP/HCP Covered Species. Covered Species include intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), southern tarplant (*Centromadia parryi* ssp. *australis* [*Hemizonia p.* ssp. *a.*]), many-stemmed dudleya (*Dudleya multicaulis*), arroyo chub (*Gila orcutti*), coast horned lizard (*Phrynosoma blainvillii*), Belding's orangethroat whiptail (*Aspidoscelis hyperythra* [*Cnemidophorus h.*]), Pacific [western] pond turtle (*Actinemys marmorata* [*Emys m.*]), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bells vireo (*Vireo bellii pusillus*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), coastal California gnatcatcher (*Polioptila californica californica*), bobcat (*Lynx rufus*), and mountain lion (*Puma concolor* [*Felis c.*]). Suitable habitat and/or observed individuals were documented in field notes and with global positioning system (GPS) units and a CNDDDB form was filled out for each occurrence.

During field surveys, natural or physical resources and opportunities were identified (mapped and included in field notes) that "preserve, restore and enhance aquatic, riparian and terrestrial natural communities and ecosystems that support Covered Species" (OCTA 2010). Resources that provide valuable enhancement, restoration, or preservation opportunities (e.g., significant

³ Alliance is "a classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover" (Sawyer et al. 2009).

⁴ Association is "a vegetation classification unit defined by a diagnostic species, a characteristic range of species composition, physiognomy, and distinctive habitat conditions" (Sawyer et al. 2009).

stands of non-native species requiring eradication/control; presence of rock outcroppings that provide niche areas for unusual plants, bats, ringtails [*Bassariscus astutus*], or other species; nesting cavities; large mammal burrows; avian rookeries/roosts; and dens) were mapped and documented in field notes. This may include significant stands of invasive plant species based on the California Invasive Plant Council (Cal-IPC) Inventory. Anthropogenic influences/structures on the properties (i.e., paved and unpaved roads, trails, cell towers, water towers, abandoned vehicles and/or “dumped” trash or debris) were also documented. GPS devices were utilized for recording all point locations.

Plant species were identified in the field or collected for subsequent identification using keys in Baldwin et al. (2012), Munz (1974), Abrams (1923, 1944 1951), and Abrams and Ferris (1960). Taxonomy follows Baldwin et al. (2012) and current scientific data (e.g., scientific journals) for scientific and common names. Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic sign, including scat, footprints, burrows, and trails. Taxonomy and nomenclature for wildlife generally follows Crother (2008) for amphibians and reptiles, American Ornithologists’ Union (AOU 2011) for birds, and Baker et al. (2003) for mammals. All species observed were recorded in field notes and are included in Attachment A.

2.3 FOCUSED BIOLOGICAL SURVEYS

Focused biological surveys were conducted in 2012 for special status plant species, coastal California gnatcatcher, coastal cactus wren, southwestern willow flycatcher, least Bell’s vireo, and bats⁵. Surveys were conducted in suitable habitat, based on the Senior Biologists’ best professional judgement.

2.3.1 Special Status Plant Species

Special status plant surveys were floristic in nature and were conducted following the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009) and the CNPS’ Botanical Survey Guidelines (CNPS 2001). Target species included the following Covered Species: intermediate mariposa lily, southern tarplant, and many-stemmed dudleya.

For special status plant surveys, rainfall received in the winter and spring determines the germination of many annual and perennial herb species. Rainfall data was retrieved from the California Data Exchange Center (CDEC) of the California Department of Water Resources (CDWR 2012). The Bell Canyon sensor (CDEC Station BEC), located approximately 7.4 to 9.7 miles from the properties, provides data for 2000 to 2011. The average precipitation for October to July was 12.69 inches. The precipitation between October 2011 and July 2012 was measured at 9.87 inches, which is 78 percent of average.

In years of low or unusual rainfall patterns, monitoring of reference populations is important in order to interpret survey results. Prior to conducting the field surveys, accessible reference populations of target species known from the Orange County area were monitored to ensure that the scheduled surveys were comprehensive and conducted during the appropriate blooming period for these species. Intermediate mariposa lily was observed flowering in Trabuco Canyon on May 29, 2012. Southern tarplant was observed flowering in San Juan Capistrano on May 21, 2012. Many-stemmed dudleya was observed flowering in San Juan Capistrano on April 18, 2012. Rainfall throughout the region was below average for the year.

⁵ Surveys for bats were conducted because five bat species were originally proposed for coverage during the baseline surveys; these species have since been removed from the Covered Species list.

Although reference populations and regional rainfall amounts were monitored to ensure the scientific adequacy of these focused surveys, there is always a minimal potential for false negative survey results as species could possibly be present on a site but may not be detectable at the time of the surveys.

The properties were surveyed for special status plant species by several BonTerra Consulting biologists (Table 1). Systematic walking surveys were conducted in all areas of suitable special status plant habitat; inaccessible areas were viewed through binoculars. The habitat preferences of target species (see Table 5, below) were compared to the resources on site (e.g., community associations, soil, slope, shade) to determine which portions of the properties represented suitable habitat. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for later identification. Plants were identified to the taxonomic level necessary to determine whether or not they are a special status species. Plants were identified using taxonomic keys, descriptions, and illustrations in Baldwin et al. (2012). Any voucher specimens collected will be deposited with the herbarium at Rancho Santa Ana Botanic Gardens in Claremont, California. Taxonomy and nomenclature follows the Baldwin et al. (2012), Hickman (1993), and current scientific journals for scientific and common names.

**TABLE 1
SUMMARY OF SURVEY DATA FOR
SPECIAL STATUS PLANT SURVEYS**

Date of Survey (2012)	Location	Personnel
May 29	Ferber Ranch	R.L. Allen, F.M. Roberts, Jr.
May 30	Ferber Ranch	R.L. Allen, F.M. Roberts, Jr.
May 31	Ferber Ranch	R.L. Allen, F.M. Roberts, Jr.
June 1	Ferber Ranch	R.L. Allen, L.A. Messett
June 5	O'Neill Oaks	R.L. Allen, D.T. Hughes
June 6	Saddle Creek South	R.L. Allen, D.T. Hughes
June 7	Hafen	R.L. Allen, D.T. Hughes
June 19	Ferber Ranch	R.L. Allen, D.E. Bramlet
July 17	Ferber Ranch	R.L. Allen, A.D. Rudalevige, F.D. Maxon, M.J. Bancroft
July 18	Ferber Ranch	R.L. Allen, A.D. Rudalevige, F.D. Maxon, M.A. Johnston
July 24	O'Neill Oaks	R.L. Allen, M.J. Bancroft
July 24	Saddle Creek South	R.L. Allen, M.J. Bancroft
July 25	Hafen	R.L. Allen, F.D. Maxon

Source: BonTerra Consulting 2013b.

2.3.2 Coastal California Gnatcatcher and Coastal Cactus Wren

Surveys for the coastal California gnatcatcher were conducted in accordance with the guidelines issued by the USFWS for areas participating in a NCCP (USFWS 1997). These guidelines stipulate that three surveys must be conducted in suitable habitats with at least one week between site visits; the surveys can be conducted year-round. All visits must take place during the morning hours, and no more than 100 acres of suitable habitat may be surveyed per visit. Because of the habitat similarities, gnatcatcher and cactus wren surveys were conducted simultaneously.

BonTerra Consulting Senior Biologist Lindsay Messett (USFWS Permit No. PRT-067064-2) conducted all surveys on the Ferber Ranch property and Biologist Michael Couffer (USFWS

Permit No. TE-782703-8) conducted the surveys on the remaining properties. The surveys covered all potentially suitable habitats for the coastal California gnatcatcher and coastal cactus wren. A summary of the focused gnatcatcher/cactus wren survey dates and conditions is shown in Table 2 below.

**TABLE 2
SUMMARY OF SURVEY DATA AND CONDITIONS FOR
GNATCATCHER/CACTUS WREN SURVEYS**

Date	Time	Surveyors	Weather Conditions		
			Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%) (Start/End)
Ferber Ranch					
May 30, 2012	0600/1215	Messett	61/70	0-3/0-4	100/60
May 31, 2012	0605/1210	Messett	62/75	0-1/0-2	100/Clear
June 1, 2012	0600/1200	Messett	61/70	0-1/0-2	100/30
June 6, 2012	0610/1230	Messett	60/71	0-2/0-3	80/40
June 7, 2012	0600/1215	Messett	60/73	0-1/0-3	Clear/Clear
June 8, 2012	0600/1205	Messett	61/74	0-1/0-6	30/Clear
June 20, 2012	0620/1210	Messett	63/71	0-3/0-4	100/50
June 21, 2012	0610/1225	Messett	63/72	0-2/0-2	10/25
June 25, 2012	0600/1200	Messett	61/74	0-1/0-3	25/35
O'Neill Oaks					
May 31, 2012	0700/1145	Couffer	56/86	0-1/0-3	90/Clear
June 1, 2012	0620/1040	Couffer	57/76	0-1/0-1	100/Clear
June 8, 2012	0615/1155	Couffer	55/76	0-1/0-1	Clear/Clear
June 9, 2012	0635/1112	Couffer	56/72	0-1/0-1	Clear/Clear
June 16, 2012	0615/1200	Couffer	59/75	0-1/0-1	90/Clear
June 17, 2012	0615/1200	Couffer	61/81	0-1/0-2	70/Clear
Hafen					
June 5, 2012	0630/1050	Couffer	60/71	0-1/0-2	30/50
June 14, 2012	0615/1000	Couffer	58/66	0-1/0-1	100/10
June 22, 2012	0600/1045	Couffer	61/70	0-1/0-3	61/70
Saddle Creek South					
June 2, 2012	0645/1145	Couffer	61/74	0-1/0-6	100/Clear
June 12, 2012	0630/1026	Couffer	61/74	0-1/0-1	100/Clear
June 21, 2012	0600/1030	Couffer	60/73	0-1/0-2	90/Clear
°F: degrees Fahrenheit; mph: miles per hour.					
Source: BonTerra Consulting 2012a.					

Weather conditions met the USFWS survey protocol requirements for optimal gnatcatcher detection. Weather conditions that were too cold (below 55°F), too hot (above 95°F), or too windy (wind speed greater than 15 miles per hour) were avoided. Surveys were conducted by slowly walking through all appropriate habitats while listening and watching for gnatcatcher/cactus wren activity. A combination of recordings of gnatcatcher/cactus wren vocalizations and “pishing” sounds were used in an attempt to elicit responses from any gnatcatchers/cactus wren that might be present. The frequency of vocalization playback and “pishing” varied depending on conditions, such as habitat patch size and topography in each area. All bird species detected during the survey were recorded, including notable observations of special status wildlife species.

2.3.3 Southwestern Willow Flycatcher and Least Bell's Vireo

The USFWS protocol for the least Bell's vireo requires that at least eight surveys be conducted from April 10 to July 31 with a ten-day interval between each site visit (USFWS 2001). The USFWS protocol for the southwestern willow flycatcher requires a total of five surveys, with the first survey conducted between May 15 and May 31; the second and third surveys between June 1 and June 24; and the fourth and fifth surveys between June 25 and July 17 (Sogge et al. 2010). A total of eight surveys are typically required to satisfy the survey requirement of both species; however, only a total of three surveys conducted in the last two survey windows for the southwestern willow flycatcher were required for this project as agreed to previously by the OCTA and USFWS.

BonTerra Consulting Senior Biologist Brian Daniels (USFWS Permit No. TE-821401-3) conducted surveys at the properties and determined that only the Ferber Ranch property supported riparian habitat potentially suitable for occupation by breeding southwestern willow flycatcher and least Bell's vireo. Mr. Daniels performed modified survey protocol of three visits to the Ferber Ranch property on June 6, 21, and July 2, 2012. The survey focused on the willow (*Salix* sp.) dominated riparian habitat, which is the typical breeding habitat of the flycatcher, located on the southwest side of the property, but also included adjacent habitats on the property.

Taped vocalizations of southwestern willow flycatcher were used on all three surveys in an attempt to elicit a response from any potentially territorial southwestern willow flycatcher. If no southwestern willow flycatchers were detected after the initial tape playing, the recording was replayed where appropriate. As the least Bell's vireo survey protocol does not require the playback of least Bell's vireo vocalizations, no taped vocalizations of least Bell's vireo were used during these surveys. All surveys were conducted under optimal weather conditions and during early morning hours when bird activity is at a peak. Numbers were recorded for all bird species detected during the survey, including any observations of special status bird species.

2.3.4 Bats

Both visual and acoustic surveys for bat species (both common and special status) were conducted on the south county properties. During the day, visual surveys were conducted to locate potential roost sites and foraging areas. At dusk and after dark, bat activity was monitored both visually (with spotlights after dark) and acoustically with ultrasonic bat detectors.

Site Reconnaissance

Dr. Ed West and BonTerra Consulting Biologist Ann Johnston assessed the ecological status and condition of the properties on June 8, 2012. All passable roads were driven, and accessible trails suitable for survey transects were hiked. The general condition and use history of the properties was documented, and potential areas for bat roosts and foraging activity were identified.

Bat Monitoring

Acoustic monitoring was conducted on the properties between June 16 and July 7, 2012. Mobile surveys were conducted along all passable 4x4 roads on each property. On-foot hiking surveys were conducted along overgrown roads/trails that provided transects through representative habitats on each property. During the mobile surveys, two vertically mounted ultrasonic detector microphones were secured to the roof of a 4x4 Jeep Wrangler. The detectors were connected individually with cabling to an EM3 EchoMeter full spectrum bat detector (SMX-US microphone, Wildlife Acoustics, Inc.) and an Anabat SD2 CF bat detector (Standard Anabat microphone,

Titely Scientific, Inc.) mounted on a platform in the vehicle. The EM3 detector was programmed for .wav file format recording with a 256K sample rate. A GPS unit was connected to the EM3 unit to provide GPS locations of all recordings. All ultrasonic detections were digitally stamped with the date, time, and location of the recordings. The SD2 detector was programmed for active monitoring. During all hiking surveys, the bat detectors were hand held at above head height level with the microphones pointed vertically to optimize bat call detection.

During the mobile surveys, the roads were driven slowly and all bat detections were visually and aurally monitored by watching the EM3 real-time spectrogram and listening to the speaker output on both the EM3 and the SD2. When repeated detections occurred, the vehicle was often stopped and the site was monitored for 10 to 20 minutes. These sites were also often stopped at during subsequent surveys along the same route. Similar point monitoring procedures were implemented during the hiking surveys. Additionally, flying bats were visually searched for at dusk during each survey.

Bat Call Acoustic Analysis

Following each survey, the digital recordings of all the bat calls were downloaded to a computer and analyzed to identify which species were present. The EM3 recordings were analyzed using SonoBat 3.1 (June 2012 release, SonoBat™). All recordings obtained using the SMX-US microphone were acoustically adjusted to SonoBat standards using the SMX-UT conversion tool in the SM2 Batch Attributer program. This option was turned off for analysis of all recordings obtained using the internal SMX-UT microphone in the EM3 unit. Following batch scrubbing of extraneous ultrasonic recordings (i.e., removal of all recordings of leaf rustling noise, wind, etc.), the bat calls were automatically identified using the SonoBat SonoBatch feature. Call files (.wav format) were tagged with species codes whenever the call quality met the identification threshold standards of the SonoBat program. Call files were tagged with species codes whenever the call quality met the identification threshold standards of the SonoBat program.

Some call sequences recorded were not of sufficient quality (e.g., less than 10 clean calls per sequence, reduced amplitude, masked in noise) to allow for confident species determinations. However, many could be, and were, categorized into species groups by their characteristic minimum frequency. For example, species with minimum call frequencies (f_m) above 35 kilohertz (kHz) were grouped into a high frequency species category (HFSP), species between 25 and 35 kHz into the medium frequency category (MFSP), and species below 25 kHz into the low frequency species (LFSP) category.

Call files of lower quality were either tagged with a list of probable species or a general category identifying the general frequency range of the calls (e.g., High vs. Low). Calls with lower quality were not identified to species, but were tagged as being bat calls.

After the initial tagging and categorization of all the calls, they were each reviewed again visually and using SonoBat 3 to verify (or not) the species identifications. All calls without species ID code tags were visually examined to determine if the calls were embedded in noise that reduced their quality but were recognizable and could be digitally extracted and re-evaluated. These call files were then processed using Raven™ (Cornell Lab of Ornithology) to remove the extraneous noise. The cleaned-up files were then re-run through SonoBat 3.1 to obtain species identifications wherever possible.

All SonoBat and GPS files for calls for which species/species group identifications could be obtained were then converted to Google Earth™ KML files and mapped using Myotis™ Transect 1.0.5b (Beta release July, 2012).

All bat calls recorded on the Anabat SD2 units were downloaded to the computer using CFRead™ (Titley Scientific) and sonograms were produced using AnalookW™ (Titley Scientific). Each sonogram was then visually compared to sonograms of known species in a digital library to determine species/species group identities. Unique calls were identified and matched to the date-time sequencing of the SonoBat calls and wav. file tags were generated for the Myotisoft KML file creation and Google Earth mapping. Simultaneous SonoBat/Anabat recordings were mapped as single records.

2.4 REGULATORY SURVEYS

2.4.1 Jurisdictional Delineation

A jurisdictional delineation was conducted by BonTerra Consulting to describe and map the extent of resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the CDFW. Survey details are provided in Table 3. The delineation followed guidelines presented in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). This regional supplement is designed for use with the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of “Waters of the U.S.” and wetland resources. A three-parameter approach—which requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils—was used to identify wetlands on the Project site and adjacent off-site areas. In order to be considered a wetland, an area must exhibit at least minimal hydric characteristics within the three parameters. However, problem areas may periodically or permanently lack certain indicators due to seasonal or annual variability of the nature of the soils or plant species on a project site. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the Regional Supplement. Non-wetland “Waters of the U.S.” are delineated based on the limits of the Ordinary High Water Mark (OHWM), which can be determined by a number of factors including erosion, the deposition of vegetation or debris, and changes in vegetation.

**TABLE 3
SUMMARY OF JURISDICTIONAL DELINEATION SURVEYS**

Property	Initial Survey Date(s)	Field Verification Date(s)	Field Personnel
Ferber Ranch	July 2 and 3, 2012 February 26, 2013	November 12, 2013	G.A. Medeiros M.J. Bancroft
O'Neill Oaks	July 2 and 18, 2012	December 11, 2013	D.T. Hughes J.C. Aguayo
Hafen	July 6, 2012	December 12, 2013	D.T. Hughes F.D. Maxon
Saddle Creek South	July 3, 2012	December 11, 2013	G.A. Medeiros M.J. Bancroft
Source: BonTerra Consulting 2013a.			

It should be noted that the RWQCB shares the USACE jurisdiction unless isolated conditions are present. If isolated waters conditions are present, the RWQCB takes jurisdiction using the USACE’s definition of the OHWM and/or the three-parameter wetlands methodology pursuant to the 1987 Wetlands Manual. The CDFW’s jurisdiction is defined as the top of the bank of the stream, channel, or basin or the outer limit of riparian vegetation located within or immediately adjacent to the river, stream, creek, pond, or lake.

Field verification meetings with the USACE were held to review the existing jurisdictional resources and to verify the completeness of the jurisdictional delineation mapping on each of the properties. The dates of these meetings are provided in Table 3. The extent of jurisdictional features within this report has been updated to reflect the outcome of the USACE review.

2.4.2 California Rapid Assessment Method Analysis

A CRAM analysis was conducted by Mr. Hughes concurrent with the jurisdictional delineation surveys. Surveys were conducted in accordance with the CRAM for Wetlands User's Manual (Collins et al. 2008). The CRAM analysis for Riverine Wetlands⁶ was used to establish and score 100-meter-long Assessment Areas (AAs) in the principal streambed features on the properties. The AA is the fundamental unit of evaluation for CRAM analysis. The AA width was defined as the outer canopy of vegetation that overhung the streambed.

Information recorded for the AA includes (1) the percentage of the AA that was surrounded by a buffer and the width of the buffer; (2) the water source for the AA; (3) the cross-sectional measurements to determine hydrologic connectivity to adjacent areas; (4) the number of plant layers within the AA; and (5) the number of co-dominant species and invasive species. Qualitative factors that were assessed include (1) the condition of the buffer surrounding the AA; (2) the channel stability; (3) the complexity of the channel's bank with regards to the number of surfaces or features that provide habitat for species and topography; and (4) the horizontal and vertical structure of the plant community. Individual scores are obtained by "choosing the best-fit set of narrative descriptions of observable conditions ranging from the worst commonly observed (D) to the best achievable for the wetland (A)" (Collins et al. 2008). Each description has a fixed numerical value. This information was used to assess four primary attributes (i.e., Buffer and Landscape Context, Hydrology, Physical Structure, and Biotic Structure). The attribute score is calculated by first adding the values of the chosen narrative descriptions for the attribute's component metrics, and then converting the sum into a percentage of the maximum possible score for the attribute. The overall AA score is the average of the final attribute scores.

AA scores range from 25 to 100. The maximum AA score possible represents how a wetland is doing relative to the best achievable conditions for that wetland type in the state. It is assumed that the same scores for different wetlands of the same type represent the same overall condition and functional capacity. Therefore, these scores may be used to track the progress of restoration efforts over time; to compare impacted sites to their in-kind mitigation sites; or to compare an individual wetland to the status and trends in ambient condition of its wetland type.

⁶ CRAM uses the definition of a wetland provided by the USFWS National Wetland Inventory (NWI): "Wetlands are lands transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is not a soil and is saturated with water or covered by shallow water at some time during the growing season of each year" (Cowardin et al. 1979).

3.0 EXISTING BIOLOGICAL RESOURCES

This section describes the biological resources that occur or potentially occur on the four south county properties. Vegetation types, wildlife populations and movement patterns, and special status biological resources are discussed below.

3.1 VEGETATION TYPES AND OTHER AREAS

3.1.1 Ferber Ranch

Twenty-two vegetation types and other areas occur on the Ferber Ranch property, as shown in Table 4 and Exhibit 6. These vegetation types were cross-walked to the general vegetation types used in the NCCP/HCP Plan.

**TABLE 4
VEGETATION TYPES AND OTHER AREAS ON
THE FERBER RANCH PROPERTY**

General Vegetation Types	Detailed Vegetation Types or Other Areas	Existing on Property (Acres)
Chaparral		
	Chamise Chaparral	11.90
	Chamise – Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush Scrub	13.36
	Scrub Oak Chaparral	44.66
	Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush – California Buckwheat Scrub	32.94
	Chaparral Subtotal	102.86
Scrub		
	California Sagebrush Scrub	149.57
	California Sagebrush Scrub/Needle Grass Grassland	0.28
	Coast Prickly Pear Scrub	6.50
	Scale Broom Scrub	0.30
	Scrub Subtotal	156.65
Grassland		
	Needle Grass Grassland	17.15
	Needle Grass Grassland/Semi-Natural Herbaceous Stands	3.94
	Giant Wild Rye Grassland	0.38
	Semi-Natural Herbaceous Stands ^a	7.37
	Grassland Subtotal	28.84
Riparian		
	White Alder Groves	0.45
	Arroyo Willow Thickets	1.87
	Mulefat Thickets	0.71
	Riparian Subtotal	3.03

**TABLE 4
VEGETATION TYPES AND OTHER AREAS ON
THE FERBER RANCH PROPERTY**

General Vegetation Types	Detailed Vegetation Types or Other Areas	Existing on Property (Acres)
Woodland		
	Coast Live Oak Woodland	93.23
Agriculture		
	Orchard	1.51
Barren		
	Cliff/Rock	2.16
Developed/Non-Native		
	Developed	0.61
	Disturbed	7.79
	Eucalyptus Grove	0.53
	Semi-Natural Woodland Stand	1.42
	Developed/Non-native Subtotal	10.35
	Total Acreage	398.63
^a Portions of the semi-natural herbaceous stands (indicated by hatching on Exhibit 6) would be considered a "Developed/Non-native" general vegetation type.		

Chaparral

Chamise Chaparral

A total of 11.90 acres of chamise chaparral occurs on slopes throughout the Ferber Ranch property. This vegetation type is dominated by chamise (*Adenostoma fasciculatum*). Subdominant species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), and chaparral yucca (*Hesperoyucca whipplei* [*Yucca w.*]).

Chamise – Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush Scrub

A total of 13.36 acres of chamise – laurel sumac – lemonade berry chaparral with California sagebrush scrub occurs in two large patches in the southern half of the Ferber Ranch property. It represents an ecotone between chaparral and scrub habitats. As such, this vegetation type is co-dominated with a variety of species such as chamise, laurel sumac (*Malosma laurina*), lemonade berry (*Rhus integrifolia*), and California sagebrush.

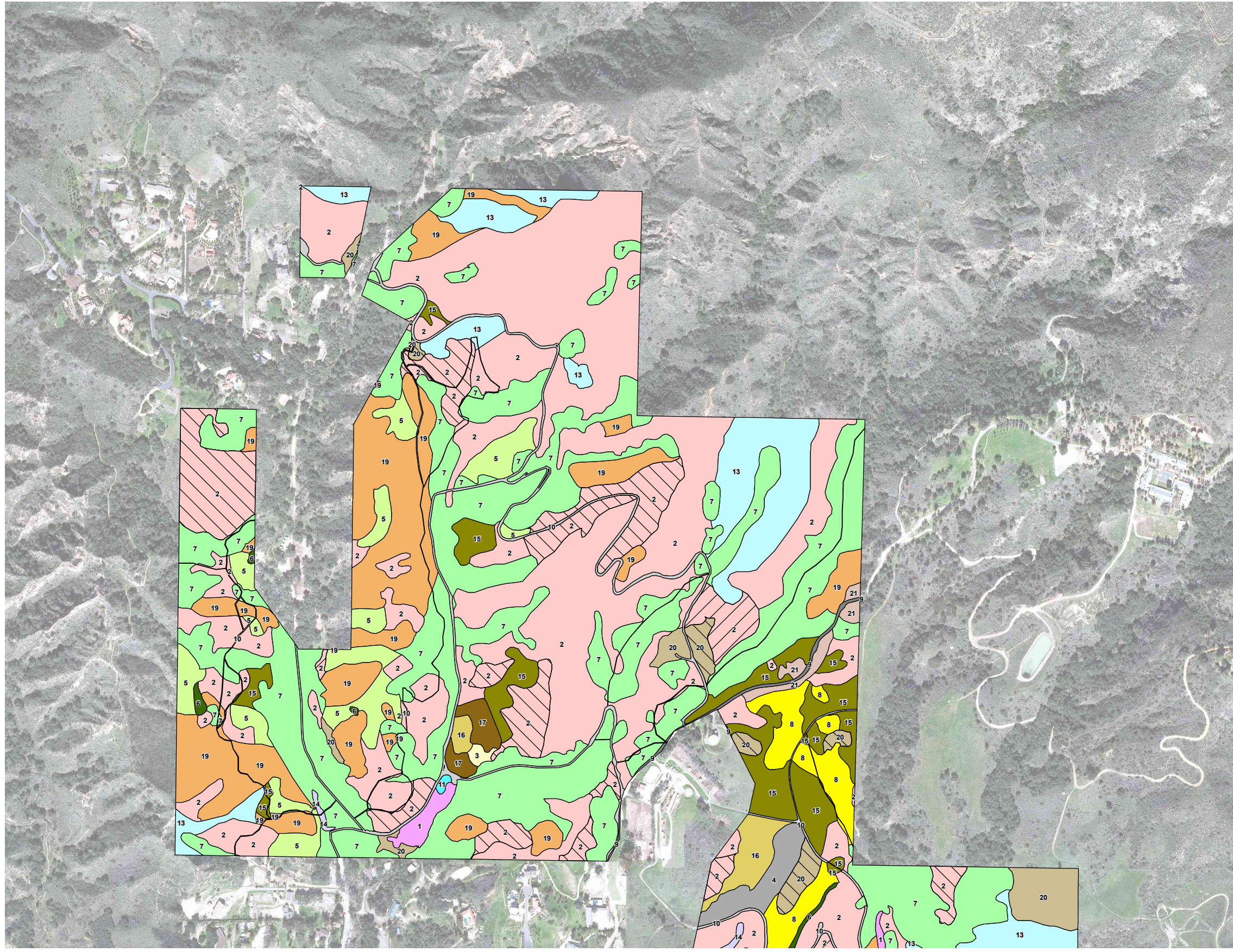
Scrub Oak Chaparral

A total of 44.66 acres of scrub oak chaparral occurs on slopes throughout the Ferber Ranch property. This vegetation type is dominated by dense scrub oak (*Quercus berberidifolia*); chamise is a subdominant species.

Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush – California Buckwheat Scrub

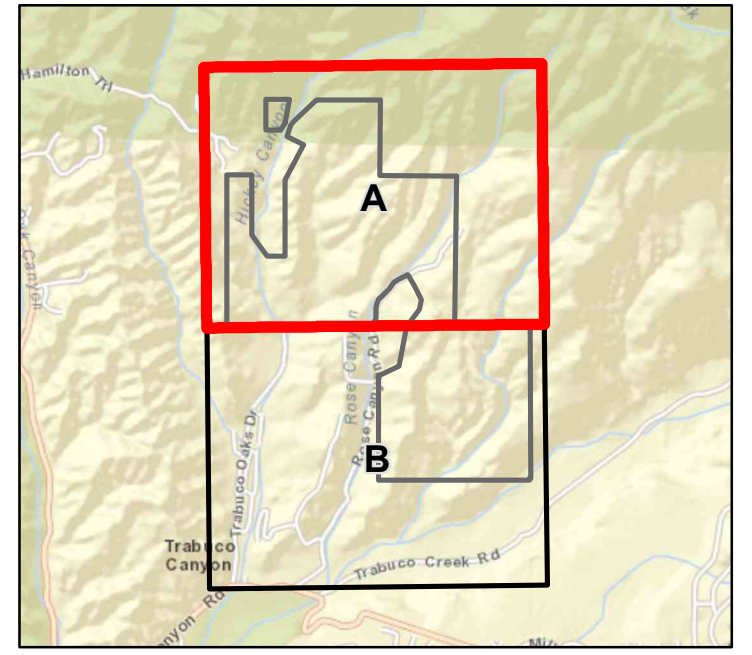
A total of 32.94 acres of laurel sumac – lemonade berry chaparral with California sagebrush – California buckwheat scrub occurs on the Ferber Ranch property. This vegetation type occurs on slopes throughout the property. It represents an ecotone between chaparral and scrub

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- 1 - Arroyo Willow Thickets
 - 2 - California Sagebrush Scrub
 - 3 - California Sagebrush Scrub/Needle Grass Grassland
 - 4 - Chamise - Laurel Sumac - Lemonade berry Chaparral with California Sagebrush Scrub
 - 5 - Chamise Chaparral
 - 6 - Cliff/Rock
 - 7 - Coast Live Oak Woodland
 - 8 - Coast Prickly Pear Scrub
 - 9 - Developed
 - 10 - Disturbed *
 - 11 - Eucalyptus Grove
 - 12 - Giant Wild Rye Grassland
 - 13 - Laurel Sumac - Lemonade berry Chaparral with California Sagebrush - California Buckwheat Scrub
 - 14 - Mulefat Thickets
 - 15 - Needle Grass Grassland
 - 16 - Needle Grass Grassland/Semi-Natural Herbaceous Stands
 - 17 - Orchard
 - 18 - Scale Broom Scrub
 - 19 - Scrub Oak Chaparral
 - 20 - Semi-Natural Herbaceous Stands
 - 21 - Semi-Natural Woodland Stand
 - 22 - White Alder Groves
- * Includes bare ground, dirt roads, and closed/permitted trails.

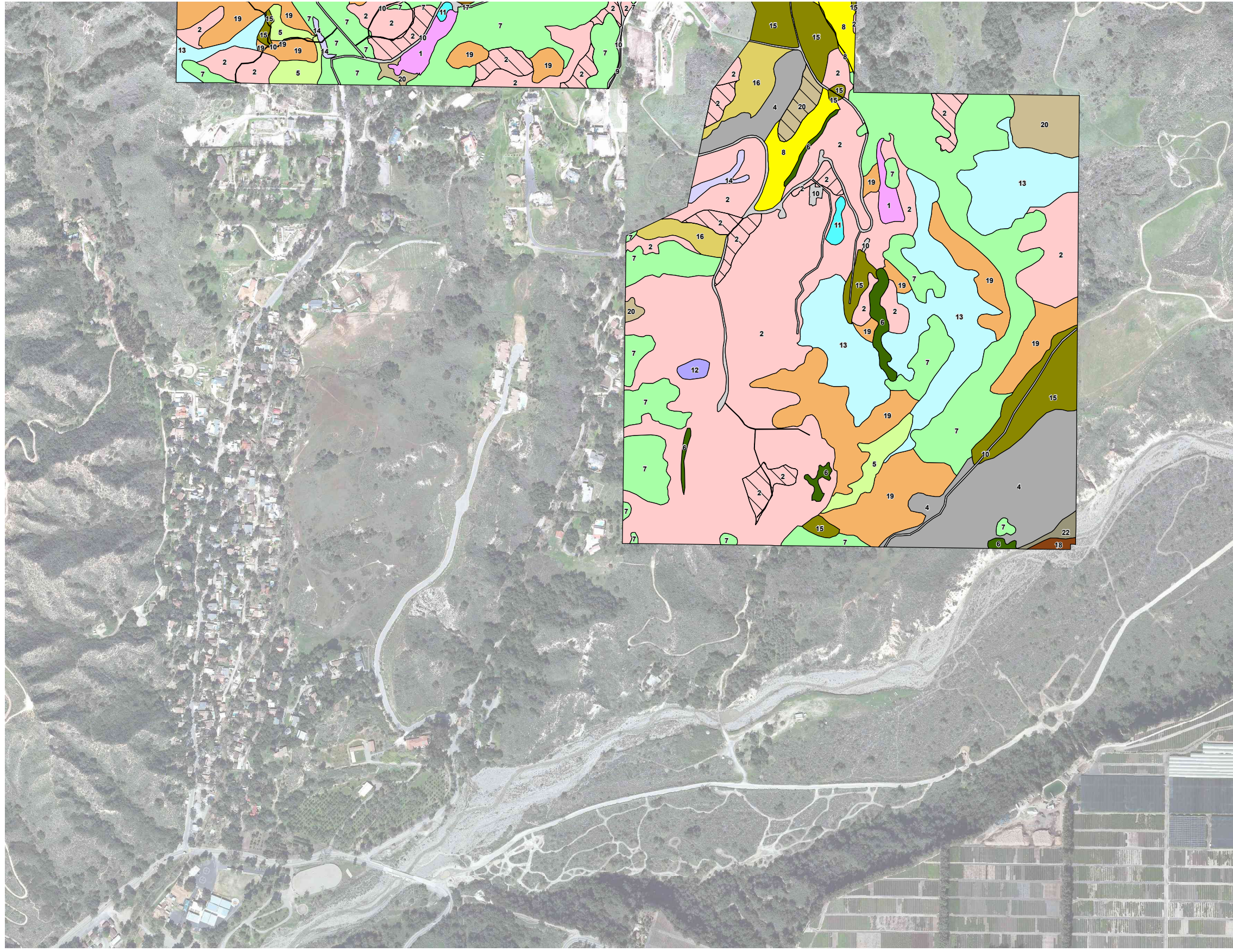
Note: Hatching indicates that the vegetation type has a subassociation.



Vegetation Types

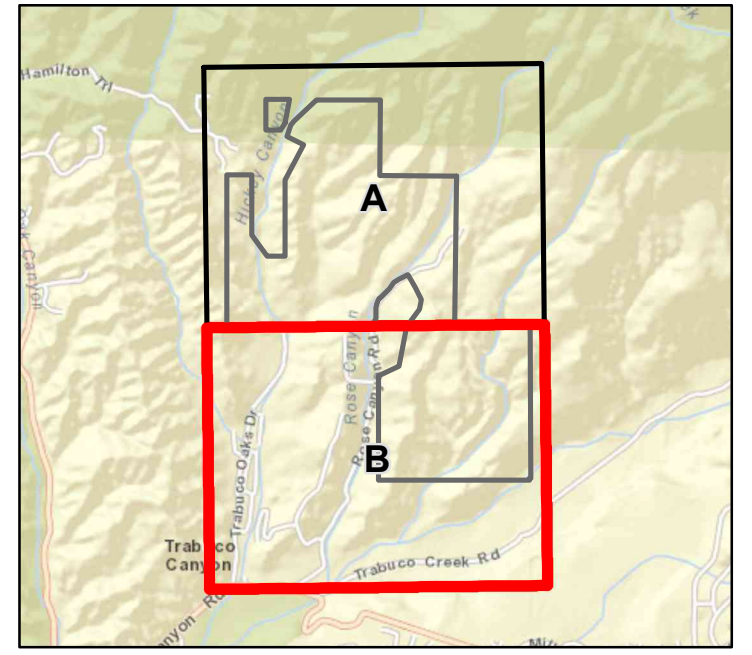
Measure M2 Acquisition Properties/Ferber Ranch Property





- 1 - Arroyo Willow Thickets
- 2 - California Sagebrush Scrub
- 3 - California Sagebrush Scrub/Needle Grass Grassland
- 4 - Chamise - Laurel Sumac - Lemonade berry Chaparral with California Sagebrush Scrub
- 5 - Chamise Chaparral
- 6 - Cliff/Rock
- 7 - Coast Live Oak Woodland
- 8 - Coast Prickly Pear Scrub
- 9 - Developed
- 10 - Disturbed *
- 11 - Eucalyptus Grove
- 12 - Giant Wild Rye Grassland
- 13 - Laurel Sumac - Lemonade berry Chaparral with California Sagebrush - California Buckwheat Scrub
- 14 - Mulefat Thickets
- 15 - Needle Grass Grassland
- 16 - Needle Grass Grassland/Semi-Natural Herbaceous Stands
- 17 - Orchard
- 18 - Scale Broom Scrub
- 19 - Scrub Oak Chaparral
- 20 - Semi-Natural Herbaceous Stands
- 21 - Semi-Natural Woodland Stand
- 22 - White Alder Groves

* Includes bare ground, dirt roads, and closed/permitted trails.
 Note: Hatching indicates that the vegetation type has a subassociation.



Vegetation Types
 Measure M2 Acquisition Properties/Ferber Ranch Property



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habitats. It is similar to the chamise – laurel sumac – lemonade berry chaparral with California sagebrush scrub described above; however, it has California buckwheat as a co-dominant species and does not have a high percentage of chamise.

Scrub

California Sagebrush Scrub

A total of 149.57 acres of California sagebrush scrub occurs on slopes throughout the Ferber Ranch property. Most areas of this vegetation type are dominated by California sagebrush with California buckwheat, black sage, and less than 10 percent coast prickly-pear. A sub-association of this vegetation type (specifically those indicated by hatching within California sagebrush scrub on Exhibit 6) contains a moderate percentage (i.e., between 20 and 50 percent) of coast prickly-pear. Scattered patches of cardoon (*Cynara cardunculus*) were observed within this vegetation type, primarily in the southern portion of the property.

California Sagebrush Scrub/Needle Grass Grassland

A total of 0.28 acre of California sagebrush scrub/needle grass grassland occurs in a small patch near the center of the Ferber Ranch property. This vegetation type contains purple needlegrass (*Stipa pulchra* [*Nassella p.*]) and foothill needlegrass (*Stipa lepida* [*Nassella l.*]) intermixed with California sagebrush.

Coast Prickly Pear Scrub

A total of 6.50 acres of coast prickly pear scrub occurs near the center of the Ferber Ranch property. It is dominated by dense stands of coast prickly-pear (i.e., greater than 50 percent). Scattered California sagebrush, California buckwheat, and black sage are also present in this vegetation type.

Scale Broom Scrub

A total of 0.30 acre of scale broom scrub occurs on the Ferber Ranch property. This vegetation type is located adjacent to the low flow channel of Trabuco Creek at the southeastern corner of the property. It is characterized by the presence of scattered scale-broom (*Lepidospartum squamatum*); southern woolly lotus (*Acmispon heermannii* var. *heermanii*), California brickellbush (*Brickellia californica*), California buckwheat, and everlasting (*Pseudognaphalium canescens* [*Gnaphalium c.*]) are also present. This portion of the active floodplain is relatively open with loose sand and cobble.

Grassland

Needle Grass Grassland

A total of 17.15 acres of needle grass grassland occurs on gentle slopes throughout the Ferber Ranch property. This vegetation type is characterized by having at least 10 percent relative cover of purple needlegrass and foothill needlegrass which is intermixed with wild oat (*Avena* sp.). Blue-eyed grass (*Sisyrinchium bellum*) was prevalent in some patches.

Needle Grass Grassland/Semi-Natural Herbaceous Stands

A total of 3.94 acres of needle grass grassland/semi-natural herbaceous stands occurs on gentle slopes throughout the Ferber Ranch property. This vegetation type is similar to the needle grass grassland described above, but is heavily disturbed by the non-native cardoon.

This vegetation type would be an appropriate candidate for habitat restoration to native grassland, scrub, or woodland communities, depending on the slope, aspect, and soils present. Given that cardoon is prevalent in this area, it should be prioritized for weed treatment.

Giant Wild Rye Grassland

A total of 0.38 acre of giant wild rye grassland occurs on the Ferber Ranch property. This vegetation type is located in a small patch in the southwestern corner of the property. It is dominated by giant wild rye (*Elymus condensatus* [*Leymus c.*]).

Semi-Natural Herbaceous Stands

A total of 7.37 acres of semi-natural herbaceous stands occurs on the Ferber Ranch property. This vegetation type occurs on slopes and plateaus throughout the property. Some of these areas are dominated by non-native grasses such as ripgut grass (*Bromus diandrus*) and smilo grass (*Stipa miliacea* [*Piptatherum miliaceum*]) with scattered black mustard (*Brassica nigra*) and western ragweed (*Ambrosia psilostachya*). Other areas (specifically those indicated by hatching within semi-natural herbaceous stands on Exhibit 6) are dominated by cardoon.

The semi-natural herbaceous stands dominated by cardoon would be an appropriate candidate for habitat restoration to native grassland, scrub, or woodland communities, depending on the slope, aspect, and soils present. Given that cardoon is prevalent in this area, it should be prioritized for weed treatment.

Riparian

White Alder Groves

A total of 0.45 acre of white alder groves occur on the Ferber Ranch property. This vegetation type is located within the floodplain of Trabuco Creek. It is dominated by white alder (*Alnus rhombifolia*) trees. Sub-dominant species include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), Goodding's black willow (*Salix gooddingii*), western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), and mule fat (*Baccharis salicifolia*). This area is characteristic of a dynamic riparian community where flood waters remove vegetation and deposit sediment; as such, the trees are immature and approximately ten feet tall.

Arroyo Willow Thickets

A total of 1.87 acres of arroyo willow thickets occurs in drainages on the Ferber Ranch property. This vegetation type is dominated by arroyo willow. Saltcedar (*Tamarix ramosissima*) is present in the understory, and patches of cattail (*Typha* sp.) occur along the edge.

The northernmost arroyo willow thicket contains a small amount of saltcedar. This area would be an appropriate candidate for habitat restoration. Given that saltcedar is present in this area, it should be prioritized for weed treatment.

Mulefat Thickets

A total of 0.71 acre of mulefat thickets occurs on the Ferber Ranch property. This vegetation type occurs in two small patches: one in a drainage adjacent to Trabuco Oaks Road and another in an upland area near the western edge of the property. It is dominated by mule fat. Scattered patches of mule fat vegetation in other areas were too small to be mapped separately.

Woodland

Coast Live Oak Woodland

A total of 93.23 acres of coast live oak woodland occurs on slopes and drainage bottoms throughout the Ferber Ranch property. This vegetation type is dominated by mature coast live oak (*Quercus agrifolia*). The understory in upland areas contains shrubs such as California sagebrush; the understory in riparian areas contains mugwort (*Artemisia douglasiana*), western poison oak (*Toxicodendron diversilobum*), hollyleaf redberry (*Rhamnus ilicifolia*), and tree tobacco (*Nicotiana glauca*).

Agriculture

Orchard

A total of 1.51 acres of orchard occurs along a trail near the center of the Ferber Ranch property. It consists of large olive (*Olea europaea*) trees that had been planted on the property in the past. It is not currently being maintained as an active orchard.

Barren

Cliff/Rock

A total of 2.16 acres of cliff/rock occurs on the Ferber Ranch property. This represents areas of exposed rock face throughout the site. The largest area, near the southern end of the site, is a deeply incised canyon with near-vertical walls that are eroding. This area is primarily unvegetated; scattered vegetation such as deerweed and California sagebrush has sprouted in eroded soil along the cliff faces and near the bottom of the cliff.

Developed/Non-Native

Developed

A total of 0.61 acre of developed areas occurs on the Ferber Ranch property. This mapping unit consists of the paved Rose Canyon Road. No vegetation is present in this area.

Disturbed

A total of 7.79 acres of disturbed areas occurs on the Ferber Ranch property. These areas consist of bare ground and contain little to no vegetation. Dirt roads, permitted trails, and closed trails are also included in this mapping unit.

Eucalyptus Grove

A total of 0.53 acre of eucalyptus grove occurs near the center of the Ferber Ranch property. It consists of a small stand of mature gum trees (*Eucalyptus* sp.) surrounded by California sagebrush scrub.

Semi-Natural Woodland Stand

A total of 1.42 acres of semi-natural woodland stands occurs on the Ferber Ranch property. This vegetation type is located adjacent to Rose Canyon Road. It consists of ornamental plantings of Aleppo pine (*Pinus halepensis*); the understory contains needlegrass (*Stipa* sp. [*Nassella* sp.]). The understory and surrounding grassland is periodically mowed.

O'Neill Oaks

Eight vegetation types and other areas occur on the O'Neill Oaks property, as shown in Table 5 and Exhibit 7.

**TABLE 5
VEGETATION TYPES AND OTHER AREAS ON
THE O'NEILL OAKS PROPERTY**

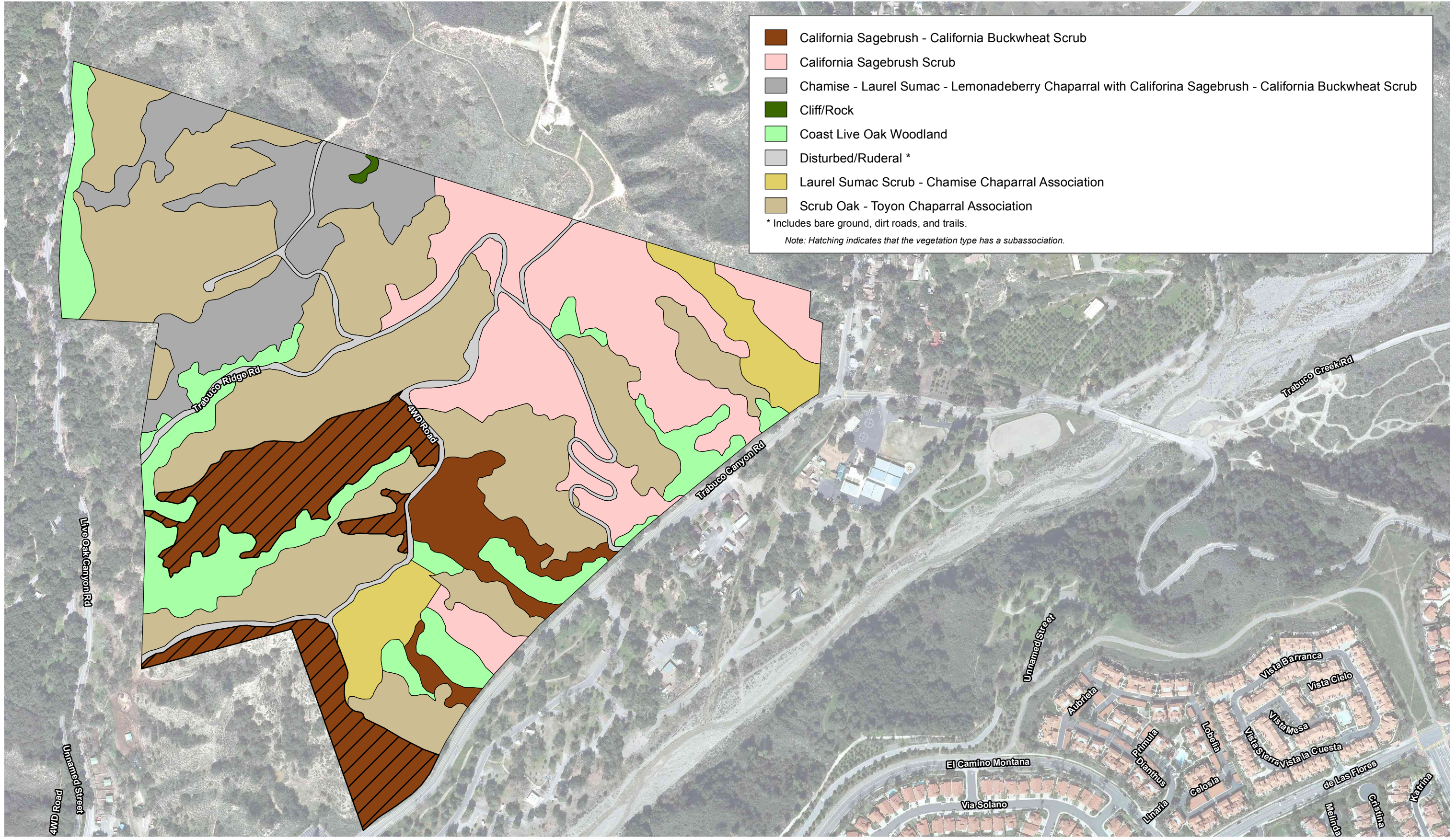
General Vegetation Types	Detailed Vegetation Types or Other Areas	Existing on Property (Acres)
Chaparral		
	Chamise – Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush – California Buckwheat Scrub	11.63
	Scrub Oak – Toyon Chaparral Association	44.06
	Laurel Sumac Scrub – Chamise Chaparral Association	5.80
	Chaparral Subtotal	61.49
Scrub		
	California Sagebrush Scrub	21.43
	California Sagebrush – California Buckwheat Scrub	17.73
	Scrub Subtotal	39.16
Woodland		
	Coast Live Oak Woodland	13.12
Barren		
	Cliff/Rock	0.12
Developed/Non-native		
	Disturbed/Ruderal	3.65
	Total Acreage	117.54

Chaparral**Chamise – Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush – California Buckwheat Scrub**

A total of 11.63 acres of chamise – laurel sumac – lemonade berry chaparral with California sagebrush – California buckwheat scrub occurs on the O'Neill Oaks property. This vegetation type is located on southeast-facing slopes in the northwestern corner of the property. It represents an ecotone between chaparral and scrub habitats. As such, it is co-dominated by a variety of species such as chamise, laurel sumac, lemonade berry, California sagebrush, California buckwheat, and deerweed.

Scrub Oak – Toyon Chaparral Association

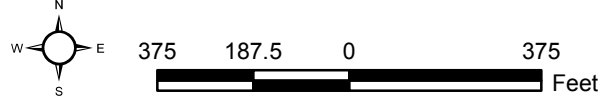
A total of 44.06 acres of scrub oak – toyon chaparral association occurs on north-facing slopes throughout the O'Neill Oaks property. This vegetation type is co-dominated by scrub oak and toyon (*Heteromeles arbutifolia*). Subdominant species include laurel sumac, chaparral nolina, and chamise. Sawyer et al. (2009) recognize this vegetation type as an association.



- California Sagebrush - California Buckwheat Scrub
 - California Sagebrush Scrub
 - Chamise - Laurel Sumac - Lemonadeberry Chaparral with California Sagebrush - California Buckwheat Scrub
 - Cliff/Rock
 - Coast Live Oak Woodland
 - Disturbed/Ruderal *
 - Laurel Sumac Scrub - Chamise Chaparral Association
 - Scrub Oak - Toyon Chaparral Association
- * Includes bare ground, dirt roads, and trails.
 Note: Hatching indicates that the vegetation type has a subassociation.

Vegetation Types

Measure M2 Acquisition Properties/O'Neill Oaks Property



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Laurel Sumac Scrub – Chamise Chaparral Association

A total of 5.80 acres of laurel sumac scrub – chamise chaparral association occurs on 2 slopes on the O'Neill Oaks property. This vegetation type is co-dominated by laurel sumac and chamise. Scrub oak and scrub species such as California sagebrush also occur in this vegetation type. Sawyer et al. (2009) recognize chamise chaparral – laurel sumac scrub as an association.

ScrubCalifornia Sagebrush Scrub

A total of 21.43 acres of California sagebrush scrub occurs on the O'Neill Oaks property. This vegetation type is located on primarily southwest-facing slopes in the eastern half of the property. It is dominated by California sagebrush; coast prickly-pear is a sub-dominant species.

California Sagebrush – California Buckwheat Scrub

A total of 17.73 acres of California sagebrush – California buckwheat scrub occurs on the O'Neill Oaks property. This vegetation type is located on southerly-facing slopes in the eastern half of the property. It is co-dominated by California sagebrush, California buckwheat, and deerweed. Subdominant species include coast prickly-pear, golden-yarrow (*Eriophyllum confertiflorum*), and lemonade berry. A subassociation of this vegetation type (indicated by hatching on Exhibit 7) contains a high density of chaparral nolina, a special status plant species (i.e., it has a California Rare Plant Rank [CRPR] of 1B.2).

WoodlandCoast Live Oak Woodland

A total of 13.12 acres of coast live oak woodland occurs in drainage bottoms throughout the O'Neill Oaks property. This vegetation type is dominated by mature coast live oaks.

BarrenCliff/Rock

A total of 0.12 acre of cliff/rock occurs on the O'Neill Oaks property. This exposed rock face is located along the northern boundary of the property within the chaparral – scrub ecotone described above.

Developed/Non-nativeDisturbed/Ruderal

A total of 3.65 acres of disturbed/ruderal vegetation occurs on the O'Neill Oaks property. Disturbed/ruderal areas consist of the dirt access roads and trails throughout the property. The majority of these roads and trails are primarily bare ground, but some areas are somewhat overgrown by non-native ruderal species such as black mustard, goldentop (*Lamarckia aurea*), and Bermuda grass (*Cynodon dactylon*). It should be noted that the northwest-southeast running trail in the northwest portion of the property is entirely overgrown with native shrubs and herbs (e.g., California sagebrush, western ragweed, and sapphire woollystar [*Eriastrum sapphirinum*]); these species are also establishing on the northwesternmost trail. Inclusion of

these areas entirely overgrown with native vegetation in the disturbed/ruderal vegetation type reflects the graded nature of the trail as opposed to its current vegetation cover.

Hafen

Five vegetation types and other areas occur on the Hafen property, as shown in Table 6 and Exhibit 8.

**TABLE 6
VEGETATION TYPES AND OTHER AREAS ON THE HAFEN PROPERTY**

General Vegetation Types	Detailed Vegetation Types or Other Areas	Existing on Property (Acres)
Chaparral		
	Scrub Oak Chaparral	30.56
Scrub		
	California Sagebrush – California Buckwheat Scrub	11.61
Riparian		
	Coast Live Oak – California Sycamore Woodland Association	2.35
Woodland		
	Coast Live Oak Woodland	3.61
Developed/Non-native		
	Disturbed	0.12
Total Acreage		48.25

Chaparral

Scrub Oak Chaparral

A total of 30.56 acres of scrub oak chaparral occurs on north-facing slopes throughout the Hafen property. This vegetation type is dominated by dense scrub oak. Toyon and chamise are subdominant species.

Scrub

California Sagebrush – California Buckwheat Scrub

A total of 11.61 acres of California sagebrush – California buckwheat scrub occurs on the Hafen property. This vegetation type is located on the south-facing slopes of the property and along the ridgeline that runs north-south across the property. It is co-dominated by a variety of scrub species such as California sagebrush, California buckwheat, black sage, and deerweed. Chaparral nolina, a special status plant species (i.e., with a CRPR of 1B.2), is also prevalent in this vegetation type.

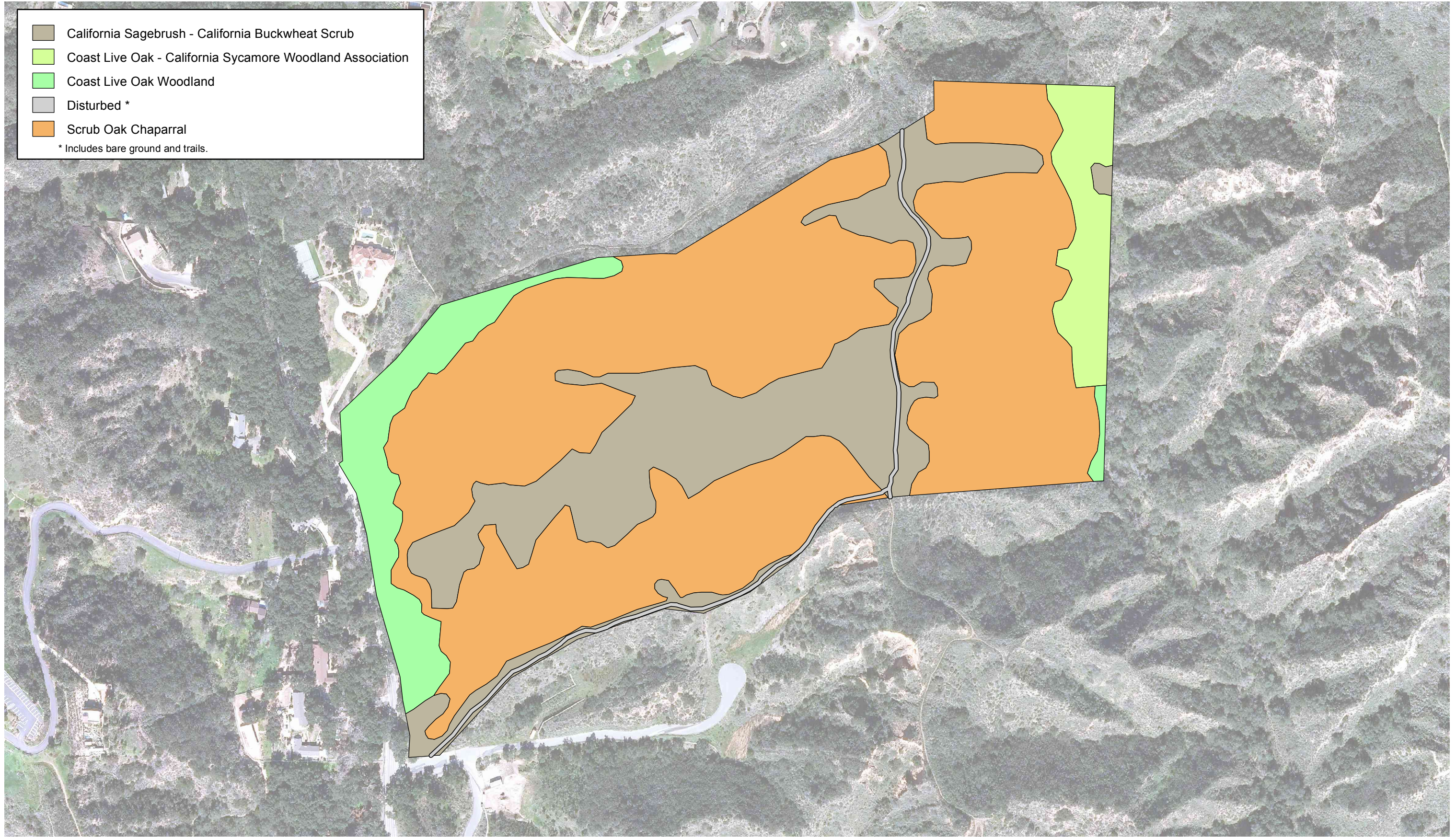
Riparian

Coast Live Oak – California Sycamore Woodland Association

A total of 2.35 acres of coast live oak – California sycamore woodland association occurs on the Hafen property. This vegetation type occurs along the drainage bottom at the eastern edge of the property. It is dominated by mature coast live oak and western sycamore trees. Common

- California Sagebrush - California Buckwheat Scrub
- Coast Live Oak - California Sycamore Woodland Association
- Coast Live Oak Woodland
- Disturbed *
- Scrub Oak Chaparral

* Includes bare ground and trails.



Vegetation Types

Measure M2 Acquisition Properties/Hafen Property



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understory species include mugwort and mule fat. Sawyer et al. (2009) recognize California sycamore – coast live oak woodland as an association.

Woodland

Coast Live Oak Woodland

A total of 3.61 acres of coast live oak woodland occurs on the Hafen property. This vegetation type occurs in drainage bottoms along the western edge of the property adjacent to Live Oak Canyon Road and at the northwest and southeast corners of the property. It is dominated by mature coast live oaks. The understory includes smilo grass, western poison oak, and Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*).

Developed/Non-Native

Disturbed

A total of 0.12 acre of disturbed areas occurs on the Hafen property. These areas consist of bare ground and contain little to no vegetation. Trails are also included in this mapping unit.

Saddle Creek South

Nine vegetation types and other areas occur on the Saddle Creek South property, as shown in Table 7 and Exhibit 9.

**TABLE 7
VEGETATION TYPES AND OTHER AREAS ON
THE SADDLE CREEK SOUTH PROPERTY**

General Vegetation Types	Detailed Vegetation Types or Other Areas	Existing on Property (Acres)
Chaparral		
	Scrub Oak Chaparral	31.41
	Laurel Sumac Scrub – Toyon Chaparral Association	4.82
	Chaparral Subtotal	36.23
Scrub		
	California Sagebrush Scrub	6.04
	California Sagebrush – White Sage Scrub Association	2.53
	Scrub Subtotal	8.57
Grassland		
	Needle Grass Grassland	1.06
	Semi-Natural Herbaceous Stands	14.26
	Grassland Subtotal	15.32
Riparian		
	California Sycamore Woodland	0.25
Woodland		
	Coast Live Oak Woodland	19.09
Developed/Non-native		
	Disturbed	2.68
	Total Acreage	82.14

Chaparral

Scrub Oak Chaparral

A total of 31.41 acres of scrub oak chaparral occurs on north-facing slopes throughout the Saddle Creek South property. This vegetation type is dominated by scrub oak; toyon is a subdominant species. Pockets of scrub species, such as California sagebrush and black sage, also occur in this vegetation type.

Laurel Sumac Scrub – Toyon Chaparral Association

A total of 4.82 acres of laurel sumac scrub – toyon chaparral association occurs on the Saddle Creek South property. This vegetation type is located primarily on south-facing slopes along the southern and eastern edges of the property; one small patch of laurel sumac scrub – toyon chaparral association is located near the center of the property. It is co-dominated by a variety of chaparral and scrub species such as laurel sumac, toyon, scrub oak, California sagebrush, bush monkeyflower (*Mimulus aurantiacus*), and golden-yarrow. Sawyer et al. (2009) recognize toyon chaparral – laurel sumac scrub as an association

Scrub

California Sagebrush Scrub

A total of 6.04 acres of California sagebrush scrub occurs on the Saddle Creek South property. This vegetation type is located on a south-facing slope that runs east-west across the property. It is dominated by California sagebrush with a moderate percentage (i.e., between 20 and 50 percent) of coast prickly-pear. Subdominant species include deerweed, desert brittlebush (*Encelia farinosa*), and bush monkeyflower.

California Sagebrush – White Sage Scrub Association

A total of 2.53 acres of California sagebrush – white sage scrub association occurs on the Saddle Creek South property. This vegetation type is located on a northwest- to northeast-facing slope near the center of the property. It is co-dominated by California sagebrush and white sage (*Salvia apiana*). Sawyer et al. (2009) recognize white sage scrub – California sagebrush scrub as an association.

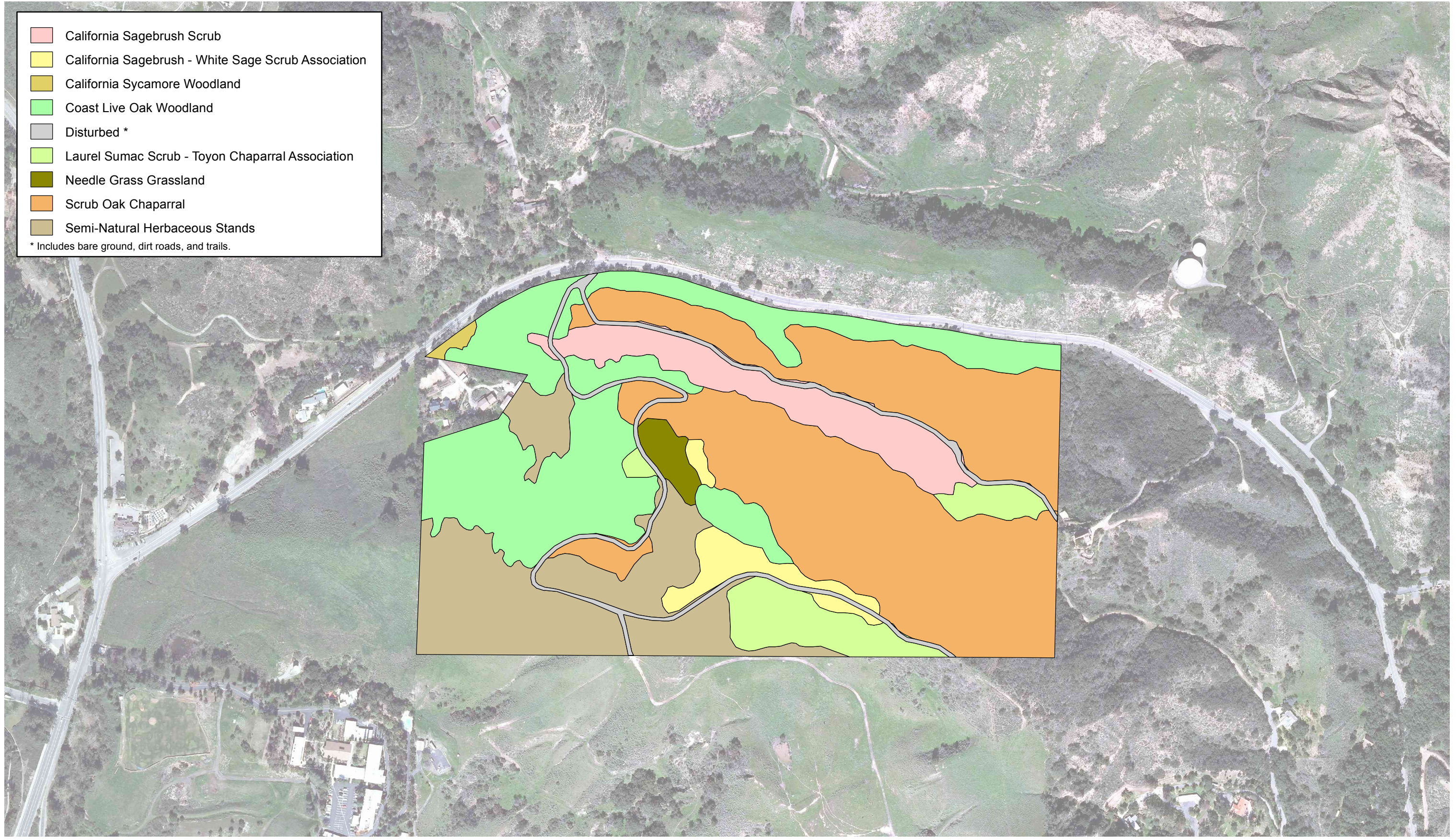
Grassland

Needle Grass Grassland

A total of 1.06 acres of needle grass grassland occurs on a moderate north-facing slope near the center of the Saddle Creek South property. This vegetation type is characterized by having at least ten percent relative cover of purple needlegrass. This vegetation type has been heavily disturbed by grazing and has a high proportion of non-native species such as red brome (*Bromus madritensis* ssp. *rubens*), ripgut grass, goldentop, and cardoon. Coastal goldenbush (*Isocoma menziesii*) is a prevalent emergent shrub in this area.

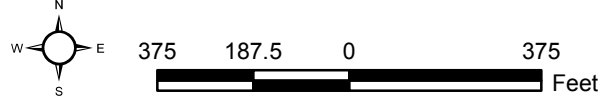
This vegetation type would be an appropriate candidate for habitat restoration to native grassland, scrub, or woodland communities, depending on the slope, aspect, and soils present. Given that cardoon is prevalent in this area, it should be prioritized for weed treatment.

- California Sagebrush Scrub
 - California Sagebrush - White Sage Scrub Association
 - California Sycamore Woodland
 - Coast Live Oak Woodland
 - Disturbed *
 - Laurel Sumac Scrub - Toyon Chaparral Association
 - Needle Grass Grassland
 - Scrub Oak Chaparral
 - Semi-Natural Herbaceous Stands
- * Includes bare ground, dirt roads, and trails.



Vegetation Types

Measure M2 Acquisition Properties/Saddle Creek South Property



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Semi-Natural Herbaceous Stands

A total of 14.26 acres of semi-natural herbaceous stands occurs on the Saddle Creek South property. This vegetation type extends downslope from the ridgeline at the southwest corner of the property and in a patch adjacent to off-site development on the western edge of the property. It is co-dominated by cardoon and a variety of non-native grasses including perennial ryegrass (*Festuca perennis* [*Lolium perenne*]), barley (*Hordeum murinum*), ripgut grass, and soft chess (*Bromus hordeaceus*). Coastal goldenbush is a prevalent emergent shrub in this area.

This vegetation type would be an appropriate candidate for habitat restoration to native grassland, scrub, or woodland communities, depending on the slope, aspect, and soils present. Given that cardoon is prevalent in this area, it should be prioritized for weed treatment.

Riparian

California Sycamore Woodland

A total of 0.25 acre of California sycamore woodland occurs on the Saddle Creek South property. This vegetation type is located in the northwest corner of the property adjacent to Live Oak Canyon Road. It consists of a mix of mature western sycamore and olive trees.

Woodland

Coast Live Oak Woodland

A total of 19.09 acres of coast live oak woodland occurs on the Saddle Creek South property. This vegetation type is located along Live Oak Canyon Road and on north-facing slopes in the western half of the property. It is dominated by mature coast live oak trees. Scattered olive trees are also present in this vegetation type. The understory includes Italian thistle and barley.

Developed/Non-Native

Disturbed

A total of 2.68 acres of disturbed areas occurs on the Saddle Creek South property. These areas consist of bare ground and contain little to no vegetation. Dirt roads and trails are included in this mapping unit.

3.2 WILDLIFE POPULATIONS AND MOVEMENT PATTERNS

Vegetation on and adjacent to the south county properties provides potential habitat for a number of wildlife species. Common wildlife species observed or expected to occur on the properties and/or in adjacent off-site areas are discussed below. Some species were observed on all four properties while other species were observed on only one or some of the properties.

3.2.1 Fish

Most creeks and waterways in Southern California are subject to periods of high water flow in winter and spring and little to no flow during the late summer and fall. Most drainages occurring on the properties are expected to convey water only following storm events. No fish species were observed on the south county properties. Fish species, such as western mosquitofish (*Gambusia affinis*), would only be expected to occur in Trabuco Creek on the Ferber Ranch property during periods of high flow.

3.2.2 Amphibians

Amphibians require moisture for at least a portion of their life cycle and many require standing or flowing water for reproduction. Terrestrial species may or may not require standing water for reproduction; they survive in dry areas by aestivating (i.e., remaining beneath the soil in burrows or under logs and leaf litter, and emerging only when temperatures are low and humidity is high). Many of these species' habitats are associated with water and they emerge to breed once the rainy season begins. Soil moisture conditions can remain high throughout the year in some habitat types depending on factors such as amount of vegetation cover, elevation, and slope/aspect.

Marginally suitable habitat for amphibian species occurs in the drainages on each property. No amphibian species were observed on the south county properties. Common amphibian species that may occur on the properties include garden slender salamander (*Batrachoseps major*), western toad (*Anaxyrus boreas*), and Pacific treefrog (*Pseudacris [Hyla] regilla*).

3.2.3 Reptiles

Reptiles are well-adapted to life in arid habitats. They have several physiological adaptations that allow them to conserve water. Reptiles can also become dormant during weather extremes, allowing them to survive prolonged droughts and paucity of food (Ruben and Hillenius 2005). Reptilian diversity and abundance typically varies with vegetation type and character. Many species prefer only one or two vegetation types; however, most species will forage in a variety of habitats. Most reptile species that occur in open areas will excavate a burrow or use rodent burrows for cover, protection from predators, and refuge during extreme weather conditions.

Lizard species observed on the properties include western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*). One snake species was observed on the properties: gopher snake (*Pituophis catenifer*).

3.2.4 Birds

A variety of bird species are expected to be residents on the south county properties, using the habitats throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) is expected to occur on the properties during the winter season, but would not occur in the summer season because it migrates north to its breeding range.

Resident bird species observed on the properties include California quail (*Callipepla californica*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), northern flicker (*Colaptes auratus*), western scrub-jay, common raven (*Corvus corax*), oak titmouse (*Baeolophus inornatus*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), wrentit (*Chamaea fasciata*), California thrasher (*Toxostoma redivivum*), common yellowthroat (*Geothlypis trichas*), spotted towhee (*Pipilo maculatus*), California towhee (*Pipilo crissalis*), and song sparrow (*Melospiza melodia*). Urban-tolerant species that occur in disturbed areas and in natural vegetation types that were also observed on the properties include mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Spinus [Carduelis] psaltria*).

Wintering birds are those species that generally breed outside the region but migrate to the area for the winter season. Wintering species observed on the properties include fox sparrow (*Passerella iliaca*). Summer residents are species that migrate into the region to breed, but

generally winter south of the region. Summer breeders observed during the surveys include black-chinned hummingbird (*Archilochus alexandri*), western wood-pewee (*Contopus sordidulus*), Pacific-slope flycatcher (*Empidonax difficilis*), western kingbird (*Tyrannus verticalis*), cliff swallow (*Petrochelidon pyrrhonota*), hooded oriole (*Icterus cucullatus*), and Bullock's oriole (*Icterus bullockii*). During spring and fall migration, the Project site also provides foraging habitat for a variety of migratory species.

Birds of prey (raptors) observed on the properties include turkey vulture (*Cathartes aura*) (a scavenger), northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), and great horned owl (*Bubo virginianus*).

3.2.5 **Mammals**

Active burrows are present throughout the properties and could provide cover for a number of small mammal species. Small ground-dwelling mammals or their sign observed on the properties include California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), dusky-footed woodrat (*Neotoma fuscipes*), and desert woodrat (*Neotoma lepida*).

Open grassland communities and the leafy understory of scrub and woodland communities provide excellent foraging habitat for herbivorous mammals. Common herbivores observed during field surveys include mule deer (*Odocoileus hemionus*) and desert cottontail (*Sylvilagus audubonii*).

Medium to larger mammalian predators (both carnivorous and omnivorous species) that were observed or are expected on the property in a variety of habitats include common striped skunk (*Mephitis mephitis*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), and mountain lion.

Five bat species were identified from the acoustic analysis: Yuma myotis (*Myotis yumanensis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*). The most common species was the Brazilian free-tailed bat, which was found on all four properties. Most of the bat activity documented on the properties occurred in the lower elevation canyons and ravines where the bats are most likely to find more abundant insect food. Ferber Ranch provides a diversity of habitats suitable for foraging, as well as potential roost habitats for small numbers of bats in snags, under bark, or in tree foliage. No suitable cliffs, buildings, or other man-made structures that would be suitable for roosting are present on the Ferber Ranch property. O'Neill Oaks has some potential to support roosting bats in tree snags or under bark; however, the closed nature of the chaparral habitat provides limited open areas suitable for foraging. Hafén supported relatively few bats, possibly due to the closed nature of the chaparral habitat and lack of open areas. An abandoned homestead with several dilapidated buildings was located on the Saddle Creek South property; however, no bats or bat sign (e.g., droppings, urine stains) were observed.

3.2.6 **Wildlife Movement**

Wildlife corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new

individuals and genetic information (MacArthur and Wilson 1967; Soule 1987; Harris and Gallagher 1989; Bennett 1990). Corridors mitigate the effects of this fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators and human disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move in their home ranges in search of food, water, mates, and other necessary resources (Noss 1983; Fahrig and Merriam 1985; Simberloff and Cox 1987; Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (e.g., foraging for food or water, defending territories or searching for mates, breeding areas, or cover). A number of terms such as “wildlife corridor”, “travel route”, “habitat linkage”, and “wildlife crossing” have been used in various wildlife movement studies to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and to facilitate the discussion on wildlife movement in this analysis, these terms are defined as follows:

- **Travel route** – a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and to provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas and it provides a relatively direct link between target habitat areas.
- **Wildlife corridor** – a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bound by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and to facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as “habitat linkages” or “landscape linkages”) can provide both transitory and resident habitat for a variety of species.
- **Wildlife crossing** – a small, narrow area, relatively short in length and generally constricted in nature that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent “choke points” along a movement corridor, which may impede wildlife movement and increase the risk of predation.

It is important to note that in a large open space area where there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors (as defined above) may not yet exist. Given an open space area that is both large enough to maintain viable populations of species and to provide a variety of travel routes (e.g., canyons, ridgelines, trails, riverbeds, and others), wildlife will use these “local” routes while searching for food, water, shelter, and mates and will not need to cross into other large open space areas. Based on their size, location, vegetative composition and availability of food, some of these movement areas (e.g., large drainages and canyons) are used for longer lengths of time and serve as source areas for food, water and cover, particularly for small- and medium-sized animals. This is especially true if the travel route is within a larger open space area. However, once open space

areas become constrained and/or fragmented as a result of urban development or construction of physical obstacles (such as roads and highways), the remaining landscape features or travel routes that connect the larger open space areas become corridors as long as they provide adequate space, cover, food and water, and do not contain obstacles or distractions (e.g., man-made noise, lighting) that would generally hinder wildlife movement.

In general, animals discussed within the context of movement corridors typically include larger, more mobile species (such as mule deer, black bear [*Ursus americanus*], mountain lion, fox [*Urocyon* sp.], and coyote) and even some of the mid-sized mammals (such as raccoon [*Procyon lotor*], striped skunk, American badger [*Taxidea taxus*], and Virginia opossum [*Didelphis virginiana*]). Most of these species have relatively large home ranges through which they move to find adequate food, water, and breeding and wintering habitat. It is assumed that corridors that serve larger, more vagile species also serve as corridors for many smaller, less mobile species, such as reptiles, amphibians, and rodents (generally discussed within the context of local movement). Regional movement for these species facilitates gene flow and requires at least some local “stepping stone” movement of individuals between populations.

The availability of open space corridors is generally considered less important for bird species. Most bird species are believed to fly in more or less direct paths to desired locations; however, some habitat-specific species may not move great distances from their preferred habitat types, and are believed to be less inclined to travel across unsuitable areas.

Ideally, an open space corridor should encompass a heterogeneous mix of vegetation types to accommodate the ecological requirements of a wide variety of resident species in any particular region. Most species typically prefer adequate vegetation cover during movement, which can serve as both a food source and as protection from weather and predators. Drainages, riparian areas, and forested canyon bottoms typically serve as natural movement corridors because these features provide cover, food, and often water for a variety of species. Very few species will move across large expanses of open, uncovered habitat unless it is the only option available to them. For some species, landscape linkages must be able to support animals for sustained periods, not just for travel. Smaller or less mobile animals (such as rodents and reptiles) require long periods to traverse a corridor, so the corridor must contain adequate food and cover for survival.

Regional Movement

Open space on each of the properties is contiguous with larger areas of open space in the region. The landscape matrix around the properties is generally undeveloped, broken primarily by Live Oak Canyon Road and rural residential development primarily along Trabuco Canyon Road, Live Oak Canyon Road, and Rose Canyon Road. The northern end of the Ferber Ranch property directly abuts the Cleveland National Forest. The southeastern edge of the O’Neill Oaks property directly abuts the O’Neill Regional Park boundary. The remainder of these two properties, as well as the Hafen and Saddle Creek South properties, generally border privately owned open space (currently undeveloped, but unprotected private property) that connects to O’Neill Regional Park or the Cleveland National Forest. The relatively undeveloped nature of the landscape is highly conducive to regional wildlife movement.

Local Movement

The south county properties contain numerous ridgelines and canyons that provide a variety of travel routes for local wildlife movement. The trails and access roads on the properties may also be used for movement. Movement is expected to occur on the properties, as well as between each property and contiguous off-site habitat. Wildlife species that require relatively large home

ranges, such as coyote, bobcat, or mule deer, were observed on the Ferber Ranch, O'Neill Oaks, and Saddle Creek South properties.

3.3 SPECIAL STATUS BIOLOGICAL RESOURCES

The following section addresses special status biological resources that were observed, reported, or have the potential to occur on the property or in adjacent off-site areas. These resources include plant and wildlife species that have been afforded special status and/or recognition by federal and State resource agencies and private conservation organizations. In general, the principal reason an individual taxon (i.e., species, subspecies, or variety) is given such recognition is the documented or perceived decline or limitations of its population size, geographic range, and/or distribution resulting in most cases from habitat loss. Tables 10 and 17 respectively provide a summary of special status plant and wildlife species known to occur in the Project vicinity (i.e., the USGS' Black Star Canyon, Cañada Gobernadora, El Toro, and Santiago Peak 7.5-minute quadrangles) and include information on the status; habitat; potential for occurrence; results of focused survey efforts; and definitions for the various status designations. Generally, this list includes species reported by the CNDDDB and CNPS, supplemented with species from the author's experience that either occur nearby or could occur based on the presence of suitable habitat. In addition to species, special status biological resources include vegetation types and habitats that are either unique; of relatively limited distribution in the region; or of particularly high wildlife value. These resources have been defined by federal, State, and local government conservation programs. Sources used to determine the status of biological resources are listed below.

- **Plants** – Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2012); the CNDDDB (CDFG 2012a); various USFWS *Federal Register* notices regarding listing status of plant species; and the *List of Special Vascular Plants, Bryophytes, and Lichens* (CDFG 2012b).
- **Wildlife** – California Wildlife Habitat Relationships Database System (CDFG BDB 2012); the CNDDDB (CDFG 2012a); various USFWS *Federal Register* notices regarding listing status of wildlife species; and the *List of Special Animals* (CDFG 2011).
- **Habitats** – CNDDDB (CDFG 2012a) and the *List of California Natural Communities* (CDFG 2010).

3.3.1 Definitions of Special Status Biological Resources

A **federally Endangered species** is one facing extinction throughout all or a significant portion of its geographic range. A **federally Threatened species** is one likely to become Endangered in the foreseeable future throughout all or a significant portion of its range. The presence of any federally Threatened or Endangered species in a project impact area generally imposes severe constraints on development, particularly if a project would result in "take" of the species or its habitat. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct. Harm, in this sense, can include any disturbance of habitats used by the species during any portion of its life history.

Proposed species or **Candidate species** are those officially proposed by the USFWS for addition to the federal Threatened and Endangered species list. Because proposed species may soon be listed as Threatened or Endangered, these species could become listed prior to or during implementation of a proposed project. The presence of a Proposed or Candidate species within a project impact area may impose constraints on development if they are listed prior to issuance of project permits, particularly if a project would result in "take" of the species or its habitat.

The State of California considers an **Endangered species** as one whose prospects of survival and reproduction are in immediate jeopardy; a **Threatened species** as one present in such small numbers throughout its range that it is likely to become an Endangered species in the near future in the absence of special protection or management; and a **Rare species** as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. Rare species applies only to California native plants. State-listed Threatened and Endangered species are protected against take unless an Incidental Take Permit is obtained from the resource agencies. The presence of any State-listed Threatened or Endangered species in a project impact area generally imposes severe constraints on development, particularly if a project would result in “take” of the species or its habitat.

California Species of Special Concern is an informal designation used by the CDFW for some declining wildlife species that are not State Candidates. This designation does not provide legal protection, but signifies that these species are recognized as special status by the CDFW. Recently, the CDFW downgraded some of these species from Species of Special Concern to the **Watch List**.

Species that are **California Fully Protected** and **Protected** include those protected by special legislation for various reasons, such as the mountain lion and white-tailed kite (*Elanus leucurus*). Fully Protected species may not be taken or possessed at any time. California Protected species include those species that may not be taken or possessed at any time except under special permit from the CDFW issued pursuant to the *California Code of Regulations* (Title 14, §§650, 670.7) or Section 2081 of the *California Fish and Game Code*.

Species of **Local Concern** are those that have no official status with the resource agencies, but are being watched because there is either a unique population in the region or the species is declining in the region.

Special Animal is a general term that refers to species that the CNDDDB is interested in tracking, regardless of legal or protective status. This term includes species designated as any of the above terms, but also includes species that may be considered biologically rare; restricted in distribution; declining throughout their range; have a critical, vulnerable stage in their life cycle that warrants monitoring; are on the periphery of their range and are threatened with extirpation in California; are associated with special status habitats; or are considered by other State or federal agencies or private organizations to be sensitive or declining.

The California Rare Plant Rank (CRPR), formerly known as CNPS List, is a ranking system by the Rare Plant Status Review group⁷ and managed by the CNPS and the CDFW. A CRPR summarizes information on the distribution, rarity, and endangerment of California’s vascular plants. Plants with a CRPR of **1A** are presumed extinct in California because they have not been seen in the wild for many years. Plants with a CRPR of **1B** are Rare, Threatened, or Endangered throughout their range. Plants with a CRPR of **2A** are presumed extirpated from California, but are more common elsewhere. Plants with a CRPR of **2B** are considered Rare, Threatened, or Endangered in California, but are more common elsewhere. Plants with a CRPR of **3** require more information before they can be assigned to another rank or rejected; this is a “review” list. Plants with a CRPR of **4** are of limited distribution or infrequent throughout a broader area in California; this is a “watch” list. The CRPR Threat Rank is an extension added onto the CRPR to designate the level of endangerment by a 1 to 3 ranking (CNPS 2011). An extension of **.1** is assigned to plants that are considered to be “seriously threatened” in California (i.e., over 80 percent of the occurrences threatened or having a high degree and immediacy of threat). Extension **.2** indicates the plant is “fairly threatened” in California (i.e.,

⁷ This group consists of over 300 botanical experts from the government, academia, non-governmental organizations, and the private sector.

between 20 and 80 percent of the occurrences threatened or having a moderate degree and immediacy of threat). Extension .3 is assigned to plants that are considered “not very threatened” in California (i.e., less than 20 percent of occurrences threatened or having a low degree and immediacy of threat or no current threats known). The absence of a threat code extension indicates plants lacking any threat information.

3.3.2 Vegetation Types

In addition to providing an inventory of special status plant and wildlife species, the CNDDDB also provides an inventory of vegetation types that are considered special status by the State and federal resource agencies, academic institutions, and various conservation groups (such as the CNPS). Determination of the level of imperilment (i.e., exposure to injury, loss, or destruction) is based on the NatureServe Heritage Program Status Ranks that rank both species and vegetation types on a global (G) and statewide (S) basis according to their rarity, trend in population size or area, and recognized threats (e.g., proposed developments, habitat degradation, and non-native species invasion) (Faber-Langendoen et al. 2009). The ranks are scaled from 1 to 5. NatureServe considers **G1** or **S1** communities to be critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors; **G2** or **S2** communities to be imperiled and at high risk of extinction or elimination due to very restricted range, very few populations or occurrences, steep declines, or other factors; **G3** or **S3** communities to be vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors; **G4** or **S4** communities to be apparently secure and uncommon but not rare with some cause for long-term concern due to declines or other factors; and **G5** or **S5** communities to be secure. A question mark (?) denotes an inexact numeric rank, but existing information points to this rank (Faber-Langendoen et al. 2009). For vegetation alliances⁸ that have State ranks of S1–S3, all associations within the alliance are considered to be highly imperiled.

Special status vegetation types observed the properties are described further below.

Chaparral Communities

Various chaparral communities occur on the south county properties, though they fall into three broad categories: chamise-dominated, scrub oak-dominated, and laurel sumac-dominated.

Scrub oak chaparral is the most abundant vegetation community on the O’Neill Oaks (44.06 acres of scrub oak – toyon chaparral association), Hafen (30.56 acres), and Saddle Creek South (31.41 acres) properties; it is also prevalent on the Ferber Ranch property (44.66 acres). The forms of chaparral dominated by a mix of large evergreen shrubs—such as laurel sumac, toyon, lemonade berry, and/or chamise—often intermixed with sage scrub species, are also prevalent on the south county properties. Ferber Ranch contains 13.36 acres of chamise – laurel sumac – lemonade berry chaparral with California sagebrush scrub; 11.90 acres of chamise chaparral; and 32.94 acres of laurel sumac – lemonade berry chaparral with California sagebrush – California buckwheat scrub. The O’Neill Oaks property contains 11.63 acres of chamise – laurel sumac – lemonade berry chaparral with California sagebrush – California buckwheat scrub and 5.80 acres of laurel sumac scrub – chamise chaparral association. Saddle Creek South contains 4.82 acres of laurel sumac scrub – toyon chaparral association.

Chaparral is a “drought tolerant plant community dominated by sclerophyllous, woody shrubs shaped by a Mediterranean-type climate and naturally recurring wildfires” (Halsey 2007). It is

⁸ A vegetation alliance is “a classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover” (Sawyer et al. 2009).

the most extensive vegetation community in California and is not presently considered to have special status, though its status in the future may be uncertain given continuing drought conditions; increased fire frequencies; and limited understanding of the system. In general, chaparral vegetation types on the properties are considered secure or apparently secure. Scrub oak chaparral is ranked by the CDFW as G4 S4. At the alliance level, chamise chaparral is ranked as G5 S5 and laurel sumac scrub is ranked as G4 S4; associations of these alliances would not be considered highly imperiled. One chaparral vegetation type on the south county properties would be considered vulnerable at the State level: toyon chaparral – laurel sumac scrub (ranked as G5 S3).

Sage Scrub Communities

California sagebrush scrub is the most abundant vegetation type on the Ferber Ranch property (149.57 acres); it also occurs on the O'Neill Oaks (21.43 acres) and Saddle Creek South properties (6.04 acres). In addition, California sagebrush scrub/needle grass grassland (0.28 acre), coast prickly pear scrub (6.50 acre), and scale broom scrub (0.30 acre) occur on the Ferber Ranch property. California sagebrush – California buckwheat scrub occurs on the O'Neill Oaks (17.73 acres) and Hafen (11.61 acres) properties, and California sagebrush – white sage scrub association (2.53 acres) occurs on the Saddle Creek South property.

California sagebrush scrub is ranked by the CDFW as G5 S5, the California sagebrush – California buckwheat scrub alliance is ranked as G4 S4, the white sage – California sagebrush alliance is ranked as G4 S3, coast prickly pear scrub is ranked as G4 S3, and scale broom scrub is ranked as G3 S3. While the Global/State rankings of California sagebrush scrub indicate that it is secure, it is of local concern as part of the larger coastal sage scrub community. Coastal sage scrub had, as a whole, declined approximately 70 to 90 percent in its historic range in California by the mid-1990s (Noss and Peters 1995). Sage scrub has largely been lost to land use changes in Southern California basins and foothills. The ecological function of Southern California's remaining sage scrub is threatened by habitat fragmentation and degradation, which is largely the result of invasive non-native species, livestock grazing, off-highway vehicles, altered fire regime, and air pollution (O'Leary 1995; Allen et al. 2000). Scalebroom scrub once occurred along intermittent streams and gently sloping fans in Los Angeles and Orange counties, but few stands remain (Sawyer et al. 2009). Construction of houses and golf courses, agriculture, dams, gravel mining, and stream channelization have interrupted the natural fluvial processes that are a part of this habitat.

Grassland Communities

Needle grass grassland occurs on the Ferber Ranch (17.15 acres) and Saddle Creek South (1.06 acres) properties; needle grass grassland/semi-natural herbaceous stands (3.94 acres) and giant wild rye grassland (0.38 acre) also occur on the Ferber Ranch property.

Needle grass grassland is ranked according to its degree of imperilment by the CDFW; the *Nassella pulchra* (purple needle grass grassland) Provisional Alliance is ranked as G4 S3?⁹ and the *Nassella lepida* (foothill needle grass grassland) Provisional Alliance is ranked as G3? S3?. Giant wild rye grassland is ranked G3 S3. Vegetation types ranked as S3 are considered of special concern. Native grasslands are believed to have covered nearly $\frac{1}{5}$ of the state and have declined by approximately 99 percent in their historic range in California (Barry 1972; Noss and Peters 1995). In the mid-nineteenth century, heavy grazing by cattle and sheep caused native perennials to be replaced by fast-growing annual grasses, which are able to take advantage of spring rains and produce seeds before the dry heat of summer. The native perennial grasses,

⁹ A question mark (?) denotes an inexact numeric rank due to insufficient samples over the full expected range of the type, but existing information points to this rank.

which are more palatable to livestock than annuals, were damaged by grazing and trampling. Native grasslands have also been lost to development and conversion to agriculture. Most of the needle grass grassland on the Ferber Ranch property is relatively undisturbed, supporting a high percent cover of native bunch grasses. The needlegrass grassland on the Saddle Creek South property has been disturbed by the presence of non-native grasses and would, therefore, not be considered as biologically valuable as undisturbed types.

Giant wild rye grassland is described under the Herbaceous Alliances and Stands and this alliance tends to be short lived because it is stimulated by fire and fairly quickly taken over by native shrubs of the coastal sage scrub zone following fire (Sawyer et al. 2009). Giant wild rye was one of the species whose abundance was maintained by Native American burning (Sawyer et al. 2009). Giant wild rye does occur after fires; however, it may persist independently of fire in areas of human disturbance and urban runoff or in areas of coastal sage scrub where natural slumping and seepage occur (Sawyer et al. 2009).

Woodland Communities

Coast live oak woodland occurs on all four south county properties (93.23 acres on Ferber Ranch, 13.12 acres on O'Neill Oaks, 3.61 acres on Hafen, and 19.09 acres on Saddle Creek South).

Coast live oak woodland is ranked as G5 S4. Oak woodlands are declining throughout California due to residential, commercial, and industrial development. Woodlands are an important resource in California that provide aesthetic, cultural, economic, and environmental value, in addition to wildlife habitat. In addition, some woodlands on the properties are associated with jurisdictional resources, discussed below.

Riparian Communities

Various riparian communities are present on the Ferber Ranch property. A total of 1.87 acres of arroyo willow thickets, 0.71 acre of mulefat thicket, and 0.45 acre white alder groves occurs on the property. In addition, 2.35 acres of coast live oak – California sycamore woodland association occurs on the Hafen property and 0.25 acre of California sycamore woodland occurs on the Saddle Creek South property.

While these are included within the jurisdiction of the USACE, the RWQCB, and/or the CDFW, they are also ranked by the CDFW according to their degree of imperilment. Arroyo willow thickets are ranked as G4 S4, mulefat thickets are ranked as G5 S4, and white alder groves are ranked as G4 S4. The California sycamore – coast live oak woodland association is ranked as G3 S3, and California sycamore woodland is ranked as G3 S3.

Typically, riparian vegetation provides important biological functions for an ecosystem such as (1) for cover and water sources for wildlife; (2) for filtration of runoff water and groundwater to be recharged; and (3) for flood control and sediment stabilization purposes. Riparian habitats are biologically productive as well as diverse, and are the exclusive habitat of several special status species. As a result, the resource agencies often consider riparian vegetation types to be important resources. It is estimated that as much as 95 to 97 percent of historic riparian habitats in Southern California had been lost by the late 1980s due to agriculture, urban development, flood control, and other human-caused impacts (Faber et al. 1989; Bell 1997). Additionally, since the 1970s, giant reed has become the greatest threat to the remaining riparian resources in coastal Southern California (Bell 1997). This invasive species competes with native species such as willows (*Salix* spp.), mule fat, and cottonwoods (*Populus* spp.); is difficult to control; and apparently does not provide food or nesting habitat for native species (Bell 1997).

Jurisdictional Areas

The south county properties are within the San Juan Hydrologic Unit. All drainages on the Ferber Ranch, O’Neill Oaks, and Hafen properties flow into Trabuco Creek; the drainages on the Saddle Creek South property flow into Aliso Creek. Trabuco Creek and Aliso Creek eventually connect with the Pacific Ocean, a Traditional Navigable Water (TNW), as designated by the USACE. The tributaries of Trabuco Creek and Aliso Creek do not satisfy the USACE criteria for Relatively Permanent Waters (RPW); however, they have a connection to those larger creeks either directly, through an underground drainage system, or via sheet flow over upland areas. “Waters of the U.S.” on the Ferber Ranch property exhibited the three parameters (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) to be considered a wetland; therefore, a total of 0.45 acre of wetlands occurs on the Ferber Ranch property. A total of 4.80 acres, 1.07 acres, 0.76 acre, and 0.45 acre of non-wetland “Waters of the U.S.” occur on the Ferber Ranch, O’Neill Oaks, Hafen, and Saddle Creek South properties, respectively (Exhibits 10, 11, 12, and 13; Table 8). A total of 53.30 acres, 11.47 acres, 4.35 acres, and 7.33 acres under the jurisdiction of the CDFW occur on the Ferber Ranch, O’Neill Oaks, Hafen, and Saddle Creek South properties, respectively (Exhibits 10, 11, 12, and 13; Table 8).

**TABLE 8
“WATERS OF THE U.S.” AND “WATERS OF THE STATE”
ON THE SOUTH COUNTY PROPERTIES**

Mitigation Property	Jurisdictional Feature			CDFW Jurisdictional Limits
	USACE/RWQCB		RWQCB only	
	Non-wetland “waters of the U.S.”	Wetlands	Isolated Feature	
Ferber Ranch	4.80	0.45	0.00	53.30
O’Neill Oaks	1.07	0.00	0.00	11.47
Hafen	0.76	0.00	0.00	4.35
Saddle Creek South	0.45	0.00	0.00	7.33
Total	7.08	0.45	0.00	76.45

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife.

Should jurisdictional resources be impacted by management activities on the properties, permits/agreements from the regulatory agencies would be required. This would consist of a USACE Section 404 Permit and/or Letters of Permission;¹⁰ an RWQCB Section 401 Water Quality Certification; and a CDFW Section 1602 Streambed Alteration Agreement.

CRAM is a tool for assessing the overall condition¹¹ of a wetland; it was developed by a consortium of federal, State, and local scientists and managers. The results of a condition assessment can be used to infer the ability to provide various functions or services to which a wetland is most suited. This analysis can be used for a variety of applications, such as in evaluating a project site to inform regulatory decisions (e.g., Section 401 and 404 permitting) or restoration or mitigation site evaluation.

As stated previously, AA scores range from 25 to 100. The maximum AA score possible represents how a wetland is doing relative to the best achievable conditions for that wetland type in the state. It is assumed that the same scores for different wetlands of the same type

¹⁰ The Hafen, O’Neill Oaks, and Ferber Ranch properties are located within the San Juan Creek/Western San Mateo Creek Watershed Special Area Management Plan; all Nationwide Permits were revoked as part of the approval for this plan. As such, permitting through the USACE would be authorized through the Letters of Permission process or the Standard Individual Permit process.

¹¹ “Condition” is defined as the state of a wetland AA’s physical and biological structure, the hydrology, and its buffer and landscape context relative to the best achievable states for the same type of wetland (CWMW 2012).

represent the same overall condition and functional capacity. Therefore, these scores may be used to track the progress of restoration efforts over time; to compare impacted sites to their in-kind mitigation sites; or to compare an individual wetland to the status and trends in ambient condition of its wetland type.

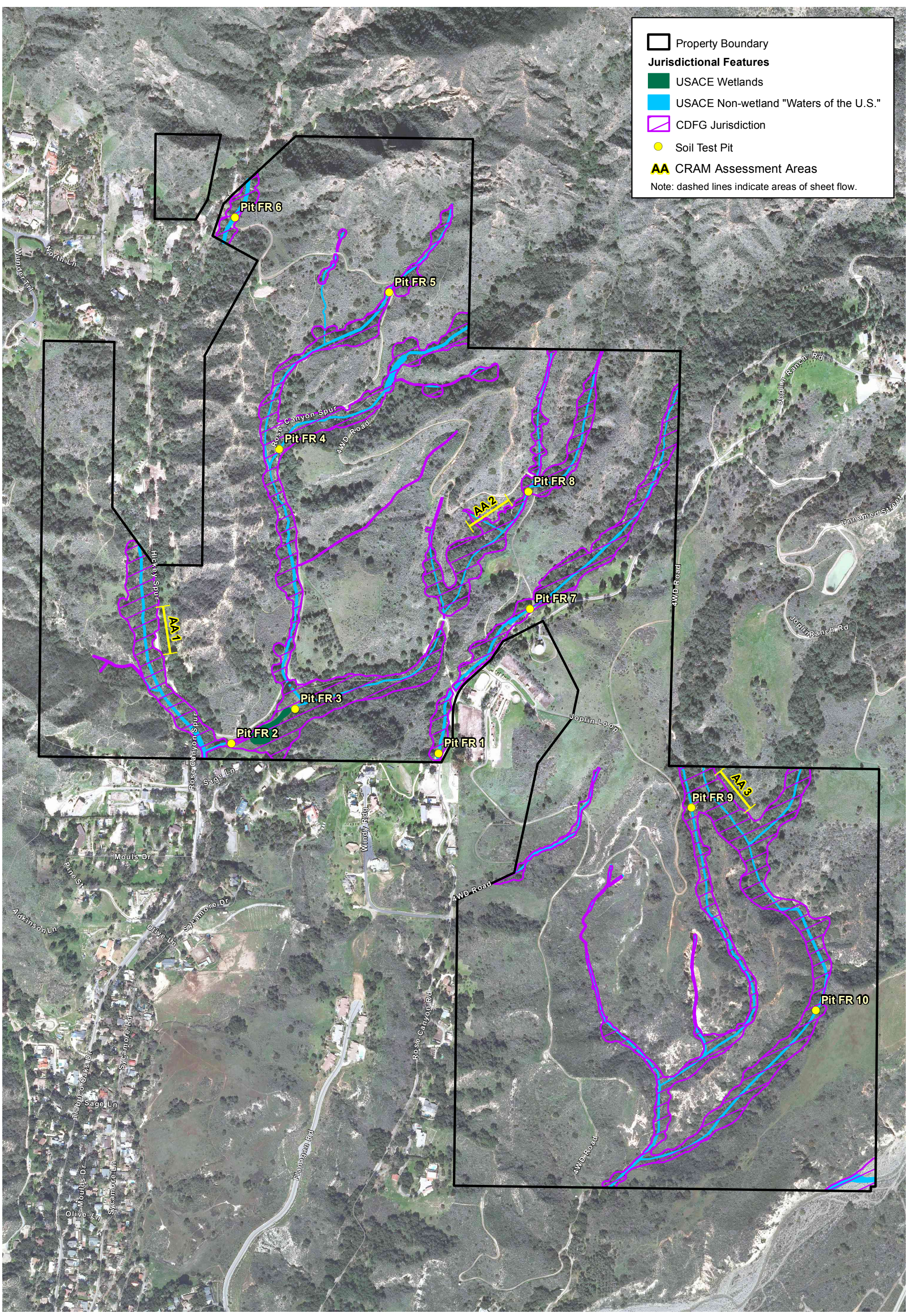
Ten 100-meter-long AAs were scored for the CRAM analysis of the south county properties (Ferber Ranch – 3, O’Neill Oaks – 3, Hafen – 3, Saddle Creek South – 1) (Exhibits 10, 11, 12, and 13). The overall AA scores range from 61.6 to 88.9 (Table 9). The Buffer and Landscape Context attribute scores range from 55.8 to 100.0; the Hydrology attribute scores were all 100.0; the Physical Structure attribute scores range from 37.5 to 75.0; and the Biotic Structure attribute scores range from 47.2 to 80.6. These scores reflect the generally natural condition of the properties. Specifically, the scores are very high for buffer condition and hydrology at all sites. This reflects the large amount of open space surrounding the drainages and lack of disturbance to the water sources resulting in little or no channel degradation. The generally low scores for Physical Structure are a reflection of the type of riparian system (i.e., generally ephemeral and uniform) as opposed to the result of anthropogenic disturbance. Because most of the jurisdictional resources are dominated by coast live oak riparian habitat, the natural density of these woodlands has limited the establishment of understory species and inhibited the scores for Biotic Structure (specifically, the number of co-dominant species, plant zonation, and vertical biotic structure). The scores for Landscape Connectivity are the most variable, with streambeds unaffected by nearby development (within 500 meters upstream or downstream) receiving the maximum score, while drainages with nearby development receiving the lowest score.

There are enhancement opportunities that would likely result in higher CRAM scores. Enhancement measures are aimed to improve scores associated with the Buffer and Landscape Context and Biotic Structure attributes. Measures aimed at changing the Hydrology and Physical Structure attributes would require changes outside the ability of an individual landowner and/or require changes in the physical structure of the bed and bank of the system that are not recommended.

There are opportunities on the O’Neill Oaks property to enhance and restore streambed areas that have been damaged by cattle grazing. Overgrazing may negatively impact the quality of drainages and surrounding buffer (e.g., through soil compaction, erosion, and facilitating the spread and persistence of non-native species) (Schoenherr 1992). Enhancement measures (e.g., elimination of grazing, targeted removal of species such as Italian thistle and tree tobacco, and restoration of native species) have the potential to increase the CRAM scores for the number of co-dominant species, percent of invasive co-dominant species, and the vertical biotic structure metrics. Due to the largely natural condition of the Ferber Ranch, Hafen, and Saddle Creek South properties, enhancement activities are not likely to significantly increase CRAM scores. However, elimination of grazing, where present, and management of non-native invasive species would help to maintain the natural conditions of these sites.

3.3.3 Special Status Plants

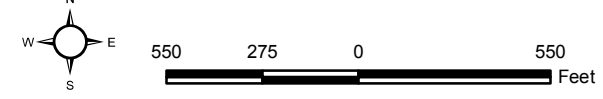
Based on the results of the literature review, 40 special status plant species are known to occur in the vicinity of the south county properties. These species and their potential for occurrence (which is based on the presence of suitable habitat) are summarized in Table 10. Note that these species are listed alphabetically according to their scientific name. Six special status plant species were observed on the south county properties. These species are discussed after the table.



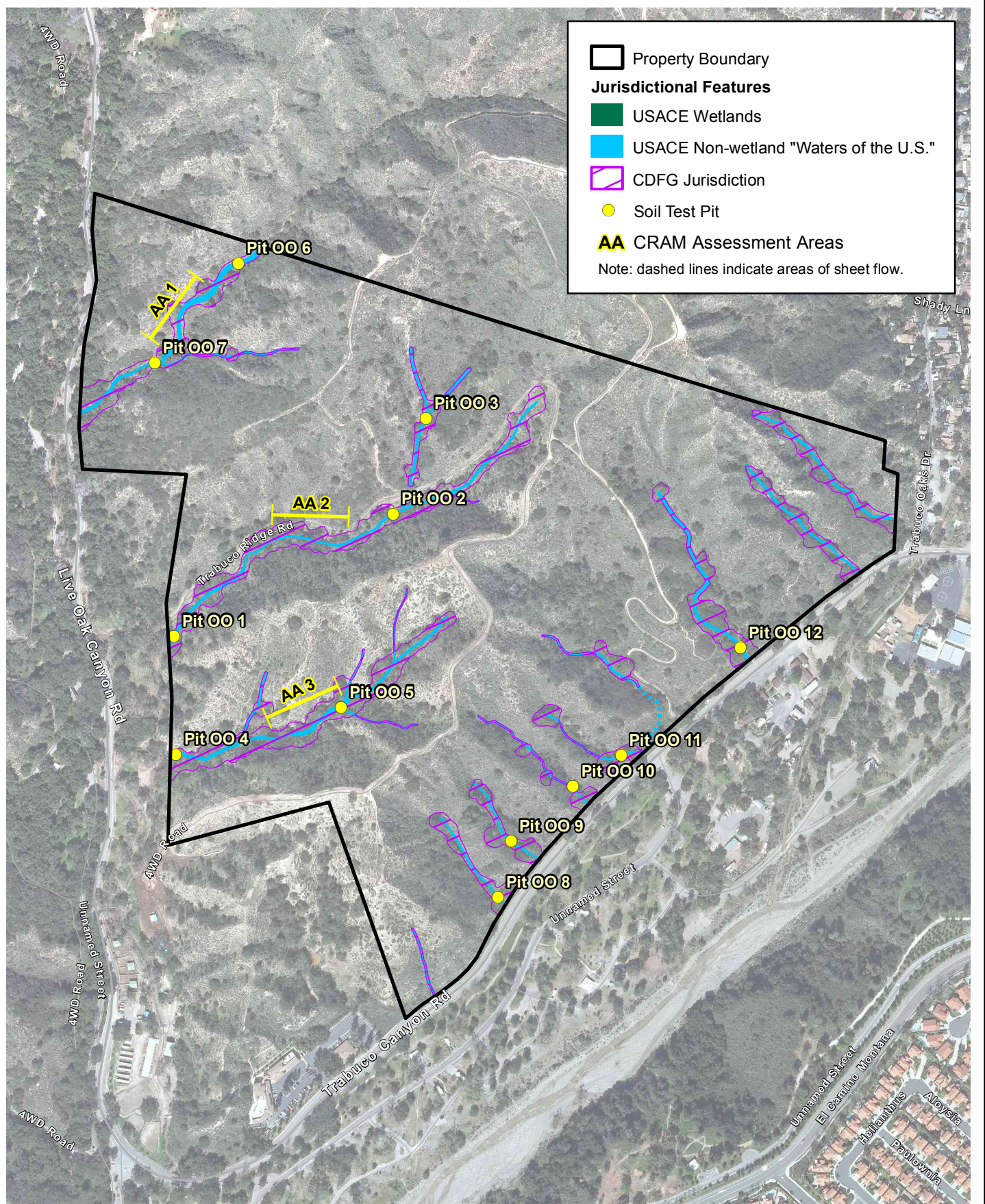
Property Boundary
Jurisdictional Features
 USACE Wetlands
 USACE Non-wetland "Waters of the U.S."
 CDFG Jurisdiction
 Soil Test Pit
 CRAM Assessment Areas
 Note: dashed lines indicate areas of sheet flow.

Jurisdictional Resources

Measure M2 Acquisition Properties/Ferber Ranch Property



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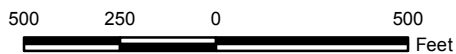


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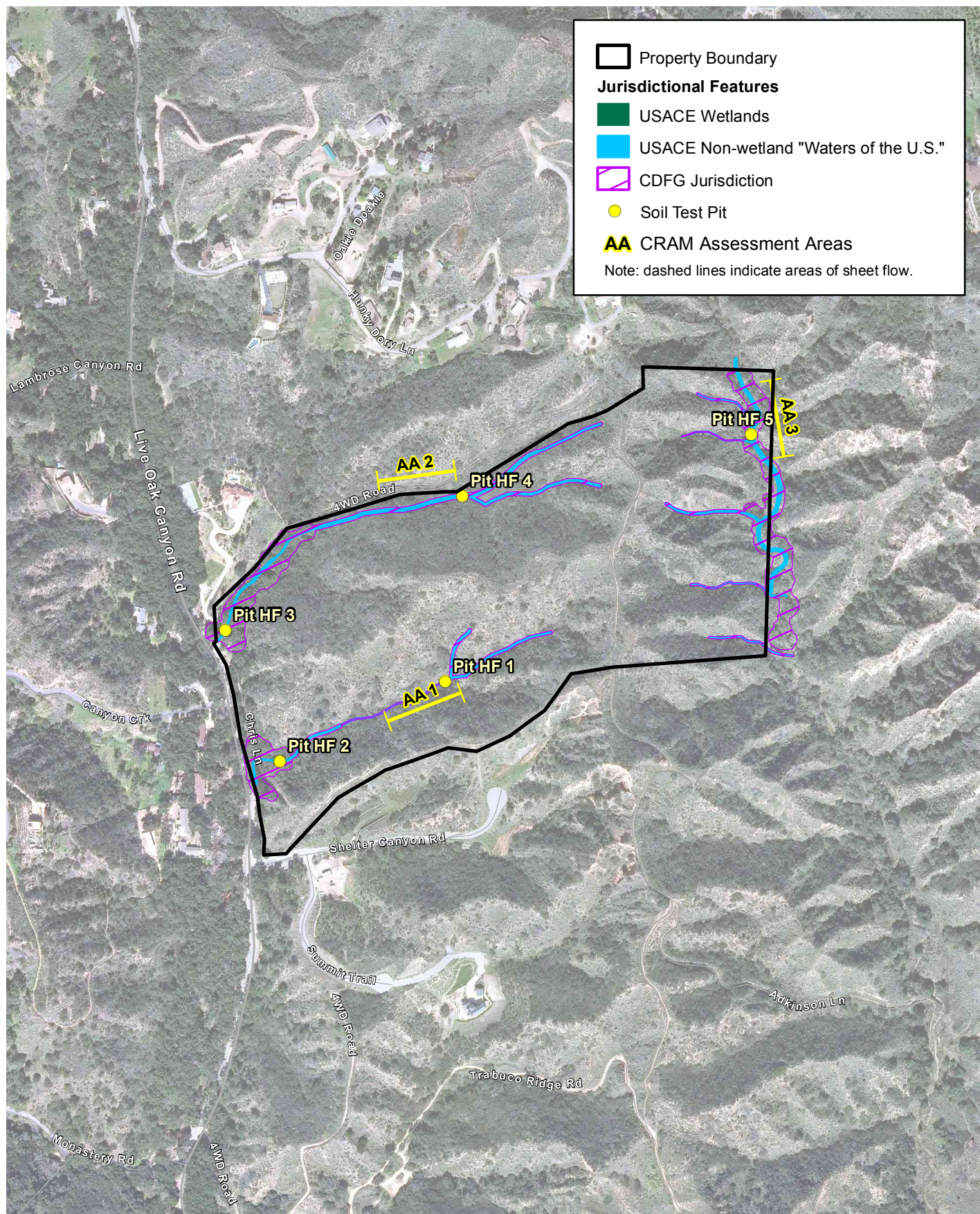
Jurisdictional Resources

Exhibit 11

Measure M2 Acquisition Properties/O'Neill Oaks Property



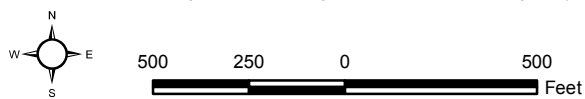
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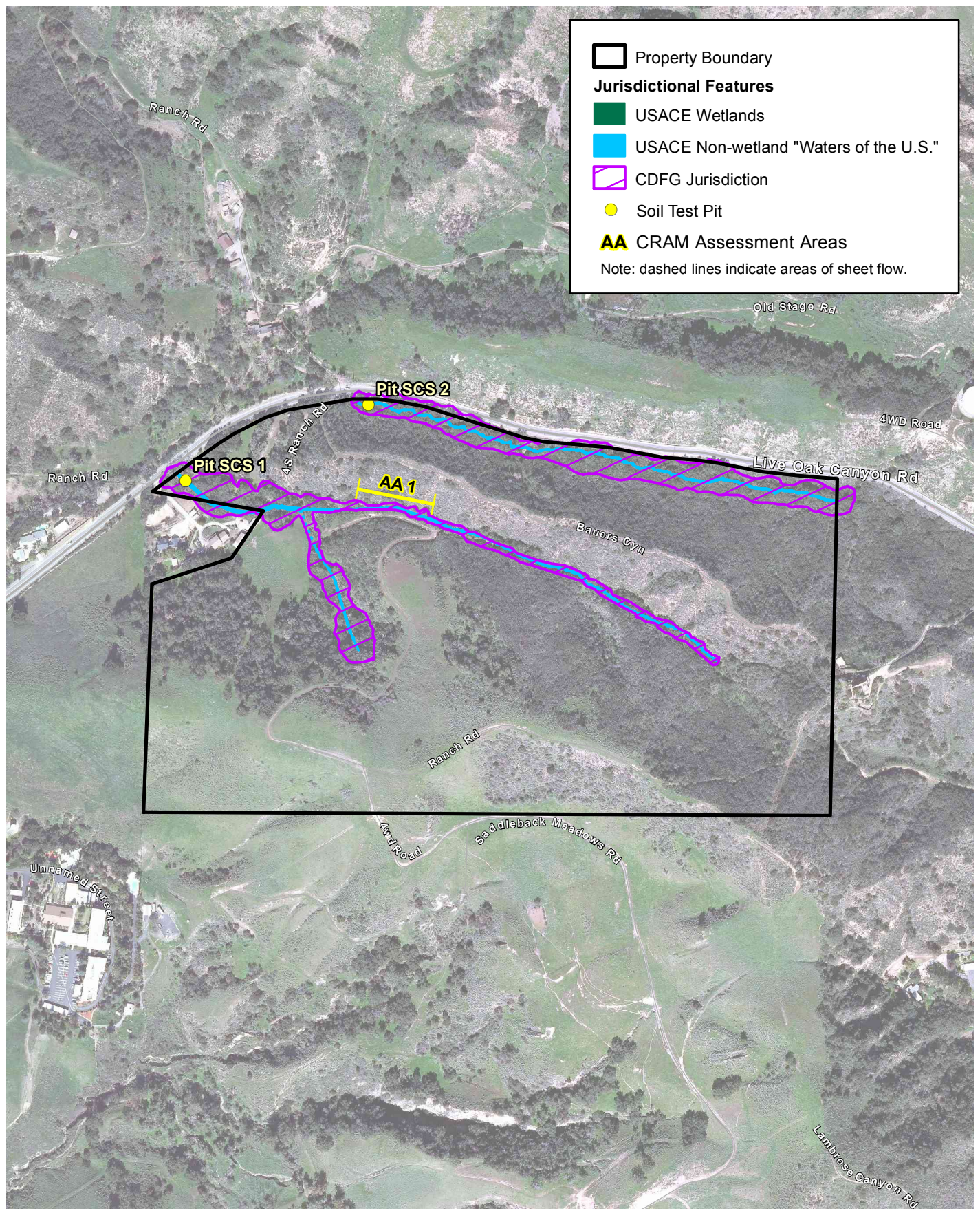
Jurisdictional Resources

Exhibit 12

Measure M2 Acquisition Properties/Hafen Property



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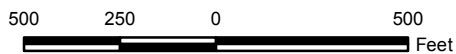


Property Boundary
Jurisdictional Features
 USACE Wetlands
 USACE Non-wetland "Waters of the U.S."
 CDFG Jurisdiction
● Soil Test Pit
AA CRAM Assessment Areas
 Note: dashed lines indicate areas of sheet flow.

Jurisdictional Resources

Exhibit 13

Measure M2 Acquisition Properties/Saddle Creek South Property



**TABLE 9
ATTRIBUTE SCORES FOR SOUTH COUNTY
PROPERTY ASSESSMENT AREAS**

Attribute	Metric	CRAM Scores ^a									
		Ferber Ranch			O'Neill Oaks			Hafen			Saddle Creek South
		AA1	AA2	AA3	AA1	AA2	AA3	AA1	AA2	AA3	AA1
Buffer and Landscape Context	Landscape Connectivity	D (3)	A (12)	A (12)	D (3)	D (3)	D (3)	D (3)	D (3)	A (12)	D (3)
	Buffer Condition (submetrics below)										
	Percentage of Assessment Area with Buffer	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)
	Average Buffer Width	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	B (9)	A (12)	A (12)	B (9)
	Buffer Condition	B (9)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)
	<i>Attribute Score</i>	55.8	100.0	100.0	62.5	62.5	62.5	59.0	62.5	100.0	59.0
Hydrology	Water Source	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)
	Hydroperiod/Channel Stability	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)
	Hydrologic Connectivity	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)
	<i>Attribute Score</i>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physical Structure	Structural Patch Richness	D (3)	D (3)	D (3)	D (3)	D (3)	D (3)	D (3)	D (3)	B (9)	D (3)
	Topographic Complexity	C (6)	C (6)	C (6)	B (9)	C (6)	C (6)	C (6)	C (6)	B (9)	C (6)
	<i>Attribute Score</i>	37.5	37.5	37.5	50.0	37.5	37.5	37.5	37.5	75.0	37.5
Biotic Structure	Plant Community (submetrics below)										
	Number of Plant Layers	B (9)	A (12)	B (9)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)
	Number of Co-dominant Species	C (6)	C (6)	C (6)	A (12)	B (9)	B (9)	B (9)	B (9)	B (9)	C (6)
	Percent of Invasive Co-dominant Species	A (12)	B (9)	B (9)	A (12)	B (9)	D (3)	A (12)	A (12)	A (12)	B (9)
	Horizontal Interspersion/Plant Zonation	C (6)	D (3)	D (3)	C (6)	D (3)	D (3)	C (6)	C (6)	B (9)	D (3)
	Vertical Biotic Structure	C (6)	B (9)	B (9)	C (6)	C (6)	C (6)	B (9)	B (9)	B (9)	C (6)
	<i>Attribute Score</i>	58.3	58.3	55.6	66.7	52.8	47.2	72.2	72.2	80.6	50.0
Overall Assessment Area Score^b		62.9	74.0	73.3	69.8	63.2	61.8	67.2	68.1	88.9	61.6

CRAM: California Rapid Assessment Method; AA: Assessment Area.

^a CRAM scores are indicated by the letter score (A through D) that is assigned to each metric and the corresponding numeric value of that score is in parentheses.

^b The overall CRAM score is calculated by averaging the four attribute scores.

Source: BonTerra Consulting 2013a.

**TABLE 10
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES**

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Abronia villosa</i> var. <i>aurita</i> chaparral sand-verbena	—	—	1B.1	Between January and September.	Sandy places, primarily in coastal sage scrub and chaparral habitats and alluvial washes and river benches.	Central and southern South Coast and western Sonoran (Colorado) Desert; between sea level and 5,250 feet above msl.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Astragalus brauntonii</i> Braunton's milk-vech	FE	—	1B.1	Between March and July.	Recent burns or disturbed areas in chaparral and tecate cypress forest.	Western Transverse Ranges, San Gabriel Mountains possibly to the South Coast, and northern Peninsular Ranges; between sea level and 2,133 feet above msl.	Only known from northern Santa Ana Mountains (Gypsum and Coal Canyons) in Orange County. Not expected to occur.	Outside known range (Gypsum and Coal Canyons) in Orange County. Not expected to occur.	Outside known range (Gypsum and Coal Canyons) in Orange County. Not expected to occur.	Outside known range (Gypsum and Coal Canyons) in Orange County. Not expected to occur.
<i>Atriplex coulteri</i> Coulter's saltbush	—	—	1B.2	Between March and October.	Alkaline soils or clay barrens in open areas of perennial grasslands, coastal sage scrub, and coastal bluff scrub.	South Coast and Channel Islands to Baja California, Mexico; sea level to 1,640 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Baccharis malibuensis</i> Malibu baccharis	—	—	1B.1	Between August and September.	Grassy openings in chaparral.	Western Transverse Ranges and Peninsular Ranges; between 164 and 984 feet above msl.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Brodiaea filifolia</i> thread-leaved brodiaea	FT	SE	1B.1	Between March and June.	Grasslands and vernal pools.	South Coast, San Bernardino Mountains, and western Peninsular Ranges; 80 to 2,820 feet above msl.	Suitable habitat present. Surveys conducted at end of or past blooming period.	Suitable habitat present. Surveys conducted at end of or past blooming period.	Suitable habitat present. Surveys conducted at end of or past blooming period.	Suitable habitat present. Surveys conducted at end of or past blooming period.
<i>Calochortus catalinae</i> Catalina mariposa lily	—	—	4.2	Between March and June, uncommonly as early as February.	Heavy soils in open grasslands, coastal sage scrub, and chaparral.	Southern Central Coast, western South Coast, and Channel Islands; sea level to 2,300 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.
<i>Calochortus plummerae</i> Plummer's mariposa lily	—	—	4.2	Between May and July.	Coastal sage scrub; dry, rocky chaparral; and yellow-pine forest.	South Coast and Peninsular Ranges; sea level to 5,580 feet above msl.	Outside known range. Not expected to occur.	Outside known range. Not expected to occur.	Outside known range. Not expected to occur.	Outside known range. Not expected to occur.

**TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES**

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Calochortus weedii</i> var. <i>intermedius</i> intermediate mariposa lily*	—	—	1B.2	Between May and July.	Coastal sage scrub and chaparral on dry, rocky, open slopes.	South Coast and northern Peninsular Ranges; sea level to 2,230 feet above msl.	Suitable habitat present. Observed on the property.	Suitable habitat present. Observed on the property.	Suitable habitat present. Observed on the property.	Suitable habitat present. Observed on the property.
<i>Camissoniopsis lewisii</i> Lewis' evening-primrose	—	—	3	Between March and June.	Sandy or clay soils of coastal grassland.	South Coast, western Peninsular Ranges, and northern Baja California, Mexico; between sea level and 984 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.
<i>Centromadia parryi</i> ssp. <i>australis</i> southern tarplant*	—	—	1B.1	Between May and November.	Seasonally moist, silty, alkaline soils in salt marshes, alkali meadows, mesic grasslands, vernal pools, ditches, and coastal scrub.	South Coast to northwestern Baja California, Mexico; sea level to 655 feet above msl.	No suitable habitat; outside known elevational range. Not expected to occur.	No suitable habitat; outside known elevational range. Not expected to occur.	No suitable habitat; outside known elevational range. Not expected to occur.	No suitable habitat; outside known elevational range. Not expected to occur.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Chorizanthe parryi</i> var. <i>fernandina</i> San Fernando Valley spineflower	FC	SE	1B.1	Between April and June.	Sandy areas.	Laskey Mesa in Ventura County and the northern Santa Susana Mountains of Los Angeles County; between 295 and 1,640 feet above msl.	Outside known range; no suitable habitat. Not expected to occur.	Outside known range; no suitable habitat. Not expected to occur.	Outside known range; no suitable habitat. Not expected to occur.	Outside known range; no suitable habitat. Not expected to occur.
<i>Chorizanthe polygonoides</i> var. <i>longispina</i> long-spined spineflower	—	—	1B.2	Between April and June.	Sandy areas.	Peninsular Ranges; between 98 and 4,921 feet above msl.	Only known from northern Santa Ana Mountains (Gypsum Canyon) in Orange County. Not expected to occur.	Only known from northern Santa Ana Mountains (Gypsum Canyon) in Orange County. Not expected to occur.	Only known from northern Santa Ana Mountains (Gypsum Canyon) in Orange County. Not expected to occur.	Only known from northern Santa Ana Mountains (Gypsum Canyon) in Orange County. Not expected to occur.
<i>Clinopodium chandleri</i> San Miguel savory	—	—	1B.2	Between March and July.	Rocky slopes in chaparral, oak woodland, and riparian forest.	Peninsular Ranges to northern Baja California, Mexico; between sea level and 3,609 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> summer holly	—	—	1B.2	Between May and June.	Chaparral.	South Coast and Peninsular Ranges to northern Baja California, Mexico; between 328 and 1,804 feet above msl.	Not expected to occur. Not observed during focused surveys.	Not expected to occur. Not observed during focused surveys.	Not expected to occur. Not observed during focused surveys.	Not expected to occur. Not observed during focused surveys.
<i>Dodecahema leptoceras</i> slender-horned spineflower	FE	SE	1B.1	Between April and June.	Sandy or gravelly areas.	East-central South Coast, adjacent foothills of the Transverse Ranges, and Peninsular Ranges; 655 to 2,295 feet above msl.	Outside known range. Not expected to occur.	Outside known range. Not expected to occur.	Outside known range. Not expected to occur.	Outside known range. Not expected to occur.
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i> Santa Monica dudleya	FT	—	1B.2	Between May and June.	Shaded, rocky outcrops and slopes in volcanic or sedimentary soils.	The Santa Monica Mountains in the southern Western Transverse Ranges and Peninsular Ranges; between 492 and 1,640 feet above msl.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Dudleya multicaulis</i> many-stemmed dudleya*	—	—	1B.2	Between April and July.	Heavy (often clayey) soils in coastal sage scrub and native grassland on coastal plains and sandstone outcrops.	South Coast; sea level to 1,970 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.
<i>Dudleya viscida</i> sticky dudleya	—	—	1B.2	Between May and June.	Bluffs, canyon walls, and rocky cliffs.	Southern South Coast of Orange and San Diego counties; between sea level and 1,476 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Marginally suitable habitat present. Not observed during focused surveys.	Marginally suitable habitat present. Not observed during focused surveys.	Marginally suitable habitat present. Not observed during focused surveys.
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i> Santa Ana River woollystar	FE	SE	1B.1	Between May and September.	Washes, floodplains, and dry river beds.	Eastern South Coast (i.e., the Santa Ana River drainage and southwestern San Bernardino County); sea level to 1,640 feet above msl.	No suitable habitat. Considered extirpated from Orange County.	No suitable habitat. Considered extirpated from Orange County.	No suitable habitat. Considered extirpated from Orange County.	No suitable habitat. Considered extirpated from Orange County.

**TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES**

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Hesperocyparis forbesii</i> Tecate cypress	—	—	1B.1	—	Chaparral.	Western Peninsular Ranges to northwestern Baja California, Mexico; planted outside native range; between 1,476 and 4,921 feet above msl.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Hordeum intercedens</i> bobtail barley	—	—	3.2	Between March and June.	Vernal pools; dry, saline streambeds; and alkaline flats.	San Joaquin Valley, outer South Coast Ranges, South Coast, Channel Islands, and Peninsular Ranges to northwestern Baja California, Mexico; between sea level and 1,640 feet above msl.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Imperata brevifolia</i> California satintail	—	—	2B.1	Between September and May.	Wet springs, meadows, streambanks, and floodplains.	Outer North Coast Ranges, Cascade Range foothills, southern Sierra Nevada foothills, San Joaquin Valley, South Coast, Transverse Ranges, and deserts to Utah, Texas, and Mexico; sea level and 1,640 feet above msl.	Potentially suitable habitat present; known from only one location in Orange County. Not observed during focused surveys.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Lepechinia cardiophylla</i> heart-leaved pitcher sage	—	—	1B.2	Between April and July.	Chaparral.	Peninsular Ranges; between 1,969 and 3,937 feet above msl.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.
<i>Lepidium virginicum</i> var. <i>robinsonii</i> Robinson's pepper-grass	—	—	4.3	Between January and July.	Dry sandy or thin soils in coastal sage scrub and chaparral.	Southwestern California and Baja California, Mexico; sea level and 1,640 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i> ocellated Humboldt lily	—	—	4.2	Between May and August.	Oak canyons, chaparral, and yellow-pine forest.	Southern, central-western, and southwestern California; between sea level and 5,906 feet above msl.	Suitable habitat present. Observed on the property.	No suitable habitat. Not expected to occur.	Suitable habitat present. Not observed during focused surveys.	No suitable habitat. Not expected to occur.
<i>Monardella hypoleuca</i> ssp. <i>lanata</i> felt-leaved monardella ^a	—	—	1B.2	Between May and October.	On rocky, granitic slopes or hillsides in chaparral.	Southwestern Peninsular Ranges of San Diego County to northern Baja California, Mexico; between 984 and 4,920 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.
<i>Monardella macrantha</i> ssp. <i>hallii</i> Hall's monardella	—	—	1B.3	Between May and August.	Chaparral and woodland.	Southern San Bernardino Mountains and Peninsular Ranges; between 1,968 and 6,562 feet above msl.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
	<i>Nama stenocarpum</i> mud nama	—	—				2B.2	Between March and October.	Intermittently wet areas, margins of vernal pools and ponds.	San Joaquin Valley, South Coast, southern Channel Islands, western Peninsular Ranges, southeastern Sonoran Desert to Texas and northern Mexico; sea level to 2,657 feet above msl.
<i>Nolina cismontana</i> peninsular nolina	—	—	1B.2	Between May and July.	Dry chaparral or coastal mountains.	South Coast, Western Transverse Ranges, and Peninsular Ranges; 655 to 4,265 feet above msl.	Suitable habitat present. Observed on the property.	Suitable habitat present. Observed on the property.	Suitable habitat present. Observed on the property.	Suitable habitat present. Not observed during focused surveys.
<i>Penstemon californicus</i> California beardtongue	—	—	1B.2	Between May and June.	Sandy soils of yellow-pine forest or pinyon/juniper woodland.	Peninsular Ranges and Mexico; between 3,937 and 7,546 feet above msl.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Pentachaeta aurea</i> ssp. <i>allenii</i> Allen's pentachaeta	—	—	1B.1	Between March and May.	Grassy areas.	Southern South Coast and Peninsular Ranges of Orange County; sea level to 1,640 feet above msl.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.
<i>Phacelia keckii</i> Santiago Peak phacelia	—	—	1B.3	Between May and June.	Open chaparral.	The Santa Ana Mountains of the Peninsular Ranges; 1,640 to 5,249 feet above msl.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.
<i>Piperia cooperi</i> chaparral rein- orchid	—	—	4.2	Between June and August.	Generally dry sites in scrub, chaparral, woodland, or forest.	South Coast, San Gabriel Mountains, Peninsular Ranges, Santa Catalina Island, to Baja California, Mexico; between sea level and 4,921 feet above msl.	Suitable habitat present. Observed on the property.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Polygala cornuta</i> var. <i>fishiae</i> Fish's milkwort	—	—	4.3	Between May and August.	Chaparral and oak woodland.	Southern Outer South Coast Ranges, Western Transverse Ranges, San Gabriel Mountains, and Peninsular Ranges to northern Baja California, Mexico; between 295 and 4,167 feet above msl.	Suitable habitat present. Observed on the property.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.
<i>Pseudognaphalium leucocephalum</i> white rabbit-tobacco	—	—	2B.2	Between August and November, uncommonly as early as July or as late as December.	Sandy or gravelly benches, dry stream bottoms, and canyon bottoms.	South Coast, San Bernardino Mountains, and Peninsular Ranges to Arizona, New Mexico, and Mexico; sea level to 1,640 feet above msl.	Suitable habitat present. Not observed during focused surveys.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Quercus dumosa</i> Nuttall's scrub oak	—	—	1B.1	Between February and April, uncommonly as late as August.	Generally in sandy soils near the coast, sandstone, chaparral, or coastal sage scrub.	South Coast, Peninsular Ranges, and Baja California, Mexico; sea level to 656 feet above msl.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.	Outside known elevation range. Not expected to occur.

TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Romneya coulteri</i> Coulter's matilija poppy	—	—	4.2	Between March and July.	Dry washes and canyons.	South Coast, Western Transverse Ranges, and Peninsular Ranges; sea level to 3,937 feet above msl.	Suitable habitat present. Observed on the property.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.	Suitable habitat present. Not observed during focused surveys.
<i>Senecio aphanactis</i> chaparral ragwort	—	—	2B.2	Between January and April.	Alkaline flats and dry, open rocky areas of coastal bluff scrub and coastal sage scrub.	Central Western California and South Coast to Baja California, Mexico; 30 to 1,805 feet above msl.	Suitable habitat present. Surveys not conducted during blooming period.	Suitable habitat present. Surveys not conducted during blooming period.	Suitable habitat present. Surveys not conducted during blooming period.	Suitable habitat present. Surveys not conducted during blooming period.
<i>Sidalcea neomexicana</i> salt spring checkerbloom	—	—	2B.2	Between March and June.	Alkaline seeps, springs, and marshes.	South Coast, San Gabriel Mountains, San Bernardino Mountains, Peninsular Ranges, and southwestern Mojave Desert to New Mexico and northern Mexico; possibly extirpated from the Western Transverse Ranges; sea level to 4,920 feet above msl.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

**TABLE 10 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES**

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW	CRPR				Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Tetradloccus dioicus</i> Parry's tetradloccus	—	—	1B.2	Between April and May.	Dry slopes, chaparral.	Southern South Coast of San Diego County, western Peninsular Ranges, and Baja California, Mexico; sea level to 3,281 feet above msl.	Known from only one location in Orange County (San Juan Canyon). Not observed during focused surveys.	Known from only one location in Orange County (San Juan Canyon). Not observed during focused surveys.	Known from only one location in Orange County (San Juan Canyon). Not observed during focused surveys.	Known from only one location in Orange County (San Juan Canyon). Not observed during focused surveys.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank; msl: mean sea level

LEGEND

Federal (USFWS)
 FE Endangered
 FT Threatened
 FC Candidate

State (CDFW)
 SE Endangered

California Rare Plant Rank (CRPR)

1B Plants Rare, Threatened, or Endangered in California and Elsewhere
 2B Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
 3 Plants about which we need more information – A Review List
 4 Plants of Limited Distribution – A Watch List

CRPR Threat Code Extensions

.1 Seriously Threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
 .2 Fairly Threatened in California (20–80% of 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)

* Proposed covered species in the NCCP/HCP
^a CNDDDB reports this plant from the Santa Ana Mountains. However Elvin and Sanders (2009) studied these plants from the Santa Ana Mountains and determined them to be an undescribed taxon, not felt-leaved monardella. They described the plant as intermediate monardella (*Monardella hypoleuca* ssp. *intermedia*), which is not a special status plant. The CNDDDB has not yet been updated with this information. Some individuals of intermediate monardella were found on the Ferber Ranch property.

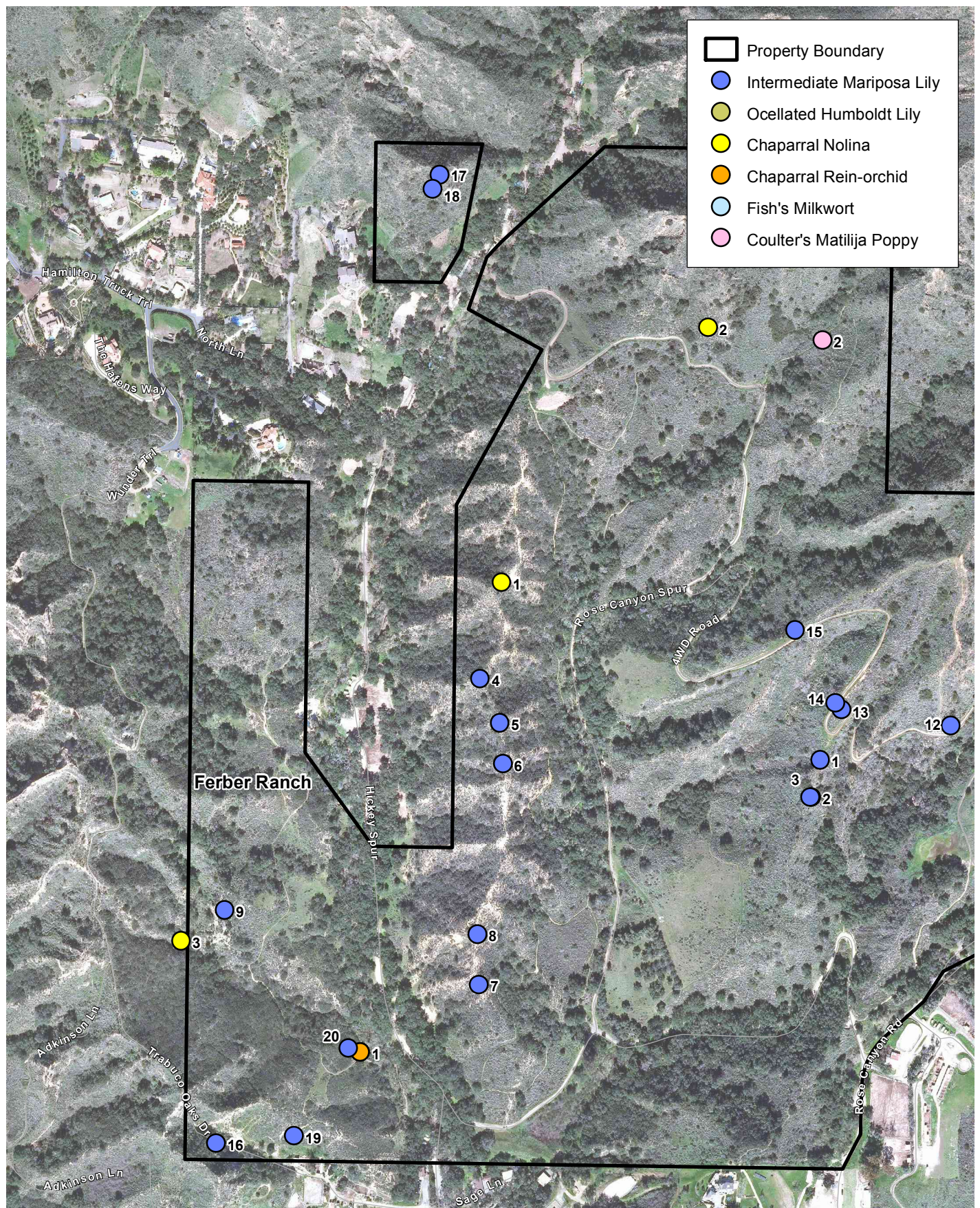
Source: BonTerra Consulting 2013b.

Intermediate Mariposa Lily

Intermediate mariposa lily was observed on all four south county properties. Populations were observed throughout the Ferber Ranch, O'Neill Oaks, and Hafen properties; one population was observed in the drainage running through the center of the Saddle Creek South property. Details on the occurrences are summarized in Table 11 and illustrated on Exhibits 14A, 14B, 14C, and 14D.

**TABLE 11
INTERMEDIATE MARIPOSA LILY POPULATIONS OBSERVED
ON THE SOUTH COUNTY PROPERTIES**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
Ferber Ranch					
F-1	1	Rocky clay soil on south-facing slope; associated with California sagebrush, black sage, chaparral yucca, and deerweed.	100%	0	0
F-2	4	Rocky clay soil on ridgeline; associated with deerweed and California sagebrush.	0	0	100%
F-3	2	Rocky clay soil on ridgeline; associated with California sagebrush, black sage, chaparral yucca, and deerweed	50%	50%	0
F-4	12	Rocky clay soil on ridgeline; associated with California buckwheat, white sage, chaparral yucca, and large-bracted morning-glory (<i>Calystegia macrostegia</i>).	75%	25%	0
F-5	12	Rocky clay soil on ridgeline; associated with California buckwheat, white sage, chaparral yucca, and large-bracted morning-glory.	75%	25%	0
F-6	4	Rocky sandy soil on ridgeline; associated with California sagebrush, deerweed, and white sage.	100%	0	0
F-7	3	Sandy soil on ridgeline; associated with scrub oak and crested needlegrass (<i>Stipa coronata</i>).	100%	0	0
F-8	2	Sandy clay soil on ridgeline; associated with California sagebrush and everlasting.	100%	0	0
F-9	2	Ridgeline; associated with chamise.	50%	50%	0
F-10	3	Sandy soil with some clay pockets; associated with chaparral yucca, California sagebrush, bedstraw (<i>Galium</i> sp.), and California buckwheat.	100%	0	0
F-11	1	Reddish clay loam soil; associated with chaparral yucca, needlegrass (<i>Stipa</i> sp.), black sage, and California sagebrush.	100%	0	0
F-12	3	Gravelly sandy soil on southeast-facing slope; associated with chaparral yucca, black sage, bedstraw, orange bush monkeyflower (<i>Mimulus aurantiacus</i> ssp. <i>puniceus</i>), and dune bentgrass (<i>Agrostis pallens</i>).	100%	0	0
F-13	4	Gravelly sandy soil on southeast-facing slope; associated with chaparral yucca, black sage, bedstraw, orange bush monkeyflower, and dune bentgrass.	100%	0	0

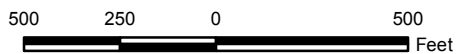


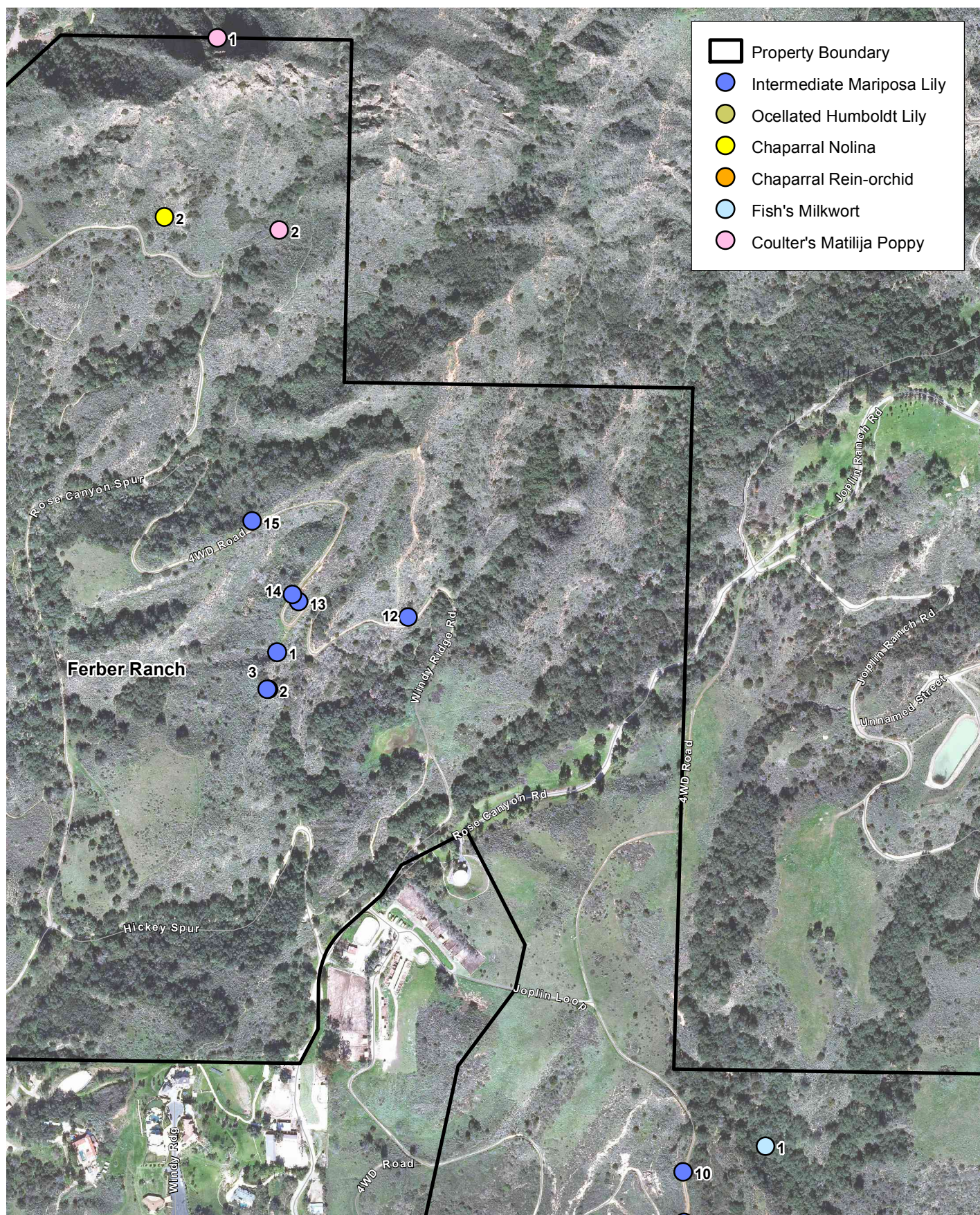
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Special Status Plant Locations

Exhibit 14A

Measure M2 Acquisition Properties/Ferber Ranch Property



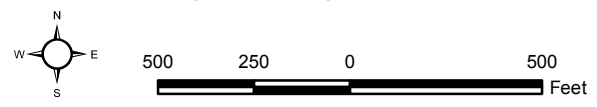


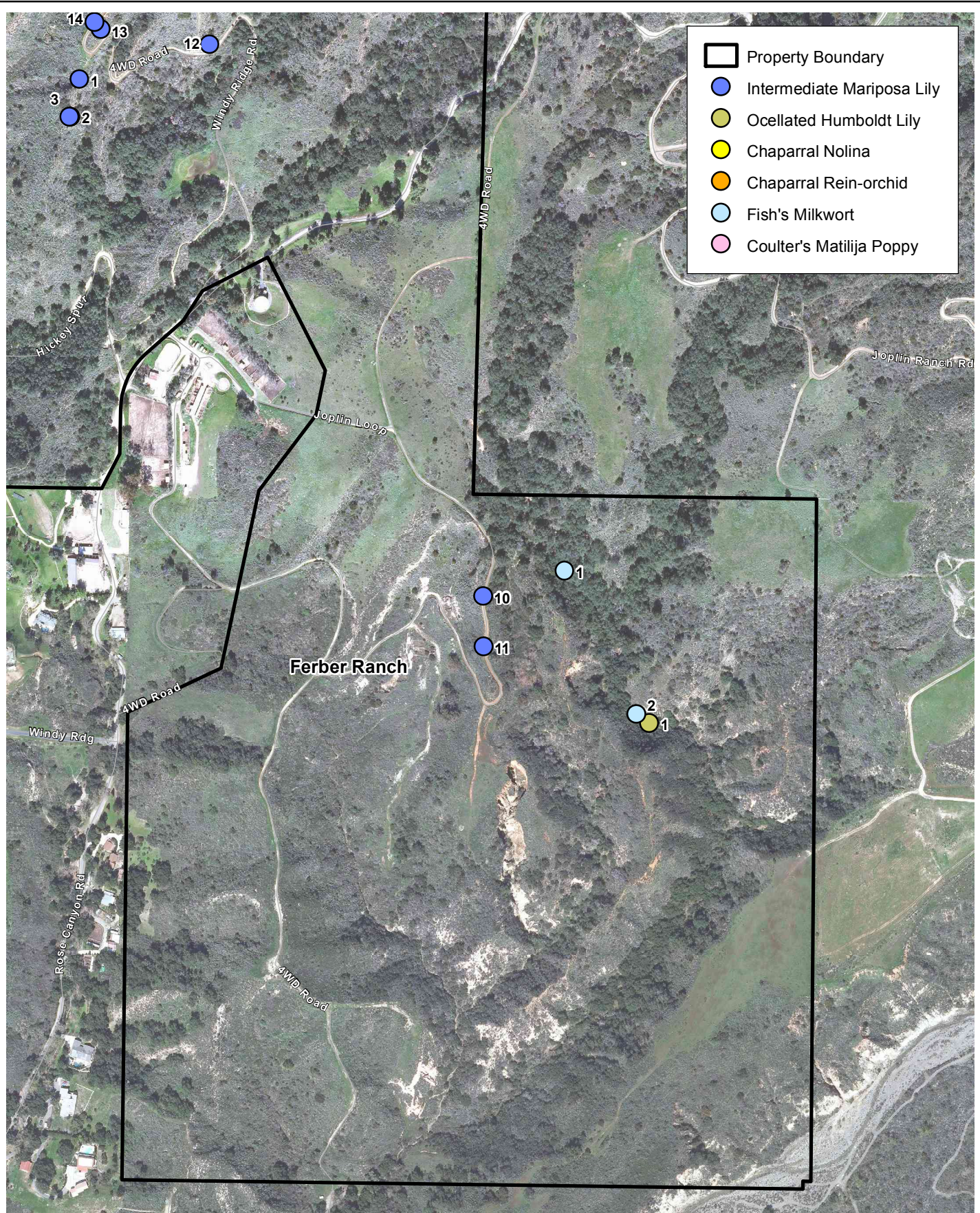
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Special Status Plant Locations

Exhibit 14A

Measure M2 Acquisition Properties/Ferber Ranch Property



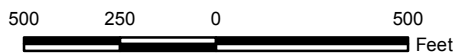


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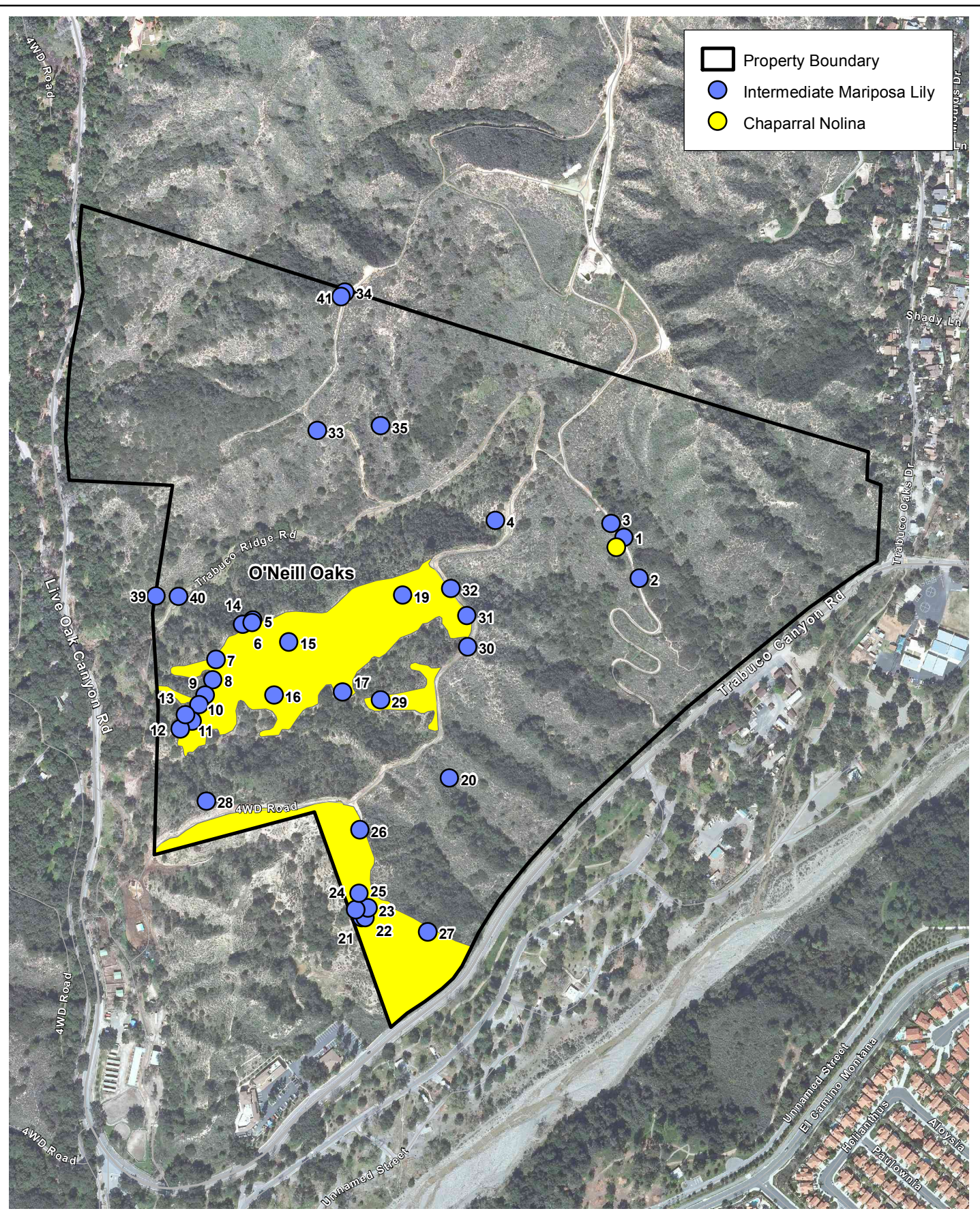
Special Status Plant Locations

Exhibit 14A

Measure M2 Acquisition Properties/Ferber Ranch Property



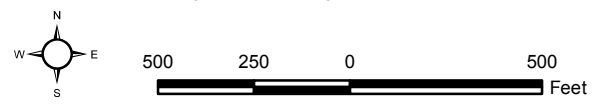
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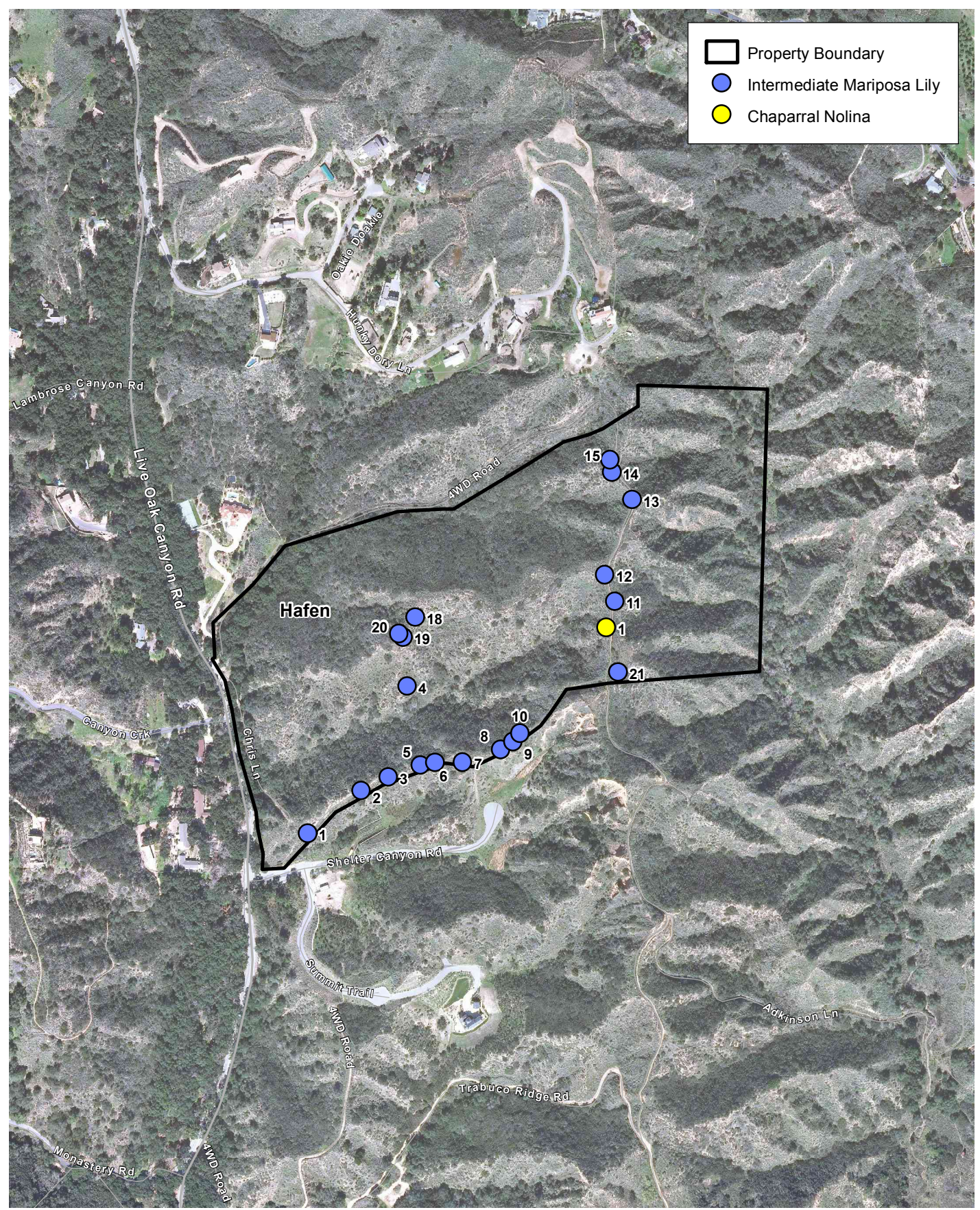
Special Status Plant Locations

Exhibit 14B

Measure M2 Acquisition Properties/O'Neill Oaks Property



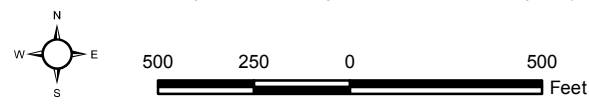
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Special Status Plant Locations

Exhibit 14C

Measure M2 Acquisition Properties/Hafen Property





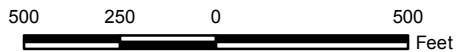
Property Boundary
● Intermediate Mariposa Lily

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Special Status Plant Locations

Exhibit 14D

Measure M2 Acquisition Properties/Saddle Creek South Property



**TABLE 11
INTERMEDIATE MARIPOSA LILY POPULATIONS OBSERVED
ON THE SOUTH COUNTY PROPERTIES**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
F-14	1	Gravelly sandy soil on southeast-facing slope; associated with deerweed, golden-yarrow, narrowly leaved bedstraw (<i>Galium angustifolium</i>), black sage, coast prickly-pear, California sagebrush, California buckwheat, and foothill needlegrass.	100%	0	0
F-15	1	Gravelly sandy soil on east-facing slope; associated with black sage, deerweed, California sagebrush, and foothill needlegrass.	100%	0	0
F-16	8	Sandstone-derived cliff face; associated with lance-leaved dudleya (<i>Dudleya lanceolata</i>), Bigelow's spike-moss (<i>Selaginella bigelovii</i>), narrowly leaved bedstraw, and lichens.	100%	0	0
F-17	1	Rocky gravelly soil; associated with chamise, chaparral yucca, black sage, and sweetbush (<i>Bebbia juncea</i> var. <i>aspera</i>).	0	100%	0
F-18	1	Rocky gravelly soil; associated with chamise, chaparral yucca, black sage, and sweetbush.	0	100%	0
F-19	3	Sandy soil near top of south-facing slope; associated with chamise, chaparral yucca, and black sage.	0	100%	0
F-20	1	Sandy soils on northeast-facing slope; associated with chaparral rein-orchid (<i>Piperia cooperi</i>), chamise, chaparral yucca, and scrub oak.	0	100%	0
O'Neill Oaks					
O-1	1	Sandy soil on ridgeline; associated with California sagebrush, deerweed, California buckwheat, and lance-leaved dudleya.	0	100%	0
O-2	3	Sandy soil on ridgeline; associated with California buckwheat, deerweed, California sagebrush, and lance-leaved dudleya.	0	100%	0
O-3	3	Sandy soil on ridgeline; associated with California buckwheat, deerweed, California sagebrush, and lance-leaved dudleya.	0	100%	0
O-4	9	Sandy soil on northwest-facing slope; associated with American lotus (<i>Acmispon americanus</i> var. <i>americanus</i>), chalk dudleya (<i>Dudleya pulverulenta</i>), white pincushion (<i>Chaenactis artemisiifolia</i>), and littleseed muhly (<i>Muhlenbergia microsperma</i>).	33%	67%	0
O-5	4	Sandy soil on north-facing slope; associated with California sagebrush and red brome.	75%	25%	0
O-6	5	Sandy loam soil on knoll; associated with California sagebrush, prickly phlox (<i>Linanthus californicus</i>), and lemonade berry.	40%	60%	0
O-7	5	Sandy soil on southwest-facing slope; associated with littleseed muhly, California sagebrush, California buckwheat, and chaparral nolina.	20%	80%	0
O-8	5	Sandy soil on southwest-facing slope; associated with chaparral nolina, California sagebrush, and California buckwheat.	0	100%	0

**TABLE 11
INTERMEDIATE MARIPOSA LILY POPULATIONS OBSERVED
ON THE SOUTH COUNTY PROPERTIES**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
O-9	4	Sandy and rocky soil on southeast-facing slope; associated with California sagebrush, chaparral nolina, California buckwheat, four-o'clock (<i>Mirabilis</i> sp.), and deerweed.	0	100%	0
O-10	4	Sandy and rocky soil on southwest-facing slope; associated with California sagebrush and black sage.	25%	50%	25%
O-11	2	Sandy soil on southwest-facing slope; associated with California sagebrush, California buckwheat, and chaparral yucca.	50%	50%	0
O-12	2	Sandy loam soil on southwest-facing slope; associated with California sagebrush.	100%	0	0
O-13	1	Sandy loam soil on west-facing slope; associated with California sagebrush.	100%	0	0
O-14	2	Loamy sand soil on south/southwest-facing slope; associated with California sagebrush.	100%	0	0
O-15	6	Sandy loam soil on west/southwest-facing slope; associated with chaparral nolina, black sage, and California sagebrush.	33%	67%	0
O-16	19	Sandy soil on west/southwest-facing slope; associated with chaparral nolina, black sage, and California sagebrush.	26%	74%	0
O-17	46	Loamy sand soil in drainage; associated with chaparral nolina, California sagebrush, white sage, chaparral yucca, and splendid mariposa lily (<i>Calochortus splendens</i>).	41%	54%	4%
O-19	53	Sandy soil on ridgeline; associated with chaparral nolina.	32%	64%	0
O-20	4	Sandy soil on ridgeline; associated with chaparral nolina, white sage, and California buckwheat.	0	100%	0
O-21	1	Cobbly sand soil on west-facing slope; associated with sessileflower goldenaster (<i>Heterotheca sessiliflora</i>).	0	100%	0
O-22	1	Cobbly sand soil on ridgeline; associated with California sagebrush.	0	100%	0
O-23	1	Cobbly sandy soil on south-facing slope; associated with California sagebrush.	0	100%	0
O-24	4	Cobbly sandy soil on ridgeline; associated with California sagebrush and chaparral yucca.	50%	50%	0
O-25	1	Sandy soil on west-facing slope; associated with California sagebrush and California buckwheat.	0	100%	0
O-26	3	Sandy soil on west-facing slope; associated with California sagebrush and chaparral nolina.	0	100%	0
O-27	20	Clay soil on ridgeline.	15%	85%	0
O-28	1	Sandy loam soil on north-facing slope; associated with California sagebrush.	0	100%	0
O-29	36	West-facing slope.	39%	61%	0
O-30	12	Sandy loam soil on west-facing slope; associated with California sagebrush.	92%	8%	0

**TABLE 11
INTERMEDIATE MARIPOSA LILY POPULATIONS OBSERVED
ON THE SOUTH COUNTY PROPERTIES**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
O-31	4	Ridgeline; associated with white sage, California sagebrush, and chaparral nolina.	0	100%	0
O-32	2	Ridgeline; associated with California sagebrush and chaparral dodder (<i>Cuscuta californica</i>).	50%	50%	0
O-33	1	Rocky loam soil on south-facing slope; associated with deerweed.	0	100%	0
O-34	3	Rocky loam soil on south-facing slope; associated with deerweed.	67%	33%	0
O-35	1	Sandy loam soil on south-facing slope; associated with deerweed.	0	100%	0
O-39	5	Silt loam soil on south-facing slope; associated with deerweed.	40%	60%	0
O-40	6	Silty loam soil on east-facing slope; associated with deerweed.	17%	83%	0
O-41	3	Sandy soil on south-facing slope.	0	0	100%
Hafen					
H-1	1	Sandy cobble; associated with chaparral yucca, California sagebrush, crested needlegrass, white sage, and scrub oak.	0	100%	0
H-2	1	Sandy cobble on northwest-facing slope; associated with chaparral yucca.	0	100%	0
H-3	9	Sandy soil; associated with California buckwheat, chaparral yucca, deerweed, and chaparral dodder.	22%	77%	0
H-4	1	Sandy soil on northwest-facing slope; associated with California buckwheat.	0	100%	0
H-5	5	Sandy soil; associated with California sagebrush.	40%	60%	0
H-6	2	Sandy soil on northwest-facing slope; associated with deerweed, California sagebrush, and chaparral yucca.	50%	50%	0
H-7	3	Sandy cobble on west-facing slope; associated with California buckwheat and chaparral yucca.	0	100%	0
H-8	1	Sandy soil; associated with deerweed.	0	0	100%
H-9	1	Sandy soil on southeast-facing slope; associated with deerweed.	0	100%	0
H-10	1	Sandy soil; associated with deerweed.	0	100%	0
H-11	5	Cobbly sandy soil on ridgeline; associated with chaparral yucca, California buckwheat, California sagebrush, black sage, scrub oak, and chaparral dodder.	20%	80%	0
H-12	2	Sandy soil on ridgeline; associated with chaparral yucca, California buckwheat, chaparral dodder, and California sagebrush.	0	100%	0
H-13	1	Sandy soil on ridgeline; associated with California sagebrush, chaparral dodder, and narrowly leaved bedstraw.	100%	0	0
H-14	4	Sandy soil on ridgeline; associated with chaparral nolina, California sagebrush, narrowly leaved bedstraw, and black sage.	25%	75%	0

**TABLE 11
INTERMEDIATE MARIPOSA LILY POPULATIONS OBSERVED
ON THE SOUTH COUNTY PROPERTIES**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
H-15	23	Sandy soil on ridgeline; associated with chaparral yucca, chaparral nolina, deerweed, California buckwheat, and narrowly leaved bedstraw.	26%	70%	4%
H-18	3	Sandy soil on south-/southwest-facing slope; associated with California buckwheat.	33%	67%	0
H-19	1	Cobbly sand on south-facing slope; associated with chaparral nolina.	0	100%	0
H-20	1	Cobbly sand on west-facing slope; associated with chaparral nolina.	0	100%	0
H-21	9	Sandy soil; associated with crested needlegrass and deerweed.	11%	88%	0
Saddle Creek South					
S-1	2	Red sandy clay soil at base of steep west-/southwest-facing slope; associated with California sagebrush, splendid mariposa lily, California buckwheat, and California fuchsia (<i>Epilobium canum</i>).	100%	0	0

Ocelated Humboldt Lily

Ocelated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*) was observed on the Ferber Ranch property. Two individuals were observed near the southeastern portion of the property. Details on the occurrence are summarized in Table 12 and illustrated on Exhibit 14A.

**TABLE 12
OCELATED HUMBOLDT LILY POPULATIONS OBSERVED
ON THE FERBER RANCH PROPERTY**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
F-1	2	Gravelly sandy loam soil in shaded riparian habitat; associated with coast live oak, western poison oak, Fish's milkwort, and mugwort.	50%	50%	0

Chaparral Nolina

Chaparral nolina was observed on the Ferber Ranch, O'Neill Oaks, and Hafen properties (Table 13; Exhibits 14A, 14B, and 14C). Relatively small populations were observed at three locations near the eastern side of the Ferber Ranch property. Large populations were observed throughout the O'Neill Oaks and Hafen properties. Over 10,000 individuals were observed throughout south-facing slopes in California sagebrush – California buckwheat scrub in the southern half of the O'Neill Oaks property and along a dirt road on the eastern side of the property. Approximately 5,000 individuals were observed along a ridgeline in California sagebrush – California buckwheat scrub on the Hafen property.

**TABLE 13
CHAPARRAL NOLINA POPULATIONS OBSERVED
ON THE SOUTH COUNTY PROPERTIES**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
Ferber Ranch					
F-1	1	Sandy clay on ridgeline; associated with bush monkeyflower, deerweed, chamise, and crested needlegrass.	100%	0	0
F-2	~200	Gravelly sandy soil on south-facing slope in California sagebrush scrub; associated with California sagebrush, lemonadeberry, golden-yarrow, black sage, and slender sunflower.	10%	90%	0
F-3	1	Northeast-facing slope in chamise chaparral; associated with chamise, white sage, and black sage.	0	0	100%
O'Neill Oaks					
Not labeled	~10,000	South-facing slopes throughout property in California sagebrush – California buckwheat scrub.	DNR	DNR	DNR
Hafen					
H-1	~5,000	Along ridgeline in California sagebrush – California buckwheat scrub	DNR	DNR	DNR
DNR: Did not record.					

Chaparral Rein-Orchid

Chaparral rein-orchid (*Piperia cooperi*) was observed on the Ferber Ranch property. Two individuals were observed near the center of the eastern side of the property. Details on the occurrence are summarized in Table 14 and illustrated on Exhibit 14A.

**TABLE 14
CHAPARRAL REIN-ORCHID POPULATIONS OBSERVED
ON THE FERBER RANCH PROPERTY**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
F-1	2	Sandy soil on northeast-facing slope in chaparral/sage scrub; associated with intermediate mariposa lily, chamise, chaparral yucca, and scrub oak.	0	50%	50%

Fish's Milkwort

Fish's milkwort (*Polygala cornuta* var. *fishiae*) was observed on the Ferber Ranch property. Thirty-one individuals were observed in an ephemeral drainage in the southeastern region of the property. Details on the occurrences are summarized in Table 15 and illustrated on Exhibit 14A.

**TABLE 15
FISH'S MILKWORT POPULATIONS OBSERVED
ON THE FERBER RANCH PROPERTY**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
F-1	11	Loamy soil on east-facing slope in coast live oak woodland; associated with western poison oak and California goldenrod.	100%	0	0
F-2	20	Sandy loam soil on moderate, east-facing slope in coast live oak woodland; associated with western poison oak and western sycamore.	100%	0	0

Coulter's Matilija Poppy

Coulter's matilija poppy (*Romneya coulteri*) was observed on the Ferber Ranch property. Sixty-five individuals were observed in the northern portion of the property. Details on the occurrences are summarized in Table 16 and illustrated on Exhibit 14A.

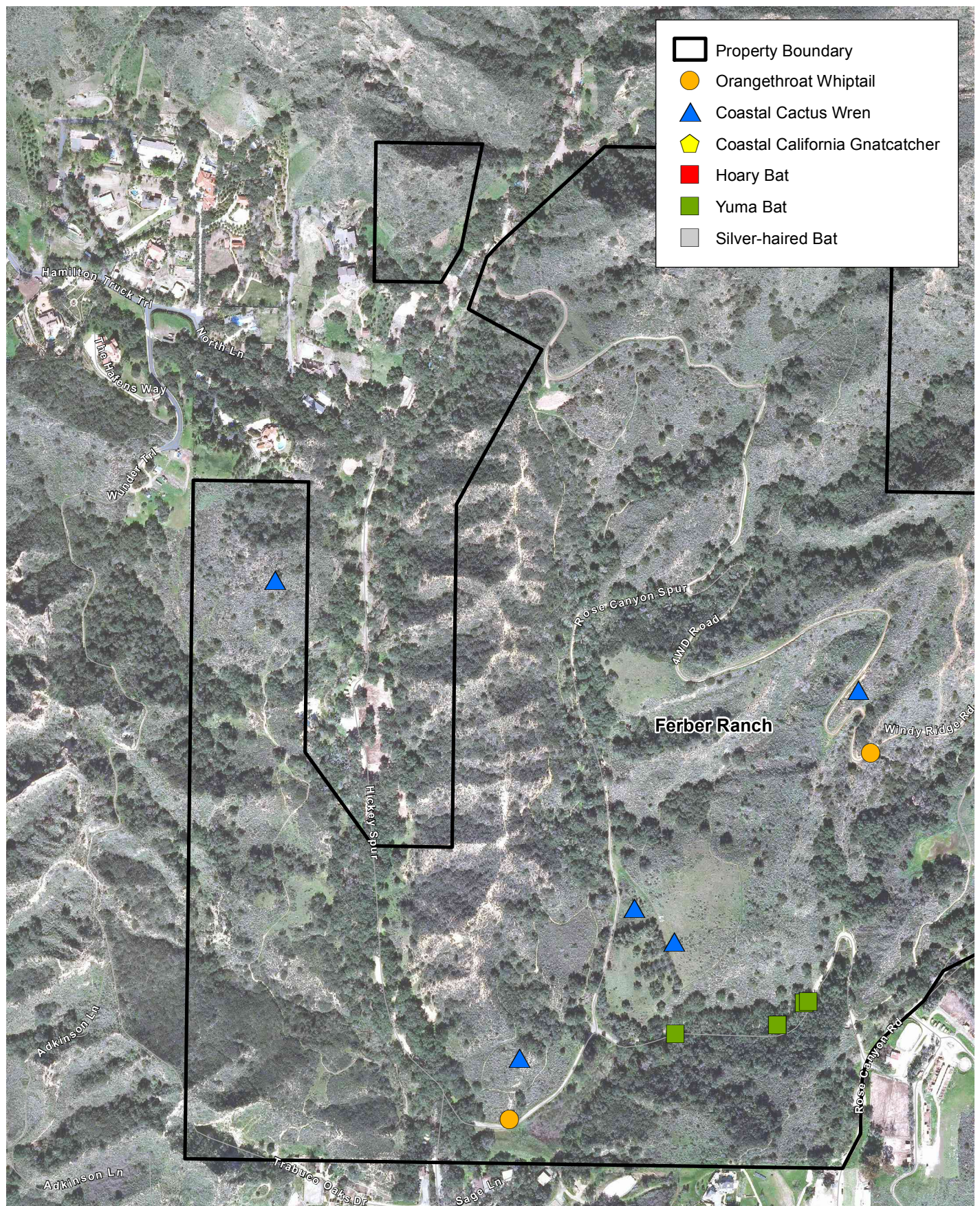
**TABLE 16
COULTER'S MATILIJA POPPY POPULATIONS OBSERVED
ON THE FERBER RANCH PROPERTY**

Population	Number of Individuals	Habitat Description	Phenology		
			Percent Vegetative	Percent Flowering	Percent Fruiting
F-1	15	South-facing slope in laurel sumac – lemonade berry chaparral with California sagebrush – California buckwheat scrub.	0	100%	0
F-2	50	South-facing slope in California sagebrush scrub.	0	0	100%

3.3.4 Special Status Wildlife

Based on the results of the literature review and the list of proposed covered wildlife species for the NCCP/HCP, 67 special status wildlife species are known to occur in vicinity of the south county properties. These species and their potential for occurrence (i.e., based on the presence of suitable habitat) are summarized in Table 17. Note that these species are listed taxonomically. Thirteen special status wildlife species were observed on the south county properties (see Exhibits 15A, 15B, 15C, and 15D. Species for which focused surveys were conducted are discussed after the table.

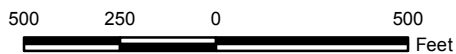
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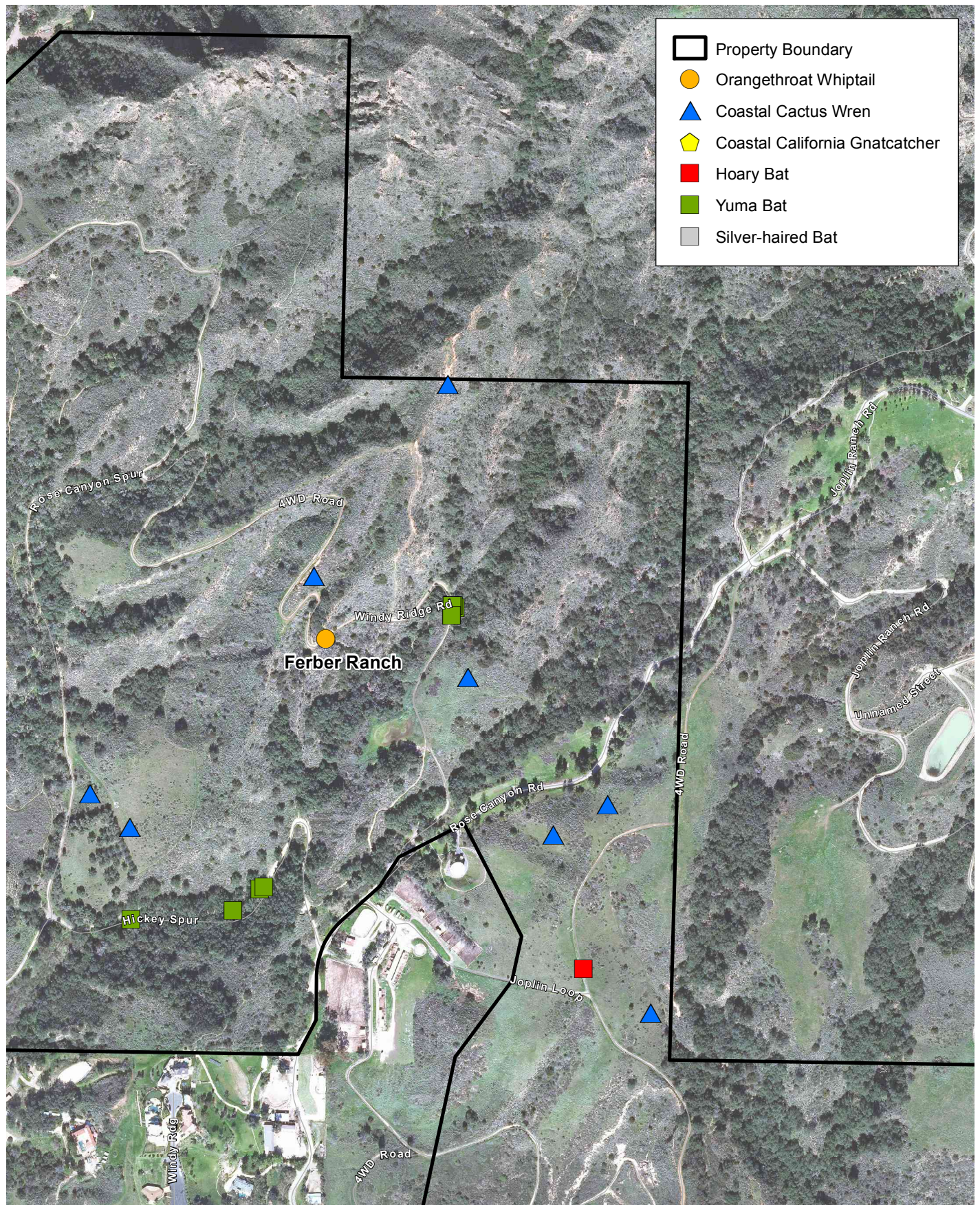
Special Status Wildlife Locations

Exhibit 15A

Measure M2 Acquisition Properties/Ferber Ranch Property



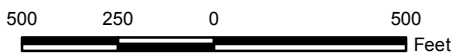
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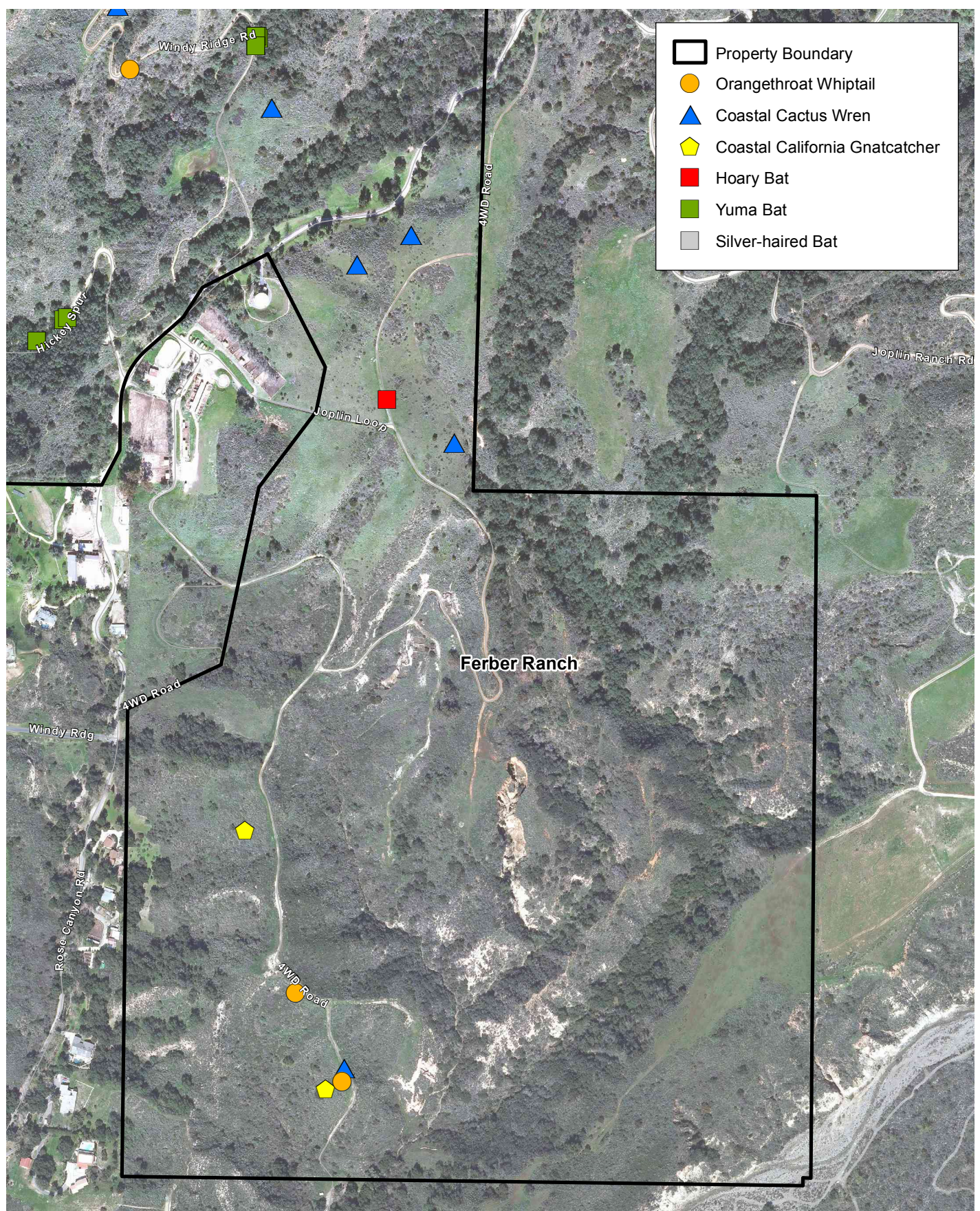


Special Status Wildlife Locations

Exhibit 15A

Measure M2 Acquisition Properties/Ferber Ranch Property



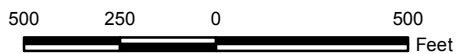


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Special Status Wildlife Locations

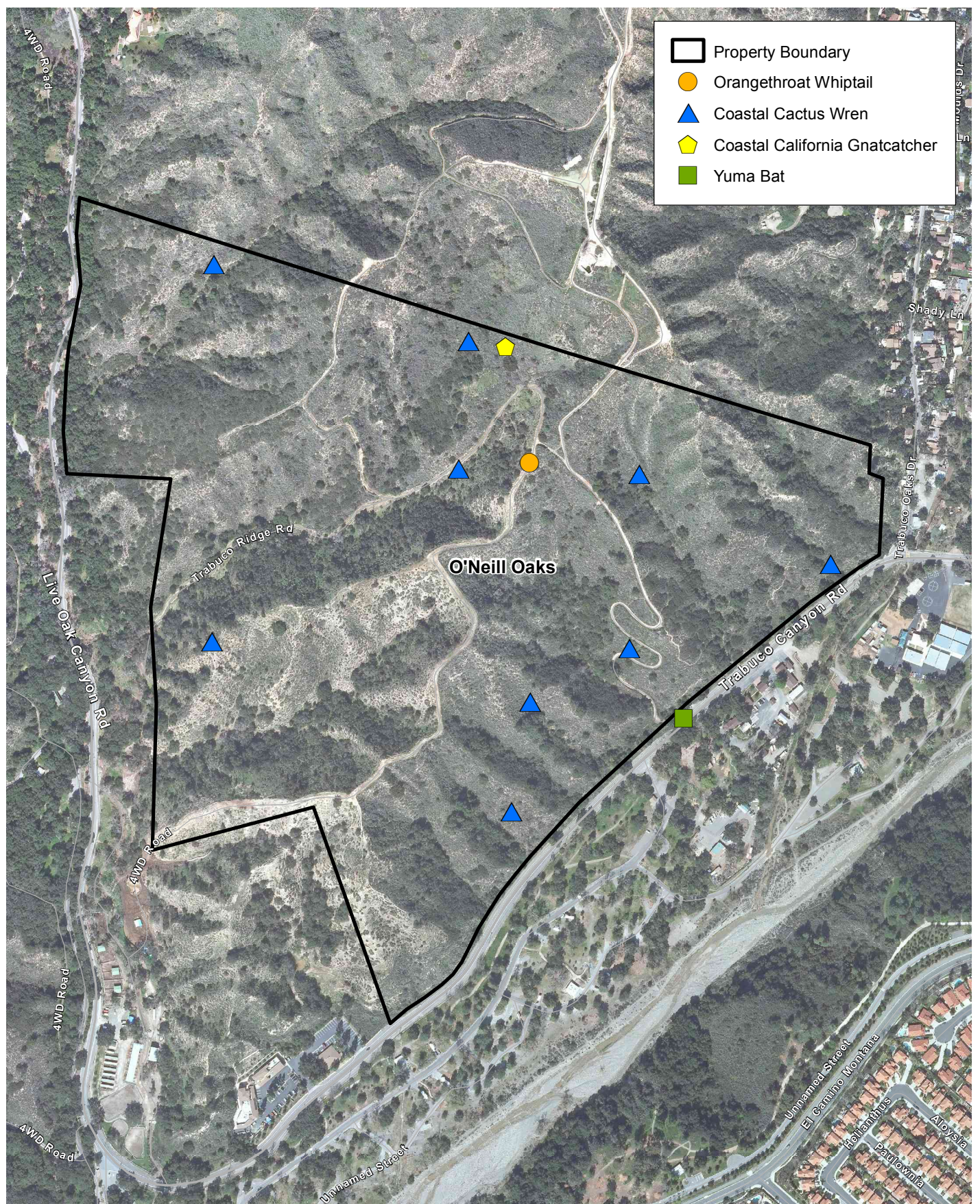
Exhibit 15A

Measure M2 Acquisition Properties/Ferber Ranch Property



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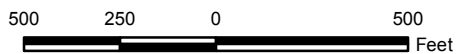
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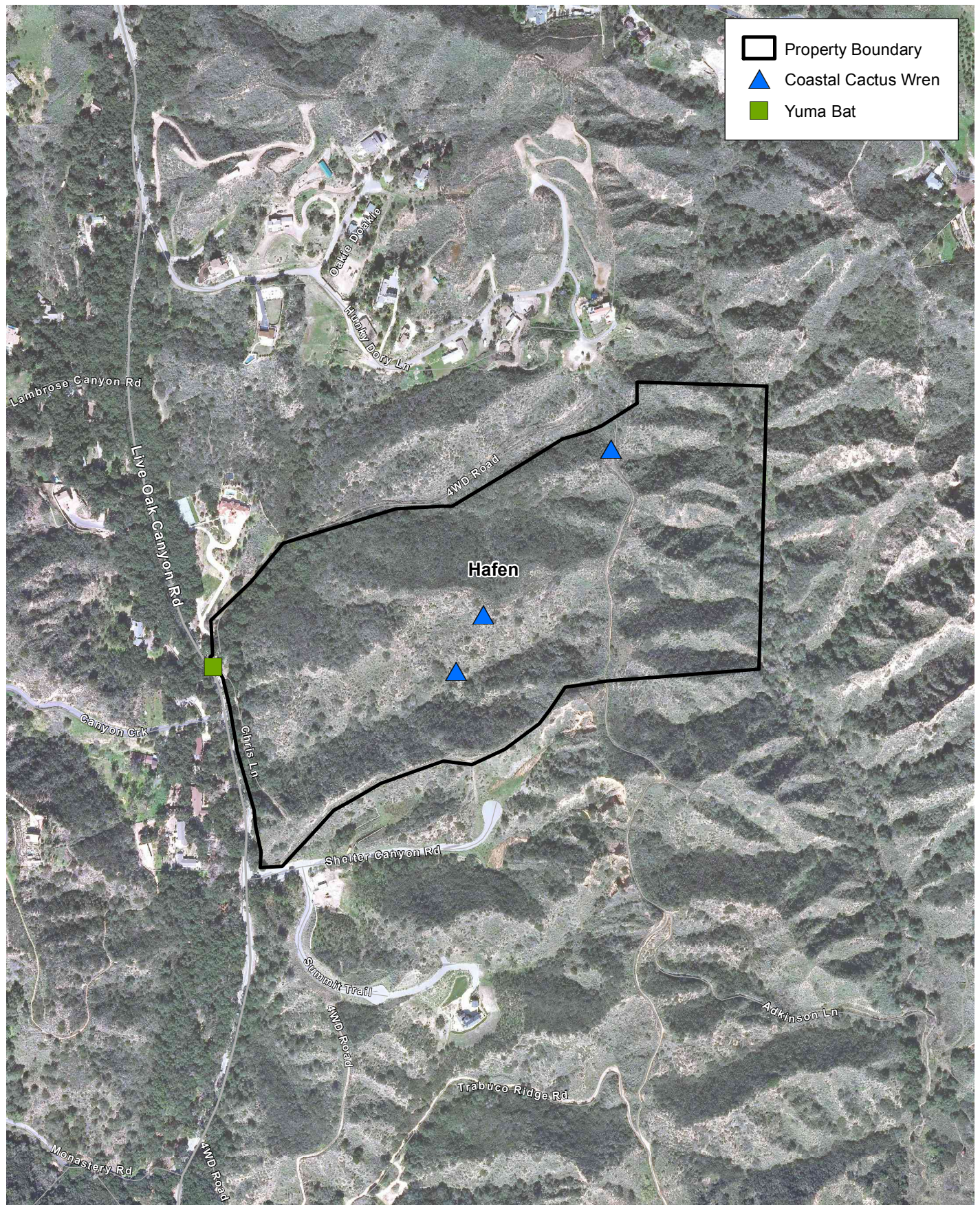
Special Status Wildlife Locations




Exhibit 15B

Measure M2 Acquisition Properties/O'Neill Oaks Property



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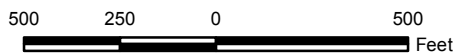






	Property Boundary
	Coastal Cactus Wren
	Yuma Bat

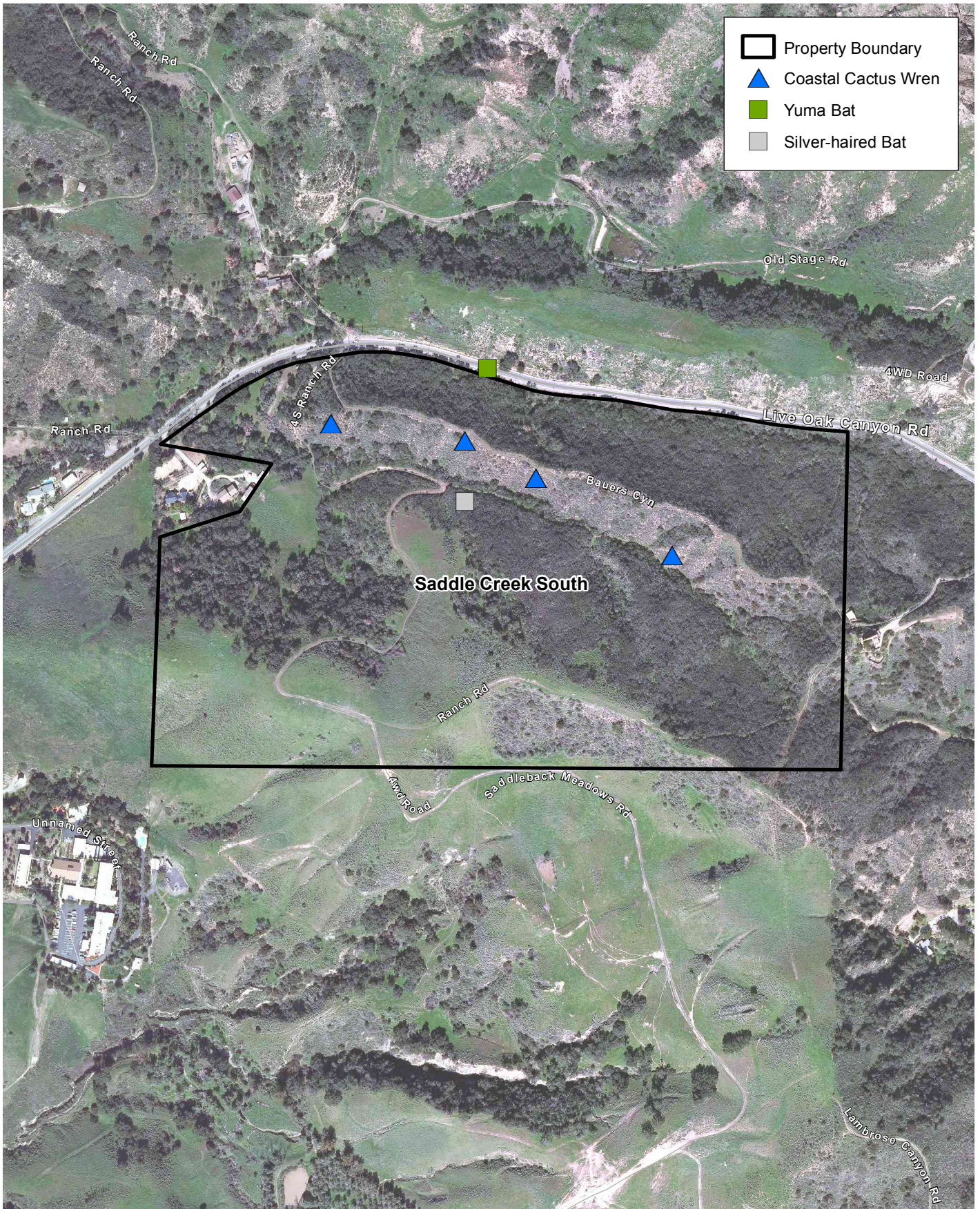
Special Status Wildlife Locations

Exhibit 15C

Measure M2 Acquisition Properties/Hafen Property



	Property Boundary
	Coastal Cactus Wren
	Yuma Bat
	Silver-haired Bat

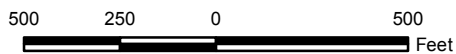


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Special Status Wildlife Locations

Exhibit 15D

Measure M2 Acquisition Properties/Saddle Creek South Property



**TABLE 17
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES**

Species	Status		Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
Invertebrates								
<i>Branchinecta sandiegonensis</i> San Diego fairy shrimp	FE	–	Vernal pools.	Coastal Orange County and San Diego County.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Streptocephalus woottoni</i> Riverside fairy shrimp	FE	–	Vernal pools and ephemeral ponds.	Coastal Ventura County south to Baja California, Mexico.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
Fish								
<i>Catostomus santaanae</i> Santa Ana sucker	FT	SSC	Small to medium-sized perennial streams, preferably with coarse gravel, rubble, or boulder substrate.	Los Angeles, San Gabriel, and Santa Ana River drainages.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Gila orcuttii</i> arroyo chub *	–	SSC	Coastal freshwater streams and rivers with steady current and emergent vegetation.	Currently found at three native locations: Santa Margarita and De Luz Creeks in San Diego County, Trabuco and San Juan Creeks in Orange County; and Malibu Creek in Los Angeles County; introduced elsewhere.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Oncorhynchus mykiss irideus</i> Southern steelhead – Southern California DPS	FE	SSC	Cool water streams; spawns in areas of gravelly substrate in riffles or pool tails.	The Southern California Steelhead DPS occurs from the Santa Maria River to the Tijuana River at the U.S. and	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

**TABLE 17
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES**

Species	Status		Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Rhinichthys osailolus</i> Santa Ana speckled dace	—	SSC	Small streams, springs, large rivers, deep lakes; prefer clear oxygenated water with movement from current or waves; typically overhanging vegetation cover.	Restricted to the headwaters of the Los Angeles, Santa Ana, and San Gabriel rivers.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
Amphibians								
<i>Spea hammondi</i> western spadefoot	—	SSC	Quiet streams, vernal pools, and temporary ponds.	Great Valley and bordering foothills and Coast Ranges from Monterey Bay south to Baja California, Mexico.	Marginally suitable habitat. Limited potential to occur.	Marginally suitable habitat. Limited potential to occur.	Marginally suitable habitat. Limited potential to occur.	Marginally suitable habitat. Limited potential to occur.
<i>Anaxyrus californicus</i> [<i>Bufo microscaphus californicus</i>] arroyo toad	FE	SSC	Semi-arid regions near washes or intermittent streams; requires suitable breeding pools.	Southern California and northwestern Baja California, Mexico.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Lithobates</i> [<i>Rana</i>] <i>pipiens</i> northern leopard frog (native populations)	—	SSC	Variety of habitats such as grasslands, brushlands, woodlands, and forests; requires aquatic habitat for overwintering and breeding.	Broadly distributed; native in California only from Modoc and Lassen Counties.	Outside native range of species; not expected to occur as a native population.	Outside native range of species; not expected to occur as a native population.	Outside native range of species; not expected to occur as a native population.	Outside native range of species; not expected to occur as a native population.

**TABLE 17
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR
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Species	Status		Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Taricha torosa</i> Coast Range newt	-	SSC	Wet forests, oak forests, chaparral, grasslands. Breeds in streams, rivers, ponds, lakes, and reservoirs.	Coast and coast range mountains from Mendocino County south to San Diego County.	Marginally suitable habitat. Limited potential to occur.	Marginally suitable habitat. Limited potential to occur.	Marginally suitable habitat. Limited potential to occur.	Marginally suitable habitat. Limited potential to occur.
Reptiles								
<i>Actinemys marmorata</i> [<i>Emys m.</i>] Pacific [western] pond turtle	-	SSC	In ponds, lakes, marshes, rivers, streams, and irrigation ditches with a rocky or muddy bottom and aquatic vegetation.	Pacific slope drainages from Washington south to northern Baja California, Mexico.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Phrynosoma blainvillii</i> coast horned lizard	-	SSC	Scrubland, grassland, coniferous forests, and broadleaf woodland with friable soil for burrowing.	Northern California south to northern Baja California, Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Aspidoscelis hyperythra</i> [<i>Cnemidophorus hyperythrus beldingi</i>] orangethroat whiptail	-	SSC	Washes and open areas of sage scrub and chaparral in friable, gravelly soil.	Western Peninsular Ranges from Orange and San Bernardino Counties south to Baja California, Mexico.	Suitable habitat. Observed on the property.	Suitable habitat. Observed on the property.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Aspidoscelis</i> [<i>Cnemidophorus</i>] <i>tigris stejnegeri</i> coastal whiptail [coastal western whiptail]	-	SA	Hot and dry open areas with sparse foliage such as chaparral, woodland.	Coastal Southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges, and north into Ventura County.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Anniella pulchra pulchra</i> silvery legless lizard	-	SSC	In loose sandy soil of chaparral, pine-oak woodland, beach, and riparian areas.	Coast, Transverse, and Peninsular Ranges from Contra Costa County south to Baja California, Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Salvadora hexalepis virgultea</i> coast patch-nosed snake	-	SSC	Sandy or rocky grasslands, chaparral, sagebrush plains, piñon-juniper woodlands, and desert scrub.	Coast of California from San Luis Obispo County south to Baja California, Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Thamnophis hammondi</i> two-striped garter snake	-	SSC	Perennial or intermittent freshwater streams with rocky beds bordered by willows or other dense vegetation.	From Monterey County south to El Rosario in Baja California, Mexico.	Limited suitable habitat. Limited potential to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Thamnophis sirtalis</i> ssp. south coast garter snake	-	SSC ^a	Associated with permanent or semi-permanent bodies of water in habitats such as grassland, woodland, scrubland, chaparral, and forest.	Coastal plain from Ventura County to San Diego County.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Lampropeltis zonata pulchra</i> California mountain kingsnake (San Diego population)	-	SSC	Found in diverse habitats including coniferous forests, oak-pine woodlands, riparian woodland, chaparral, manzanita, and coastal sage scrub; wooded areas near a stream with rock outcrops, talus or rotting logs that are exposed to the sun.	Found in three areas in Southern California: in the central San Diego County peninsular ranges - the Laguna, Palomar, Volcan, and Hot Springs Mountains; in the Santa Ana Mountains; and in the Hollywood Hills and the Santa Monica mountains.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Crotalus ruber</i> red-diamond rattlesnake	-	SSC	Open scrub, chaparral, woodland, and grassland.	Orange County and San Bernardino County south to Baja California, Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
Birds								
<i>Plegadis chihi</i> white-faced ibis (rookery sites)	-	WL	Nests in extensive marshes with tall marsh plants and feeds in fresh emergent wetland, shallow ponds or lakes, and the muddy ground of wet meadows of irrigated pastures and croplands.	Within Orange County, this species is known to occur at the San Joaquin Marsh and along lower San Diego Creek to Upper Newport Bay and at the Santa Ana River channel.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Accipiter cooperii</i> Cooper's hawk (nesting)	–	WL	Prefers to nest in oak woodlands and riparian woodlands. Forages primarily in forest habitats.	Breeds from southern Canada into northwestern and north-central Mexico. Wintering range extends south.	Observed on the property. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.	Observed on the property. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.	Observed on the property. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.	Observed on the property. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.
<i>Accipiter striatus</i> sharp-shinned hawk (nesting)	–	WL	Nests and forages in forest habitats.	Breeds in Alaska and Canada, portions of the U.S., in the West Indies, and south through Mexico, Central America, and South America. Migrant and winter visitor in Orange County.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.
<i>Aquila chrysaetos</i> golden eagle (nesting and non-breeding/ wintering)	–	FP, WL	Nests in open and semi-open habitats, such as tundra, shrublands, grasslands, woodland-brushlands, coniferous forests, farmland, and riparian habitats. Forages in broad expanses of open country.	Resident throughout Southern California, except in the Colorado Desert and Colorado River, where it is a casual winter visitor.	Observed foraging on the property. Limited potential to occur for nesting; marginal nesting habitat.	May occur for foraging; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.	May occur for foraging; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.	May occur for foraging; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
	<i>Buteo regalis</i> ferruginous hawk (non-breeding/ wintering)	-			WL	Open, dry habitats such as grasslands, shrublands, rangelands, and plowed agricultural fields.	Winter resident in California; visitor along the coast of Southern California.	Not expected to occur for foraging or nesting; no suitable foraging habitat and outside the breeding range of the species.
<i>Circus cyaneus</i> northern harrier (nesting)	-	SSC	Breeds on the ground within dense vegetation. Forages in open habitats such as marshes and fields.	Winter migrant throughout Southern California, but a scarce local breeder.	Observed foraging on the property. Limited potential to occur for nesting; marginal nesting habitat.	May occur for foraging; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.	May occur for foraging; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.	May occur for foraging; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.
<i>Elanus leucurus</i> white-tailed kite (nesting)	-	FP	Low elevation grassland, agricultural areas, wetlands, oak woodlands, savannahs, and riparian habitat adjacent to open areas.	Resident in coastal Southern California and a visitor and local breeder on the western edge of the deserts.	Observed on the property. May occur for nesting. Suitable foraging and nesting habitat.	May occur for foraging and nesting. Suitable foraging and nesting habitat	May occur for foraging and nesting. Suitable foraging and nesting habitat	May occur for foraging and nesting. Suitable foraging and nesting habitat

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
	<i>Falco columbarius</i> merlin (non-breeding/ wintering)	–			WL	Breeds in forests and prairies. Occurs along the coast in open grasslands, savannahs; in inland and montane valleys; and in the desert.	Breeds in northern North America, Europe, and Asia. Fall transient and rare winter visitor in California.	Suitable foraging habitat; may occur for foraging as a fall or winter visitor. Outside the breeding range of the species; not expected to occur for nesting.
<i>Falco mexicanus</i> prairie falcon (nesting)	–	WL	Nests on cliffs. Forages in grassland and scrub vegetation.	Year-round resident of interior Southern California. Winter resident and rare summer resident along the Southern California coast.	Suitable foraging habitat; may occur for foraging as a fall or winter visitor. Outside the breeding range of the species; not expected to occur for nesting.	Suitable foraging habitat; may occur for foraging as a fall or winter visitor. Outside the breeding range of the species; not expected to occur for nesting.	Suitable foraging habitat; may occur for foraging as a fall or winter visitor. Outside the breeding range of the species; not expected to occur for nesting.	Suitable foraging habitat; may occur for foraging as a fall or winter visitor. Outside the breeding range of the species; not expected to occur for nesting.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
	<i>Charadrius alexandrinus nivosus</i> western snowy plover (nesting)	FT ^b			SSC ^c	Nests primarily on dune-backed beaches, barrier beaches, and salt- evaporation ponds; on the coast, it forages on beaches, tide flats, salt flats, and salt ponds.	The Pacific coast populations of the western snowy plover breed from southern Washington south through Baja California, Mexico. In Orange County, breeding is currently limited to Bolsa Chica and the mouth of the Santa Ana River. Migrants have been observed in the County from late summer through winter.	No suitable habitat. Not expected to occur.
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo (nesting)	FC	SE	Broad areas of old-growth riparian habitats dominated by willows with dense understory.	Breeds primarily along the Sacramento River and south fork of the Kern River; from the Santa Ana River in the region.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Asio otus</i> long-eared owl (nesting)	-	SSC	Nests in dense trees such as oaks and willows. Forages over grasslands and other open habitats.	Breeds in Canada south to northern Baja California, Mexico. Winters throughout breeding range to the interior of Mexico.	May occur for foraging and nesting. Suitable foraging and nesting habitat.	May occur for foraging and nesting. Suitable foraging and nesting habitat.	May occur for foraging and nesting. Suitable foraging and nesting habitat.	May occur for foraging and nesting. Suitable foraging and nesting habitat.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Athene cunicularia</i> burrowing owl (burrow sites; wintering in northern counties)	-	SSC	Sparse vegetation in arid and semi-arid habitats such as grasslands, steppes, deserts, prairies, and agricultural areas. Nests in mammal burrows or man-made cavities.	In California from the Central Valley and Southern California.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Empidonax traillii extimus</i> southwestern willow flycatcher* (nesting)	FE	SE	Riparian habitats with dense growths of willows; often with a scattered overstory of cottonwood.	Breeds in coastal Southern California.	Marginally suitable habitat. Not seen during surveys/not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Lanius ludovicianus</i> loggerhead shrike (nesting)	-	SSC	Grasslands and other dry, open habitats.	Throughout North America; a year-round resident in Southern California.	Suitable habitat. May occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	Suitable habitat. May occur.
<i>Vireo bellii pusillus</i> least Bell's vireo* (nesting)	FE	SE	Riparian habitat dominated by willows with dense understory vegetation.	Breeds throughout the Central Valley and other low-elevation river systems in California and Baja California, Mexico.	Marginally suitable habitat. Not seen during surveys/not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Eremophila alpestris actia</i> California horned lark	-	WL	Open habitats with bare ground or short vegetation, such as shortgrass prairie, deserts, brushy flats, alpine, shrubsteppe, and agricultural areas.	From Alaska and Canadian arctic south to Mexico. Common migrant and winter resident that remains to breed along the Southern California coast.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Progne subis</i> purple martin (nesting)	-	SSC	Breeds in cavities of conifer or western sycamore. Forages over riparian areas, forests, and woodlands.	Throughout much of eastern North American and locally in the Rocky Mountains, Sonoran Desert, Central Mexico, and Pacific coast states. Summer resident and migrant in California.	No suitable habitat due to presence of European starlings. Not expected to occur.	No suitable habitat due to European starlings. Not expected to occur.	No suitable habitat due to European starlings. Not expected to occur.	No suitable habitat due to European starlings. Not expected to occur.
<i>Campylorhynchus brunneicapillus sandiegensis</i> coastal cactus wren* (San Diego and Orange Counties)	-	SSC	Coastal sage scrub and alluvial sage scrub with prickly pear cactus and/or cholla.	Southern Orange County and San Diego County to northwestern Baja California, Mexico.	Suitable habitat. Observed on the property.	Suitable habitat. Observed on the property.	Suitable habitat. Observed on the property.	Suitable habitat. Observed on the property.
<i>Polioptila californica californica</i> coastal California gnatcatcher*	FT	SSC	Coastal sage scrub vegetation.	Los Angeles, Orange, Riverside, and San Diego Counties south to Baja California, Mexico.	Suitable habitat. Observed on the property.	Suitable habitat. Observed on the property.	Suitable habitat. Not observed during focused surveys.	Suitable habitat. Not observed during focused surveys.
<i>Dendroica petechia brewsteri</i> yellow warbler (nesting)	-	SSC	Riparian vegetation, often with willows and cottonwoods.	Breeds in Southern California.	Marginally suitable habitat. Not seen during surveys/not expected to occur (except as migrant).	No suitable habitat. Not expected to occur (except as migrant).	No suitable habitat. Not expected to occur (except as migrant).	No suitable habitat. Not expected to occur (except as migrant).

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Icteria virens</i> yellow-breasted chat (nesting)	-	SSC	The border of streams, creeks, sloughs, and rivers in dense thickets and tangles of blackberry, wild grape, and willow.	Summer resident in Southern California along the coast and in the deserts.	Marginally suitable habitat. Not seen during surveys/not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Aimophila ruficeps canescens</i> Southern California rufous-crowned sparrow	-	WL	Steep, dry, rocky, south- or west-facing slopes in scrub vegetation interspersed with grasses and forbs or rock outcrops.	Year-round in Southern California.	Suitable habitat. Observed on the property.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Ammodramus savannarum</i> grasshopper sparrow (nesting)	-	SSC	Dense, dry or well-drained grassland.	Across North America from southern Canada south to Ecuador. Summer resident along the coastal slope of Southern California.	Suitable habitat. May occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	Suitable habitat. May occur.
<i>Amphispiza belli belli</i> Bell's sage sparrow	-	WL	Low, dense chamise chaparral and dry scrub vegetation, often with stands of cactus.	Resident in interior foothills or coastal Southern California.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Agelaius tricolor</i> tricolored blackbird (nesting colony)	-	SSC	Colonially nests in marsh vegetation of bulrushes and cattails. In winter, forages in grasslands, agricultural fields, dairies, and feedlots.	Primarily in California with local nesting colonies in Oregon, Washington, Nevada, and coastal Baja California, Mexico.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
Mammals								
<i>Antrozous pallidus</i> pallid bat	–	SSC	Low elevation grasslands, shrublands, woodlands, and forests. Roosts in caves, crevices, mines, bridges, and occasionally in hollow trees.	Throughout California except the high Sierra Nevada from Shasta County to Kern County and in the northwestern portion of the State.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	–	SSC	Wide variety of habitats except subalpine and alpine. Roosts in caves, mines, tunnels, buildings, or other human-made structures.	Throughout most of California.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Euderma maculatum</i> spotted bat	–	SSC	Foothills, mountains, arid deserts, grasslands, and mixed conifer forests. Roosts in rock crevices, occasionally in caves and buildings.	Western North America from southern British Columbia to Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Lasionycteris noctivagans</i> silver-haired bat	–	SA	Coastal and montane forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Primarily a forest dweller.	North America, from southern British Columbia to northern Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. Observed during focused bat surveys.

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	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Lasiurus cinereus</i> hoary bat	–	SA	Prefers open habitats or habitat mosaics, with access to trees and open areas or habitat edges.	Widest range of any New World bat, living from Argentina and Chile northward through Canada.	Suitable habitat. Observed during focused bat surveys.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Lasiurus blossevillii</i> western red bat	–	SSC	Prefers riparian areas dominated by walnuts, oaks, willows, cottonwoods, and sycamores where they roost in these broad-leafed trees.	Found in western Canada, the western U.S., western Mexico and Central America.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Lasiurus xanthinus</i> western yellow bat	–	SSC	Valley foothill riparian, desert riparian, desert wash, and palm oasis. Roosts in trees.	Mexican Plateau, coastal western Mexico, and deserts of the southwestern U.S.	Suitable habitat. May occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Myotis ciliolabrum</i> western small-footed myotis	–	SA	Arid uplands, primarily in arid wooded and brushy uplands near water. Roosts in caves, buildings, mines, crevices, and occasionally under bridges and under bark.	Southern British Columbia, Alberta, and Saskatchewan, Canada to the southwestern U.S.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.

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<i>Myotis evotis</i> long-eared myotis	–	SA	Nearly all brush, woodland, and forest habitats, but appears to prefer coniferous woodlands and forests. Roosts in buildings, crevices, spaces under bark, and snags.	Western Canada; western U.S.; and Baja California, Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Myotis yumanensis</i> Yuma myotis	–	SA	Open forests and woodlands, closely associated with water bodies. Roosts in buildings, mines, caves, crevices, swallow nests, and under bridges.	Southwestern British Columbia through the western U.S., and into central Mexico.	Suitable habitat. Observed during focused bat surveys.	Suitable habitat. Observed during focused bat surveys.	Suitable habitat. Observed during focused bat surveys.	Suitable habitat. Observed during focused bat surveys.
<i>Eumops perotis californicus</i> western mastiff bat	–	SSC	Open, semi-arid to arid habitats including conifer and deciduous woodland, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban. Roosts in crevices in cliffs, high buildings, trees, and tunnels.	Southeastern San Joaquin Valley and Coastal Ranges from Monterey County south through Southern California, and from the coast eastward to the Colorado Desert.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Nyctinomops femorosaccus</i> pocketed free-tailed bat	–	SSC	Pinyon-juniper woodland, desert scrub, desert succulent scrub, desert riparian, desert. Roosts in crevices in cliffs, caverns, or buildings.	Southwestern U.S. to south-central Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.

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<i>Nyctinomops macrotis</i> big free-tailed bat	–	SSC	Forages over water in rugged, rocky terrain. Roosts in crevices in high cliffs or rocky outcrops.	Western U.S. to northern South America and the Caribbean Islands.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Lepus californicus bennettii</i> San Diego black-tailed jackrabbit	–	SSC	Herbaceous and desert-shrub areas and open, early stages of forest and chaparral.	Pacific slope from Santa Barbara County south to northwestern Baja California, Mexico.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.	No suitable habitat. Not expected to occur.
<i>Chaetodipus fallax fallax</i> northwestern San Diego pocket mouse	–	SSC	Chaparral, coastal sage scrub, and grassland.	Southwest San Bernardino County south to northern Baja California, Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Neotoma lepida intermedia</i> San Diego desert woodrat	–	SSC	Joshua tree woodland, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and desert habitats.	Pacific slope from San Luis Obispo south to northwestern Baja California, Mexico.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Onychomys torridus ramona</i> southern grasshopper mouse	–	SSC	Desert areas, especially in scrub habitats with friable soil. Also in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats.	Along the coast of Southern California from Los Angeles County south through San Diego County.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Bassariscus astutus</i> ringtail ^d	–	–	Woodlands, riparian areas, and arid scrubland.	The southwestern third of the U.S. into Baja California and other portions of Mexico.	Limited suitable habitat. Limited potential to occur.	Limited suitable habitat. Limited potential to occur.	Limited suitable habitat. Limited potential to occur.	Limited suitable habitat. Limited potential to occur.

**TABLE 17
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE SOUTH COUNTY PROPERTIES**

Species	Status		Habitat	Range	Potential to Occur on Each Property/Results of Focused Surveys			
	USFWS	CDFW			Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Taxidea taxus</i> American badger	-	SSC	Drier, open stages of shrub, forest, and herbaceous habitats with friable soil.	Throughout California except the extreme northwest.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Puma [Felis] concolor</i> mountain lion ^e	-	-	Broad variety of habitats in range except shrubless deserts and agricultural areas.	Latitudinal range of 110 degrees in North and South America.	Suitable habitat. May occur.	Suitable habitat. Observed on the property^e.	Suitable habitat. May occur.	Suitable habitat. May occur.
<i>Lynx rufus</i> bobcat [*]	-	-	Broad variety of habitats.	Throughout contiguous U.S. and Mexico south to Rio Mescale, and Canada.	Suitable habitat. Observed on the property.	Suitable habitat. May occur.	Suitable habitat. May occur.	Suitable habitat. May occur.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; DPS: Distinct Population Segment; msl: mean sea level.

LEGEND

Federal (USFWS)		State (CDFW)	
FE	Endangered	SE	Endangered
FT	Threatened	SSC	Species of Special Concern
FC	Candidate Species	WL	Watch List
		FP	Fully Protected
		SA	Special Animal

- * Proposed Covered Species in the NCCP/HCP.
- ^a Individuals on the coastal plain from Ventura County to San Diego County, from sea level to approximately 2,790 feet above msl, are protected.
- ^b Federal listing applies only to the Pacific coastal population.
- ^c SSC designation refers to both the coastal and interior populations.
- ^d A species of local concern.
- ^e Incidentally observed by a Park Ranger in May 2012.

Coastal Cactus Wren

Coastal cactus wren was observed on all four south county properties (Exhibits 15A, 15B, 15C, and 15D). Multiple territories were observed on each property, including one territory on the Ferber Ranch property adjacent to willow riparian habitat that fledged young cactus wrens.

Coastal California Gnatcatcher

Coastal California gnatcatchers were observed in the southwest corner of the Ferber Ranch property and the northern edge of the O'Neill Oaks property during focused surveys. One breeding pair and one individual (detected through vocalization) were observed on the Ferber Ranch property; one breeding pair was detected on the O'Neill Oaks property. Breeding behavior was confirmed either through observation of males displaying territorial behavior, or observations of adults carrying nesting material and/or food for nesting.

Silver-Haired Bat

Silver-haired bat was observed during the focused bat surveys. It was documented once on the Saddle Creek South location in Bauers Canyon, which runs west-east through the center of the property (Exhibit 15D).

Hoary Bat

Hoary bat was observed during the focused bat surveys. It was documented once on the Ferber Ranch property over open fields along the northern spur road off Joplin Loop Road in the central portion of the property (Exhibit 15A).

Yuma Myotis

Yuma myotis was observed during the focused bat surveys (Exhibits 15A, 15B, 15C, and 15D). It was documented 15 times on the Ferber Ranch property and once on each of the other three properties. On the Ferber Ranch property, it was primarily recorded from two locations: along Hickey Canyon Road and Windy Ridge Road in the northern section of the property. On the O'Neill Oaks property it was recorded at the western boundary of the property; it is likely that three high frequency species detected along the Trabuco Ridge trail and at the entrance to the property were also Yuma myotis. On the Hafen property, it was recorded along Live Oak Canyon Road on the western border of the property; a high frequency species detected at the entrance is possibly a Yuma myotis. On the Saddle Creek South property, it was recorded on the northern boundary of the property along Live Oak Canyon Road.

3.3.5 Critical Habitat

The USFWS defines critical habitat as follows:

the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the [Endangered Species] Act, on which are found those physical or biological features (1) essential to the conservation of the species and (2) that may require special management considerations or protection; and specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

On February 9, 2011, the USFWS published a Final Rule designating critical habitat for arroyo toad. This Final Rule designates 98,366 acres in Santa Barbara, Ventura, Los Angeles, San

Bernardino, Riverside, Orange, and San Diego Counties as critical habitat. The southern end of the Ferber Ranch property and the southeastern edge of the O'Neill Oaks property are within Unit 10b of the designated critical habitat for arroyo toad.

On December 19, 2007, the USFWS published a final rule revising critical habitat for the coastal California gnatcatcher. The revised critical habitat designates 197,303 acres of land in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, California. All four properties are within Unit 6 of the designated critical habitat for coastal California gnatcatcher.

On December 4, 2012, the USFWS published a Final Rule revising critical habitat for the Riverside fairy shrimp (*Streptocephalus woottoni*). The revised critical habitat designates 1,724 acres of land in Ventura, Orange, and San Diego Counties, California. The southern half of the Saddle Creek South property overlaps Subunit 2dA of the designated critical habitat for Riverside fairy shrimp.

3.4 COVERED SPECIES SUMMARY

The baseline surveys described in this document were focused towards establishing baseline knowledge of the set of species covered by the OCTA M2 NCCP/HCP. The OCTA M2 NCCP/HCP includes requirements to understand and document the status of Covered Species and their habitats within the Preserves. Table 18 provides a summary of the OCTA M2 NCCP/HCP Covered Species; whether they were observed during the baseline surveys; other information documenting the potential for the Covered Species to occur on site; and a description of the threats and opportunities for management of the Preserve to benefit Covered Species.

**TABLE 18
SUMMARY OF COVERED SPECIES**

Species	Observations During Baseline Surveys				Potential to Occur on the Property				Opportunities, Threats, and Management
	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	
Plants									
<i>Calochortus weedii</i> var. <i>intermedius</i> intermediate mariposa lily	OBS	OBS	OBS	OBS	POT	POT	POT	POT	Potential threats include off-road vehicles, equestrian use, and grazing. Opportunities occur to establish the species in areas with suitable conditions (e.g., soils) that are currently degraded. A resource management plan may incorporate restricting unauthorized vehicles on site and transplantation

TABLE 18 (Continued)
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys				Potential to Occur on the Property				Opportunities, Threats, and Management
	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	
									and/or seeding of this variety in suitable areas on site.
<i>Centromadia parryi</i> ssp. <i>australis</i> southern tarplant	NO	NO	NO	NO	NE	NE	NE	NE	No opportunities available because properties are outside range of the species.
<i>Dudleya multicaulis</i> many-stemmed dudleya	NO	NO	NO	NO	POT	MAR	MAR	MAR	<p>Potential threats include off-road vehicles, equestrian use, and grazing.</p> <p>Opportunities occur to establish the species in areas with suitable conditions (e.g., soils) that are currently degraded.</p> <p>A resource management plan may incorporate restrictions to unauthorized vehicles on site and transplantation and/or seeding of this species in suitable areas on site.</p>
Fish									
<i>Gila orcuttii</i> arroyo chub	NO	NO	NO	NO	NE	NE	NE	NE	No opportunities available because suitable habitat does not occur on the properties.
Reptiles									
<i>Actinemys marmorata</i> [<i>Emys m.</i>] Pacific [western] pond turtle	NO	NO	NO	NO	NE	NE	NE	NE	No opportunities available because suitable habitat does not occur on the properties.

**TABLE 18 (Continued)
SUMMARY OF COVERED SPECIES**

Species	Observations During Baseline Surveys				Potential to Occur on the Property				Opportunities, Threats, and Management
	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	
<i>Phrynosoma blainvillii</i> coast horned lizard	NO	NO	NO	NO	POT	POT	POT	POT	<p>Potential threats include mortality and habitat destruction due to off-road vehicles/ equestrian use and spread of non-native ant species.</p> <p>Habitat restoration opportunities for coastal sage scrub and other suitable habitat exists.</p> <p>A resource management plan may incorporate restricting unauthorized vehicles and ensuring any plant/soil material brought on site is free of non-native ant species.</p>
<i>Aspidoscelis hyperythra</i> [<i>Cnemidophorus hyperythrus beldingi</i>] orangethroat whiptail	OBS	OBS	NO	NO	POT	POT	POT	POT	<p>The major threat to this species is loss of habitat by development.</p> <p>The preservation of suitable habitats on site is the best conservation opportunity for this species.</p> <p>A resource management plan may incorporate restoration opportunities for coastal sage scrub and other native habitats utilized by this species.</p>

**TABLE 18 (Continued)
SUMMARY OF COVERED SPECIES**

Species	Observations During Baseline Surveys				Potential to Occur on the Property				Opportunities, Threats, and Management
	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	
Birds									
<i>Empidonax traillii extimus</i> southwestern willow flycatcher (nesting)	NO	NO	NO	NO	MAR	NE	NE	NE	<p>The loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird (<i>Molothrus ater</i>) are this subspecies' greatest threats.</p> <p>The southwestern willow flycatcher population has not shown the same recovery that the least Bell's vireo has shown in response to riparian habitat restoration and cowbird control, as described below. Therefore, no additional opportunities or management activities have been identified.</p>
<i>Vireo bellii pusillus</i> least Bell's vireo (nesting)	NO	NO	NO	NO	MAR	NE	NE	NE	<p>The loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird are this subspecies' greatest threats.</p> <p>Possible opportunities available on the Ferber Ranch property for riparian habitat restoration and enhancement.</p> <p>A resource management plan may include a cowbird-control program and an</p>

**TABLE 18 (Continued)
SUMMARY OF COVERED SPECIES**

Species	Observations During Baseline Surveys				Potential to Occur on the Property				Opportunities, Threats, and Management
	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	
									exotic plant removal effort to support riparian restoration efforts on the Ferber Ranch property.
<i>Campylorhynchus brunneicapillus sandiegensis</i> coastal cactus wren (San Diego and Orange Counties)	OBS	OBS	OBS	OBS	POT	POT	POT	POT	Habitat loss, degradation, and fragmentation are the most critical threats facing this subspecies. Protection of cactus scrub habitat is crucial for the preservation of this subspecies. A resource management plan may incorporate restoration opportunities for coastal sage scrub with cactus species utilized by this subspecies.
<i>Polioptila californica californica</i> coastal California gnatcatcher	OBS	OBS	NO	NO	POT	POT	POT	POT	Habitat loss, degradation, and fragmentation are the most critical threats facing this subspecies. Protection of coastal sage scrub habitat is crucial for the preservation of this subspecies. A resource management plan may incorporate restoration opportunities for coastal sage scrub utilized by this subspecies.

**TABLE 18 (Continued)
SUMMARY OF COVERED SPECIES**

Species	Observations During Baseline Surveys				Potential to Occur on the Property				Opportunities, Threats, and Management
	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South	
Mammals									
<i>Puma</i> [Felis] <i>concolor</i> mountain lion	NO	OBS	NO	NO	POT	POT	POT	POT	<p>Potential threats include illegal hunting and habitat loss.</p> <p>Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species. Management should include maintenance of movement opportunities,</p>
<i>Lynx rufus</i> bobcat	OBS	NO	NO	NO	POT	POT	POT	POT	<p>Potential threats include illegal hunting and habitat loss.</p> <p>Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species.</p> <p>Management should include maintenance of movement opportunities.</p>
<p>NO: Not observed on site; OBS: Observed on site; NE: No suitable habitat and/or outside known range; not expected to occur; MAR: Marginally suitable habitat; not observed during surveys and not expected to occur; POT: Suitable habitat; may occur; PF/NR: Suitable foraging, but no suitable roosting habitat; may occur for foraging but is not expected to roost on site; PF/PR: Suitable foraging and roosting habitat; may occur for foraging and roosting.</p>									

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ATTACHMENT A
PLANT AND WILDLIFE COMPENDIA



PLANT COMPENDIUM FOR THE SADDLE CREEK SOUTH SURVEY AREA

SPECIES	
PTERIDOPHYTES - FERNS AND ALLIES	
PTERIDACEAE - BRAKE FAMILY	
<i>Pellaea andromedifolia</i>	coffee fern
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	goldenback fern
ANGIOSPERMAE - FLOWERING PLANTS	
EUDICOTS	
ADOXACEAE - MUSKROOT FAMILY	
<i>Sambucus nigra</i> ssp. <i>caerulea</i> [<i>S. mexicana</i>]	blue elderberry
ANACARDIACEAE - SUMAC FAMILY	
<i>Rhus aromatica</i> [<i>R. trilobata</i>]	skunk bush
<i>Rhus integrifolia</i>	lemonadeberry
<i>Toxicodendron diversilobum</i>	western poison oak
APIACEAE - CARROT FAMILY	
<i>Daucus pusillus</i>	rattlesnake weed
<i>Lomatium lucidum</i>	shiny lomatium
<i>Sanicula crassicaulis</i>	Pacific sanicle
<i>Torilis nodosa</i> *	short sock-destroyer
APOCYNACEAE - DOGBANE FAMILY	
<i>Asclepias fascicularis</i>	narrow-leaf milkweed
ASTERACEAE - SUNFLOWER FAMILY	
<i>Achillea millefolium</i>	common yarrow
<i>Anthemis cotula</i> *	mayweed
<i>Artemisia californica</i>	California sagebrush
<i>Artemisia douglasiana</i>	mugwort
<i>Baccharis salicifolia</i> ssp. <i>salicifolia</i> [<i>B. salicifolia</i>]	mule fat
<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i> *	Italian thistle
<i>Centaurea melitensis</i> *	tootalote, Malta star-thistle
<i>Cirsium occidentale</i> var. <i>occidentale</i>	cobwebby thistle
<i>Cirsium vulgare</i> *	bull thistle
<i>Corethrogyne filaginifolia</i>	California-aster
<i>Cynara cardunculus</i> *	cardoon, globe artichoke
<i>Deinandra fasciculata</i> [<i>Hemizonia</i> f.]	fascicled tarweed
<i>Eriophyllum confertiflorum</i>	golden-yarrow
<i>Grindelia camporum</i>	white-stem gumplant
<i>Hazardia squarrosa</i>	saw-toothed goldenbush
<i>Hedypnois cretica</i> *	Crete weed
<i>Hypochoeris glabra</i> *	smooth cat's-ear
<i>Isocoma menziesii</i> var. <i>vernonioides</i>	coastal goldenbush
<i>Logfia filaginoidea</i> [<i>Filago californica</i>]	California cottonrose
<i>Pseudognaphalium biolettii</i> [<i>Gnaphalium bicolor</i>]	bicolored everlasting, Bioletti's cudweed
<i>Pseudognaphalium californicum</i> [<i>Gnaphalium c.</i>]	California everlasting
<i>Solidago velutina</i> ssp. <i>californica</i> [<i>Solidago c.</i>]	California goldenrod
<i>Sonchus oleraceus</i> *	common sow thistle
<i>Uropappus lindleyi</i> [<i>Microseris l.</i>]	silver puffs

PLANT COMPENDIUM FOR THE SADDLE CREEK SOUTH SURVEY AREA

SPECIES	
BORAGINACEAE - BORAGE FAMILY	
<i>Phacelia cicutaria</i>	caterpillar phacelia
BRASSICACEAE - MUSTARD FAMILY	
<i>Hirschfeldia incana</i> *	shortpod mustard
<i>Sisymbrium officinale</i> *	hedge mustard
CACTACEAE - CACTUS FAMILY	
<i>Opuntia littoralis</i>	coastal prickly-pear
CAPRIFOLIACEAE - HONEYSUCKLE FAMILY	
<i>Lonicera subspicata</i> var. <i>denudata</i>	southern honeysuckle
<i>Symphoricarpos mollis</i>	creeping snowberry
CARYOPHYLLACEAE - PINK FAMILY	
<i>Silene gallica</i> *	small-flower catchfly
<i>Silene laciniata</i> ssp. <i>laciniata</i> [S.l. ssp. <i>major</i>]	Mexican pink
CHENOPODIACEAE - GOOSEFOOT FAMILY	
<i>Chenopodium album</i> *	lamb's quarters
CONVOLVULACEAE - MORNING-GLORY FAMILY	
<i>Calystegia macrostegia</i>	large-bracted morning-glory
<i>Cuscuta californica</i>	chaparral dodder
CRASSULACEAE - STONECROP FAMILY	
<i>Dudleya lanceolata</i>	lance-leaved dudleya / lanceleaf/ coastal dudleya / coastal live-forever
<i>Dudleya pulverulenta</i>	chalk dudleya / chalky live-forever
CUCURBITACEAE - GOURD FAMILY	
<i>Marah macrocarpus</i>	wild cucumber / chilicothe
EUPHORBIACEAE - SPURGE FAMILY	
<i>Croton setigerus</i> [<i>Eremocarpus</i> s.]	doveweed / turkey mullein
FABACEAE - LEGUME FAMILY	
<i>Acmispon americanus</i> [<i>Lotus purshianus</i>]	American lotus
<i>Acmispon glaber</i> var. <i>glaber</i> [<i>Lotus scoparius</i> var. <i>scoparius</i>]	coastal deerweed
<i>Lathyrus vestitus</i> ssp. <i>vestitus</i>	chaparral sweet pea
<i>Spartium junceum</i> *	Spanish broom
<i>Trifolium hirtum</i> *	rose clover
<i>Trifolium willdenovii</i>	tomcat clover
FAGACEAE - OAK / BEECH FAMILY	
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus berberidifolia</i>	scrub oak / California scrub oak
GERANIACEAE - GERANIUM FAMILY	
<i>Erodium botrys</i> *	long-beaked filaree
LAMIACEAE - MINT FAMILY	
<i>Marrubium vulgare</i> *	common horehound
<i>Salvia apiana</i>	white sage
<i>Salvia mellifera</i>	black sage
<i>Stachys rigida</i> ssp. <i>quercetorum</i>	hillside hedge-nettle

PLANT COMPENDIUM FOR THE SADDLE CREEK SOUTH SURVEY AREA

SPECIES	
MALVACEAE - MALLOW FAMILY	
<i>Malva parviflora</i> *	cheeseweed
MYRSINACEAE - MYRSINE FAMILY	
<i>Anagallis arvensis</i> *	scarlet pimpernel
NYCTAGINACEAE - FOUR-O'CLOCK FAMILY	
<i>Mirabilis laevis</i> var. <i>crassifolia</i> [<i>M. californica</i>]	wishbone bush / California wishbone bush
OLEACEAE - OLIVE FAMILY	
<i>Olea europaea</i> *	olive
ONAGRACEAE - EVENING PRIMROSE FAMILY	
<i>Epilobium canum</i>	California fuchsia
OROBANCHACEAE - BROOMRAPE FAMILY	
<i>Castilleja affinis</i> ssp. <i>affinis</i>	coastal paintbrush
OXALIDACEAE - WOOD-SORREL FAMILY	
<i>Oxalis californica</i> [<i>O. albicans</i> ssp. <i>c.</i>]	California wood-sorrel
PHRYMACEAE - LOPSEED FAMILY	
<i>Mimulus aurantiacus</i> var. <i>puniceus</i>	orange bush monkeyflower
PLANTAGINACEAE - PLANTAIN FAMILY	
<i>Keckiella cordifolia</i>	heart-leaved bush-penstemon
POLYGONACEAE - BUCKWHEAT FAMILY	
<i>Eriogonum fasciculatum</i>	California buckwheat
<i>Pterostegia drymarioides</i>	woodland threadstem
RANUNCULACEAE - CROWFOOT FAMILY	
<i>Delphinium parryi</i> ssp. <i>parryi</i>	Parry's larkspur
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	common meadow-rue
RHAMNACEAE - BUCKTHORN FAMILY	
<i>Rhamnus ilicifolia</i>	hollyleaf redberry
ROSACEAE - ROSE FAMILY	
<i>Adenostoma fasciculatum</i> var. <i>fasciculatum</i>	common chamise
<i>Heteromeles arbutifolia</i>	toyon / Christmas berry
<i>Drymocallis glandulosa</i> ssp. <i>glandulosa</i> [<i>Potentilla g.</i> ssp. <i>g.</i>]	sticky cinquefoil
RUBIACEAE - MADDER FAMILY	
<i>Galium angustifolium</i>	narrowly leaved bedstraw
<i>Galium parisiense</i> *	Parisian bedstraw
MONOCOTYLEDONES - MONOCOTS	
AGAVACEAE - CENTURY PLANT FAMILY	
<i>Chlorogalum pomeridianum</i>	wavy-leaved soap plant
<i>Hesperoyucca whipplei</i> [<i>Yucca w.</i>]	chaparral yucca
IRIDACEAE - IRIS FAMILY	
<i>Sisyrinchium bellum</i>	western blue-eyed grass
LILIACEAE - LILY FAMILY	
<i>Calochortus splendens</i>	splendid mariposa lily
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily

PLANT COMPENDIUM FOR THE SADDLE CREEK SOUTH SURVEY AREA

SPECIES	
POACEAE - GRASS FAMILY	
<i>Avena barbata</i> *	slender wild oat
<i>Brachypodium distachyon</i> *	purple false brome
<i>Bromus diandrus</i> *	ripgut grass
<i>Bromus hordeaceus</i> *	soft chess
<i>Elymus condensatus</i> [<i>Leymus c.</i>]	giant wild rye
<i>Hordeum murinum</i> var. <i>leporinum</i> *	hare barley
<i>Melica imperfecta</i>	little California melic grass
<i>Stipa coronata</i> [<i>Achnatherum coronatum</i>]	crested needlegrass
<i>Stipa pulchra</i> [<i>Nassella p.</i>]	purple needlegrass
THEMIDACEAE - BRODIAEA FAMILY	
<i>Bloomeria crocea</i>	common goldenstar
<i>Dichelostemma capitatum</i>	blue dicks
* non-native to the region it was found cf. appears similar to	

PLANT COMPENDIUM FOR THE HAFEN SURVEY AREA

SPECIES	
PTERIDOPHYTES - FERNS AND ALLIES	
DRYOPTERIDACEAE - WOOD FERN FAMILY	
<i>Dryopteris arguta</i>	coastal wood fern
PTERIDACEAE - BRAKE FAMILY	
<i>Pellaea andromedifolia</i>	coffee fern
SELAGINELLACEAE - SPIKE-MOSS FAMILY	
<i>Selaginella bigelovii</i>	Bigelow's or bushy spike-moss
ANGIOSPERMAE - FLOWERING PLANTS	
EUDICOTS	
ANACARDIACEAE - SUMAC FAMILY	
<i>Rhus integrifolia</i>	lemonadeberry
<i>Toxicodendron diversilobum</i>	western poison oak
APIACEAE - CARROT FAMILY	
<i>Daucus pusillus</i>	rattlesnake weed
<i>Foeniculum vulgare*</i>	sweet fennel
<i>Torilis arvensis*</i>	tall sock-destroyer
ASTERACEAE - SUNFLOWER FAMILY	
<i>Acourtia microcephala</i>	sacapellote
<i>Artemisia californica</i>	California sagebrush
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i> [<i>B. pilularis</i>]	coyote brush
<i>Baccharis salicifolia</i> ssp. <i>salicifolia</i> [<i>B. salicifolia</i>]	mule fat
<i>Brickellia californica</i>	California brickellbush
<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus*</i>	Italian thistle
<i>Centaurea melitensis*</i>	totalote, Malta star-thistle
<i>Chaenactis artemisiifolia</i>	white pincushion
<i>Chaenactis glabriuscula</i>	yellow pincushion
<i>Corethrogyne filaginifolia</i>	California-aster
<i>Encelia californica</i>	California brittlebush
<i>Encelia farinosa</i>	desert brittlebush
<i>Encelia californica</i> x <i>Encelia farinosa</i>	hybrid California/desert brittlebush
<i>Erigeron foliosus</i>	leafy fleabane
<i>Eriophyllum confertiflorum</i>	golden-yarrow
<i>Hazardia squarrosa</i>	saw-toothed goldenbush
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Logfia filaginoides</i> [<i>Filago californica</i>]	California cottonrose
<i>Porophyllum gracile</i>	odora
<i>Pseudognaphalium biolettii</i> [<i>Gnaphalium bicolor</i>]	bicolored everlasting, Bioletti's cudweed
<i>Pseudognaphalium californicum</i> [<i>Gnaphalium c.</i>]	California everlasting
<i>Stephanomeria diegensis</i>	San Diego wreath plant
<i>Uropappus lindleyi</i> [<i>Microseris l.</i>]	silver puffs
BORAGINACEAE - BORAGE FAMILY	
<i>Eucrypta chrysanthemifolia</i>	common eucrypta
BRASSICACEAE - MUSTARD FAMILY	
<i>Hirschfeldia incana*</i>	shortpod mustard

PLANT COMPENDIUM FOR THE HAFEN SURVEY AREA

SPECIES	
CACTACEAE - CACTUS FAMILY	
<i>Opuntia littoralis</i>	coastal prickly-pear
CAPRIFOLIACEAE - HONEYSUCKLE FAMILY	
<i>Lonicera subspicata</i> var. <i>denudata</i>	southern honeysuckle
<i>Symphoricarpos mollis</i>	creeping snowberry
CONVOLVULACEAE - MORNING-GLORY FAMILY	
<i>Calystegia macrostegia</i>	large-bracted morning-glory
<i>Cuscuta californica</i>	chaparral dodder
CRASSULACEAE - STONECROP FAMILY	
<i>Dudleya lanceolata</i>	lance-leaved dudleya / lanceleaf/ coastal dudleya / coastal live-forever
<i>Dudleya pulverulenta</i>	chalk dudleya / chalky live-forever
CUCURBITACEAE - GOURD FAMILY	
<i>Marah macrocarpus</i>	wild cucumber / chilicothe
FABACEAE - LEGUME FAMILY	
<i>Acmispon americanus</i> [<i>Lotus purshianus</i>]	American lotus
<i>Acmispon glaber</i> var. <i>glaber</i> [<i>Lotus scoparius</i> var. <i>scoparius</i>]	coastal deerweed
<i>Lathyrus vestitus</i> ssp. <i>vestitus</i>	chaparral sweet pea
<i>Lupinus sparsiflorus</i>	Coulter's lupine
<i>Lupinus truncatus</i>	truncate lupine / collar lupine
FAGACEAE - OAK / BEECH FAMILY	
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus berberidifolia</i>	scrub oak / California scrub oak
LAMIACEAE - MINT FAMILY	
<i>Salvia apiana</i>	white sage
<i>Salvia columbariae</i>	chia
<i>Salvia mellifera</i>	black sage
NYCTAGINACEAE - FOUR-O'CLOCK FAMILY	
<i>Mirabilis laevis</i> var. <i>crassifolia</i> [<i>M. californica</i>]	wishbone bush / California wishbone bush
ONAGRACEAE - EVENING PRIMROSE FAMILY	
<i>Clarkia purpurea</i>	winecup clarkia
OROBANCHACEAE - BROOMRAPE FAMILY	
<i>Castilleja foliolosa</i>	felt paintbrush
<i>Cordylanthus rigidus</i> ssp. <i>setigerus</i>	pellaea
PHRYMACEAE - LOPSEED FAMILY	
<i>Mimulus aurantiacus</i> var. <i>puniceus</i>	orange bush monkeyflower
PLANTAGINACEAE - PLANTAIN FAMILY	
<i>Keckiella cordifolia</i>	heart-leaved bush-penstemon
PLATANACEAE - SYCAMORE FAMILY	
<i>Platanus racemosa</i>	western sycamore
POLEMONIACEAE - PHLOX FAMILY	
<i>Eriastrum sapphirinum</i>	sapphire woollystar
<i>Linanthus californicum</i> [<i>Leptodactylon</i> c.]	prickly phlox

PLANT COMPENDIUM FOR THE HAFEN SURVEY AREA

SPECIES	
POLYGONACEAE - BUCKWHEAT FAMILY	
<i>Chorizanthe staticoides</i>	Turkish rugging
<i>Eriogonum fasciculatum</i>	California buckwheat
<i>Pterostegia drymarioides</i>	woodland threadstem
RHAMNACEAE - BUCKTHORN FAMILY	
<i>Ceanothus crassifolius</i>	hoaryleaf ceanothus
<i>Rhamnus ilicifolia</i>	hollyleaf redberry
ROSACEAE - ROSE FAMILY	
<i>Adenostoma fasciculatum</i> var. <i>fasciculatum</i>	common chamise
<i>Heteromeles arbutifolia</i>	toyon / Christmas berry
<i>Drymocallis glandulosa</i> ssp. <i>glandulosa</i> [<i>Potentilla g.</i> ssp. <i>g.</i>]	sticky cinquefoil
RUBIACEAE - MADDER FAMILY	
<i>Galium angustifolium</i>	narrowly leaved bedstraw
<i>Galium porrigens</i> var. <i>porrigens</i>	climbing bedstraw
SOLANACEAE - NIGHTSHADE FAMILY	
<i>Nicotiana glauca</i> *	tree tobacco
MONOCOTYLEDONES - MONOCOTS	
AGAVACEAE - CENTURY PLANT FAMILY	
<i>Chlorogalum pomeridianum</i>	wavy-leaved soap plant
<i>Hesperoyucca whipplei</i> [<i>Yucca w.</i>]	chaparral yucca
LILIACEAE - LILY FAMILY	
<i>Calochortus splendens</i>	splendid mariposa lily
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily
POACEAE - GRASS FAMILY	
<i>Avena barbata</i> *	slender wild oat
<i>Bothriochloa barbinodis</i>	cane bluestem
<i>Bromus madritensis</i> ssp. <i>rubens</i> *	red brome
<i>Cynodon dactylon</i> *	Bermuda grass
<i>Elymus condensatus</i> [<i>Leymus c.</i>]	giant wild rye
<i>Festuca</i> sp. [<i>Vulpia</i> sp.]	fescue
<i>Muhlenbergia microsperma</i>	littleseed muhly
<i>Stipa coronata</i> [<i>Achnatherum coronatum</i>]	crested needlegrass
<i>Stipa miliacea</i> [<i>Piptatherum miliacea</i>]*	smilo grass
RUSCACEAE - BUTCHER'S-BROOM FAMILY	
<i>Nolina cismontana</i>	chaparral nolina, chaparral beargrass
THEMIDACEAE - BRODIAEA FAMILY	
<i>Dichelostemma capitatum</i>	blue dicks
* non-native to the region it was found cf. appears similar to	

PLANT COMPENDIUM FOR THE O'NEILL OAKS SURVEY AREA

SPECIES	
PTERIDOPHYTES - FERNS AND ALLIES	
SELAGINELLACEAE - SPIKE-MOSS FAMILY	
<i>Selaginella bigelovii</i>	Bigelow's or bushy spike-moss
ANGIOSPERMAE - FLOWERING PLANTS	
EUDICOTS	
ADOXACEAE - MUSKROOT FAMILY	
<i>Sambucus nigra</i> ssp. <i>caerulea</i> [<i>S. mexicana</i>]	blue elderberry
ANACARDIACEAE - SUMAC FAMILY	
<i>Malosma laurina</i>	laurel sumac
<i>Rhus integrifolia</i>	lemonadeberry
<i>Toxicodendron diversilobum</i>	western poison oak
ASTERACEAE - SUNFLOWER FAMILY	
<i>Artemisia californica</i>	California sagebrush
<i>Artemisia dracuncululus</i>	tarragon
<i>Baccharis salicifolia</i> ssp. <i>salicifolia</i> [<i>B. salicifolia</i>]	mule fat
<i>Bebbia juncea</i> var. <i>aspera</i>	sweetbush
<i>Brickellia californica</i>	California brickellbush
<i>Centaurea melitensis</i> *	toçalote, Malta star-thistle
<i>Chaenactis artemisiifolia</i>	white pincushion
<i>Cirsium occidentale</i> var. <i>occidentale</i>	cobwebby thistle
<i>Corethrogyne filaginifolia</i>	California-aster
<i>Cynara cardunculus</i> *	cardoon, globe artichoke
<i>Deinandra fasciculata</i> [<i>Hemizonia</i> f.]	fascicled tarweed
<i>Encelia californica</i>	California brittlebush
<i>Encelia farinosa</i>	desert brittlebush
<i>Eriophyllum confertiflorum</i>	golden-yarrow
<i>Hazardia squarrosa</i>	saw-toothed goldenbush
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Heterotheca sessiliflora</i>	sessileflower goldenaster
<i>Hypochaeris glabra</i> *	smooth cat's-ear
<i>Logfia filaginoides</i> [<i>Filago californica</i>]	California cottonrose
<i>Osmadenia tenella</i>	osmadenia
<i>Porophyllum gracile</i>	odora
<i>Pseudognaphalium biolettii</i> [<i>Gnaphalium bicolor</i>]	bicolored everlasting, Bioletti's cudweed
<i>Pseudognaphalium californicum</i> [<i>Gnaphalium</i> c.]	California everlasting
<i>Rafinesquia californica</i>	California chicory
<i>Senecio vulgaris</i> *	common groundsel
BORAGINACEAE - BORAGE FAMILY	
<i>Phacelia ramosissima</i>	branching phacelia
BRASSICACEAE - MUSTARD FAMILY	
<i>Capsella bursa-pastoris</i> *	shepherd's purse
<i>Hirschfeldia incana</i> *	shortpod mustard
<i>Lepidium nitidum</i>	peppergrass / shining peppergrass
<i>Sisymbrium officinale</i> *	hedge mustard

PLANT COMPENDIUM FOR THE O'NEILL OAKS SURVEY AREA

SPECIES	
CACTACEAE - CACTUS FAMILY	
<i>Opuntia littoralis</i>	coastal prickly-pear
<i>Opuntia x occidentalis</i>	western prickly-pear
CAPRIFOLIACEAE - HONEYSUCKLE FAMILY	
<i>Lonicera subspicata</i> var. <i>denudata</i>	southern honeysuckle
CARYOPHYLLACEAE - PINK FAMILY	
<i>Silene laciniata</i> ssp. <i>laciniata</i> [S.l. ssp. <i>major</i>]	Mexican pink
CHENOPODIACEAE - GOOSEFOOT FAMILY	
<i>Chenopodium album</i> *	lamb's quarters
<i>Salsola tragus</i> *	Russian thistle
CISTACEAE - ROCK-ROSE FAMILY	
<i>Helianthemum scoparium</i>	peak rush-rose
CONVOLVULACEAE - MORNING-GLORY FAMILY	
<i>Calystegia macrostegia</i>	large-bracted morning-glory
<i>Cuscuta californica</i>	chaparral dodder
<i>Cuscuta subinclusa</i>	canyon dodder
CRASSULACEAE - STONECROP FAMILY	
<i>Dudleya lanceolata</i>	lance-leaved dudleya / lanceleaf/ coastal dudleya / coastal live-forever
<i>Dudleya pulverulenta</i>	chalk dudleya / chalky live-forever
CUCURBITACEAE - GOURD FAMILY	
<i>Marah macrocarpus</i>	wild cucumber / chilicothe
FABACEAE - LEGUME FAMILY	
<i>Acmispon americanus</i> [<i>Lotus purshianus</i>]	American lotus
<i>Acmispon glaber</i> var. <i>glaber</i> [<i>Lotus scoparius</i> var. <i>scoparius</i>]	coastal deerweed
<i>Acmispon strigosus</i> [<i>Lotus</i> s.]	strigose lotus
FAGACEAE - OAK / BEECH FAMILY	
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus berberidifolia</i>	scrub oak / California scrub oak
GERANIACEAE - GERANIUM FAMILY	
<i>Erodium cicutarium</i> *	red-stemmed filaree
LAMIACEAE - MINT FAMILY	
<i>Salvia apiana</i>	white sage
<i>Salvia mellifera</i>	black sage
MALVACEAE - MALLOW FAMILY	
<i>Malva parviflora</i> *	cheeseweed
NYCTAGINACEAE - FOUR-O'CLOCK FAMILY	
<i>Mirabilis laevis</i> var. <i>crassifolia</i> [<i>M. californica</i>]	wishbone bush / California wishbone bush
OXALIDACEAE - WOOD-SORREL FAMILY	
<i>Oxalis californica</i> [<i>O. albicans</i> ssp. <i>c.</i>]	California wood-sorrel
PAEONIACEAE - PEONY FAMILY	
<i>Paeonia californica</i>	California peony

PLANT COMPENDIUM FOR THE O'NEILL OAKS SURVEY AREA

SPECIES	
PHRYMACEAE - LOPSEED FAMILY	
<i>Mimulus aurantiacus</i> var. <i>puniceus</i>	orange bush monkeyflower
PLANTAGINACEAE - PLANTAIN FAMILY	
<i>Keckiella cordifolia</i>	heart-leaved bush-penstemon
<i>Plantago erecta</i>	dwarf plantain / California plantain
POLEMONIACEAE - PHLOX FAMILY	
<i>Eriastrum sapphirinum</i>	sapphire woollystar
<i>Linanthus californicum</i> [<i>Leptodactylon</i> c.]	prickly phlox
POLYGONACEAE - BUCKWHEAT FAMILY	
<i>Chorizanthe staticoides</i>	Turkish rugging
<i>Eriogonum fasciculatum</i>	California buckwheat
<i>Polygonum aviculare</i> ssp. <i>depressum</i> [<i>Polygonum arenastrum</i>]*	common knotweed
RHAMNACEAE - BUCKTHORN FAMILY	
<i>Rhamnus ilicifolia</i>	hollyleaf redberry
ROSACEAE - ROSE FAMILY	
<i>Adenostoma fasciculatum</i> var. <i>fasciculatum</i>	common chamise
<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	birch-leaf mountain-mahogany
<i>Heteromeles arbutifolia</i>	toyon / Christmas berry
RUBIACEAE - MADDER FAMILY	
<i>Galium angustifolium</i>	narrowly leaved bedstraw
SCROPHULARIACEAE - FIGWORT FAMILY	
<i>Scrophularia californica</i>	California figwort
SOLANACEAE - NIGHTSHADE FAMILY	
<i>Datura wrightii</i>	jimson weed
<i>Nicotiana glauca</i> *	tree tobacco
<i>Solanum douglasii</i>	Douglas' nightshade
MONOCOTYLEDONES - MONOCOTS	
AGAVACEAE - CENTURY PLANT FAMILY	
<i>Chlorogalum pomeridianum</i>	wavy-leaved soap plant
<i>Hesperoyucca whipplei</i> [<i>Yucca</i> w.]	chaparral yucca
LILIACEAE - LILY FAMILY	
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily
POACEAE - GRASS FAMILY	
<i>Bromus diandrus</i> *	ripgut grass
<i>Bromus madritensis</i> ssp. <i>rubens</i> *	red brome
<i>Cynodon dactylon</i> *	Bermuda grass
<i>Elymus condensatus</i> [<i>Leymus</i> c.]	giant wild rye
<i>Melica imperfect</i>	little California melic grass
<i>Muhlenbergia microsperma</i>	littleseed muhly
<i>Stipa coronata</i> [<i>Achnatherum coronatum</i>]	crested needlegrass
<i>Stipa lepida</i> [<i>Nassella</i> l.]	foothill needlegrass
<i>Stipa miliacea</i> [<i>Piptatherum miliacea</i>]*	smilo grass

PLANT COMPENDIUM FOR THE O'NEILL OAKS SURVEY AREA

SPECIES	
RUSCACEAE - BUTCHER'S-BROOM FAMILY	
<i>Nolina cismontana</i>	chaparral nolina, chaparral beargrass
THEMIDACEAE - BRODIAEA FAMILY	
<i>Bloomeria crocea</i>	common goldenstar
* non-native to the region it was found cf. appears similar to	

PLANT COMPENDIUM FOR THE FERBER RANCH SURVEY AREA

SPECIES	
PTERIDOPHYTES - FERNS AND ALLIES	
DRYOPTERIDACEAE - WOOD FERN FAMILY	
<i>Dryopteris arguta</i>	coastal wood fern
POLYPODIACEAE - POLYPODY FAMILY	
<i>Polypodium californicum</i>	California polypody
PTERIDACEAE - BRAKE FAMILY	
<i>Adiantum jordanii</i>	California maidenhair
<i>Pellaea andromedifolia</i>	coffee fern
<i>Pellaea mucronata</i>	bird's-foot fern
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	goldenback fern
SELAGINELLACEAE - SPIKE-MOSS FAMILY	
<i>Selaginella bigelovii</i>	Bigelow's or bushy spike-moss
GYMNOSPERMS	
PINACEAE - PINE FAMILY	
<i>Pinus halepensis</i> *	Aleppo pine
ANGIOSPERMAE - FLOWERING PLANTS	
EUDICOTS	
ADOXACEAE - MUSKROOT FAMILY	
<i>Sambucus nigra</i> ssp. <i>caerulea</i> [<i>S. mexicana</i>]	blue elderberry
ANACARDIACEAE - SUMAC FAMILY	
<i>Malosma laurina</i>	laurel sumac
<i>Rhus integrifolia</i>	lemonadeberry
<i>Rhus integrifolia</i> x <i>Rhus ovata</i>	hybrid lemonadeberry-sugarbush
<i>Toxicodendron diversilobum</i>	western poison oak
APIACEAE - CARROT FAMILY	
<i>Daucus pusillus</i>	rattlesnake weed
<i>Foeniculum vulgare</i> *	sweet fennel
<i>Lomatium lucidum</i>	shiny lomatium
<i>Osmorhiza brachypoda</i>	California sweet cicely
<i>Sanicula crassicaulis</i>	Pacific sanicle
<i>Torilis arvensis</i> *	tall sock-destroyer
<i>Yabea microcarpa</i>	California hedge parsley
APOCYNACEAE - DOGBANE FAMILY	
<i>Asclepias eriocarpa</i>	kotolo, Indian milkweed
<i>Asclepias fascicularis</i>	narrow-leaf milkweed
<i>Vinca major</i> *	greater periwinkle
ASTERACEAE - SUNFLOWER FAMILY	
<i>Acourtia microcephala</i>	sacapellote
<i>Ambrosia psilostachya</i>	western ragweed
<i>Artemisia californica</i>	California sagebrush
<i>Artemisia douglasiana</i>	mugwort
<i>Artemisia dracunculul</i>	tarragon
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i> [<i>B. pilularis</i>]	coyote brush
<i>Baccharis salicifolia</i> ssp. <i>salicifolia</i> [<i>B. salicifolia</i>]	mule fat
<i>Baccharis sarothroides</i>	broom baccharis

PLANT COMPENDIUM FOR THE FERBER RANCH SURVEY AREA

SPECIES	
<i>Bebbia juncea</i> var. <i>aspera</i>	sweetbush
<i>Brickellia californica</i>	California brickellbush
<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i> *	Italian thistle
<i>Centaurea melitensis</i> *	totalote, Malta star-thistle
<i>Chaenactis artemisiifolia</i>	white pincushion
<i>Cirsium occidentale</i>	cobweb thistle
<i>Cirsium vulgare</i> *	bull thistle
<i>Corethrogyne filaginifolia</i>	California-aster
<i>Cynara cardunculus</i> *	cardoon, globe artichoke
<i>Deinandra fasciculata</i> [<i>Hemizonia</i> f.]	fascicled tarweed
<i>Encelia californica</i>	bush sunflower
<i>Erigeron canadensis</i> [<i>Conyza</i> c.]	common horseweed
<i>Erigeron foliosus</i>	leafy fleabane
<i>Eriophyllum confertiflorum</i>	golden-yarrow
<i>Gazania linearis</i> *	gazania
<i>Glebionis coronaria</i> [<i>Chrysanthemum coronarium</i>]*	garland daisy
<i>Gutierrezia californica</i>	California matchweed
<i>Hazardia squarrosa</i>	saw-toothed goldenbush
<i>Hedynois cretica</i> *	Crete weed
<i>Helianthus gracilentus</i>	slender sunflower
<i>Helminthotheca echioides</i> [<i>Picris</i> e.]*	bristly ox-tongue
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Hypochaeris glabra</i> *	smooth cat's-ear
<i>Isocoma menziesii</i> var. <i>vernonioides</i>	coastal goldenbush
<i>Lactuca serriola</i> *	prickly lettuce
<i>Lepidospartum squamatum</i>	scale-broom
<i>Logfia filaginoides</i> [<i>Filago californica</i>]	California cottonrose
<i>Logfia gallica</i> [<i>Filago</i> g.]*	daggerleaf cottonrose
<i>Madia gracilis</i>	gumweed
<i>Osmadenia tenella</i>	osmadenia
<i>Porophyllum gracile</i>	odora
<i>Pseudognaphalium biolettii</i> [<i>Gnaphalium bicolor</i>]	bicolored everlasting, Bioletti's cudweed
<i>Pseudognaphalium californicum</i> [<i>Gnaphalium</i> c.]	California everlasting
<i>Pseudognaphalium canescens</i> [<i>Gnaphalium</i> c.]	everlasting
<i>Pseudognaphalium luteoalbum</i> [<i>Gnaphalium</i> l.]*	weedy cudweed
<i>Pseudognaphalium microcephalum</i> [<i>Gnaphalium canescens</i> ssp. <i>m.</i>]	white everlasting
<i>Rafinesquia californica</i>	California chicory
<i>Solidago velutina</i> ssp. <i>californica</i> [<i>Solidago</i> c.]	California goldenrod
<i>Sonchus asper</i> ssp. <i>asper</i> *	prickly sow thistle
<i>Sonchus oleraceus</i> *	common sow thistle
<i>Stebbinsoseris heterocarpa</i> [<i>Microseris</i> h.]	grassland silverpuffs/brownpuffs
<i>Stephanomeria diegensis</i>	San Diego wreath plant

PLANT COMPENDIUM FOR THE FERBER RANCH SURVEY AREA

SPECIES	
BETULACEAE - BIRCH FAMILY	
<i>Alnus rhombifolia</i>	white alder
BORAGINACEAE - BORAGE FAMILY	
<i>Cryptantha intermedia</i>	common cryptantha
<i>Eucrypta chrysanthemifolia</i>	common eucrypta
<i>Phacelia cicutaria</i>	caterpillar phacelia
<i>Phacelia minor</i>	wild canterbury-bell
BRASSICACEAE - MUSTARD FAMILY	
<i>Hirschfeldia incana</i> *	shortpod mustard
<i>Lepidium nitidum</i>	peppergrass / shining peppergrass
<i>Sisymbrium officinale</i> *	hedge mustard
CACTACEAE - CACTUS FAMILY	
<i>Opuntia ficus-indica</i> *	mission prickly-pear
<i>Opuntia littoralis</i>	coastal prickly-pear
<i>Opuntia x occidentalis</i>	western prickly-pear
<i>Opuntia x vaseyi</i>	mesa prickly-pear
CAPRIFOLIACEAE - HONEYSUCKLE FAMILY	
<i>Lonicera subspicata</i> var. <i>denudata</i>	southern honeysuckle
<i>Symphoricarpos mollis</i>	creeping snowberry
CARYOPHYLLACEAE - PINK FAMILY	
<i>Polycarpon depressum</i>	California polycarp
<i>Silene gallica</i> *	small-flower catchfly
<i>Silene laciniata</i> ssp. <i>laciniata</i> [<i>Silene l.</i> ssp. <i>major</i>]	Mexican pink
CHENOPODIACEAE - GOOSEFOOT FAMILY	
<i>Atriplex semibaccata</i> *	Australian saltbush
<i>Chenopodium album</i> *	lamb's quarters
<i>Chenopodium californicum</i>	California goosefoot
<i>Chenopodium murale</i> *	nettle-leaved goosefoot
CISTACEAE - ROCK-ROSE FAMILY	
<i>Helianthemum scoparium</i>	peak rush-rose
CONVOLVULACEAE - MORNING-GLORY FAMILY	
<i>Calystegia macrostegia</i>	large-bracted morning-glory
<i>Convolvulus arvensis</i> *	bindweed
<i>Cuscuta californica</i>	chaparral dodder
<i>Cuscuta subinclusa</i>	canyon dodder
CRASSULACEAE - STONECROP FAMILY	
<i>Dudleya lanceolata</i>	lance-leaved dudleya / lanceleaf/ coastal dudleya / coastal live-forever
<i>Dudleya pulverulenta</i>	chalk dudleya / chalky live-forever
CUCURBITACEAE - GOURD FAMILY	
<i>Marah macrocarpus</i>	wild cucumber / chilicothe
EUPHORBIACEAE - SPURGE FAMILY	
<i>Chamaesyce polycarpa</i> [<i>Euphorbia p.</i>]	golondrina / small-seed sandmat
<i>Croton setigerus</i> [<i>Eremocarpus s.</i>]	doveweed / turkey mullein
<i>Euphorbia peplus</i> *	petty spurge

PLANT COMPENDIUM FOR THE FERBER RANCH SURVEY AREA

SPECIES	
<i>Ricinus communis</i> *	castor bean
FABACEAE - LEGUME FAMILY	
<i>Acmispon americanus</i> [<i>Lotus purshianus</i>]	American lotus
<i>Acmispon glaber</i> var. <i>glaber</i> [<i>Lotus scoparius</i> var. <i>scoparius</i>]	coastal deerweed
<i>Acmispon hamatus</i> [<i>Lotus h.</i>]	grab lotus / San Diego lotus
<i>Acmispon heermannii</i> var. <i>heermannii</i> [<i>Lotus h.</i> var. <i>h.</i>]	southern woolly lotus
<i>Acmispon maritimus</i> var. <i>maritimus</i> [<i>Lotus salsuginosus</i> ssp. <i>salsuginosus</i>]	alkali lotus
<i>Acmispon strigosus</i> [<i>Lotus s.</i>]	strigose lotus
<i>Astragalus trichopodus</i> var. <i>lonchus</i>	ocean locoweed
<i>Lathyrus vestitus</i> ssp. <i>vestitus</i>	chaparral sweet pea
<i>Lupinus bicolor</i>	miniature lupine
<i>Lupinus microcarpus</i> var. <i>densiflorus</i>	dense-flowered chick lupine
<i>Medicago polymorpha</i> *	California burclover
<i>Melilotus alba</i> *	white sweetclover
<i>Melilotus indica</i> *	sourclover
<i>Trifolium willdenovii</i>	tomcat clover
<i>Vicia</i> cf. <i>benghalensis</i> *	purple vetch
<i>Vicia sativa</i> ssp. <i>sativa</i> *	spring vetch
FAGACEAE - OAK / BEECH FAMILY	
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus berberidifolia</i>	scrub oak / California scrub oak
GERANIACEAE - GERANIUM FAMILY	
<i>Erodium botrys</i> *	long-beaked filaree
<i>Erodium cicutarium</i> *	red-stemmed filaree
GROSSULARIACEAE - GOOSEBERRY FAMILY	
<i>Ribes indecorum</i>	white-flowered currant
LAMIACEAE - MINT FAMILY	
<i>Marrubium vulgare</i> *	common horehound
<i>Monardella hypoleuca</i> ssp. <i>intermedia</i>	intermediate thick-leaved monardella
<i>Salvia apiana</i>	white sage
<i>Salvia mellifera</i>	black sage
<i>Salvia apiana</i> x <i>Salvia mellifera</i>	hybrid white sage-black sage
<i>Stachys rigida</i> ssp. <i>rigida</i>	rigid hedge-nettle
MALVACEAE - MALLOW FAMILY	
<i>Malva parviflora</i> *	cheeseweed
MYRSINACEAE - MYRSINE FAMILY	
<i>Anagallis arvensis</i> *	scarlet pimpernel
NYCTAGINACEAE - FOUR-O'CLOCK FAMILY	
<i>Mirabilis laevis</i> var. <i>crassifolia</i> [<i>M. californica</i>]	wishbone bush / California wishbone bush
OLEACEAE - OLIVE FAMILY	
<i>Fraxinus dipetala</i>	California ash
<i>Olea europaea</i> *	olive

PLANT COMPENDIUM FOR THE FERBER RANCH SURVEY AREA

SPECIES	
ONAGRACEAE - EVENING PRIMROSE FAMILY	
<i>Camissoniopsis bistorta</i> [<i>Camissonia b.</i>]	California sun cup
<i>Clarkia purpurea</i>	winecup clarkia
<i>Epilobium canum</i>	California fuchsia
<i>Eulobus californicus</i> [<i>Camissonia californica</i>]	mustard-like evening primrose
OROBANCHACEAE - BROOMRAPE FAMILY	
<i>Castilleja affinis</i> ssp. <i>affinis</i>	coastal paintbrush
<i>Castilleja exserta</i>	purple owl's clover
<i>Castilleja foliolosa</i>	felt paintbrush
<i>Cordylanthus rigidus</i> ssp. <i>setigerus</i>	dark-tipped bird's beak
OXALIDACEAE - WOOD-SORREL FAMILY	
<i>Oxalis californica</i> [<i>O. albicans</i> ssp. <i>c.</i>]	California wood-sorrel
<i>Oxalis pes-caprae</i> *	Bermuda buttercup / sour grass
PAEONIACEAE - PEONY FAMILY	
<i>Paeonia californica</i>	California peony
PAPAVERACEAE - POPPY FAMILY	
<i>Romneya coulteri</i>	Coulter's matilija poppy
PHRYMACEAE - LOPSEED FAMILY	
<i>Mimulus aurantiacus</i> var. <i>puniceus</i>	orange bush monkeyflower
<i>Mimulus cardinalis</i>	scarlet monkeyflower
PLANTAGINACEAE - PLANTAIN FAMILY	
<i>Antirrhinum kelloggii</i>	Kellogg's / climbing snapdragon
<i>Antirrhinum nuttallianum</i> ssp. <i>nuttallianum</i>	Nuttall's snapdragon
<i>Keckiella cordifolia</i>	heart-leaved bush-penstemon
PLATANACEAE - SYCAMORE FAMILY	
<i>Platanus racemosa</i>	western sycamore
POLEMONIACEAE - PHLOX FAMILY	
<i>Allophyllum glutinosum</i>	blue false-gilia
<i>Eriastrum sapphirinum</i>	sapphire woollystar
<i>Linanthus californicum</i> [<i>Leptodactylon c.</i>]	prickly phlox
<i>Linanthus dianthiflorus</i>	ground pink
POLYGALACEAE - MILKWORT FAMILY	
<i>Polygala cornuta</i> ssp. <i>fishiae</i>	horned polygala / fish's milkwort
POLYGONACEAE - BUCKWHEAT FAMILY	
<i>Chorizanthe staticoides</i>	Turkish rugging
<i>Eriogonum elongatum</i> var. <i>elongatum</i>	long-stemmed wild buckwheat
<i>Eriogonum fasciculatum</i>	California buckwheat
<i>Polygonum aviculare</i> ssp. <i>depressum</i> [<i>Polygonum arenastrum</i>]*	common knotweed
<i>Pterostegia drymarioides</i>	woodland threadstem
<i>Rumex conglomeratus</i> *	whorled dock
<i>Rumex crispus</i> *	curly dock
<i>Rumex salicifolius</i>	willow dock
RANUNCULACEAE - CROWFOOT FAMILY	
<i>Clematis</i> sp.	clematis

PLANT COMPENDIUM FOR THE FERBER RANCH SURVEY AREA

SPECIES	
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	common meadow-rue
RHAMNACEAE - BUCKTHORN FAMILY	
<i>Frangula californica</i> [<i>Rhamnus californica</i>]	California coffee berry
<i>Rhamnus ilicifolia</i>	hollyleaf redberry
ROSACEAE - ROSE FAMILY	
<i>Adenostoma fasciculatum</i> var. <i>fasciculatum</i>	common chamise
<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	birch-leaf mountain-mahogany
<i>Heteromeles arbutifolia</i>	toyon / christmas berry
<i>Rosa californica</i>	California rose
RUBIACEAE - MADDER FAMILY	
<i>Galium angustifolium</i>	narrowly leaved bedstraw
<i>Galium aparine</i>	goose grass
<i>Galium parisiense</i> *	Parisian bedstraw
<i>Galium porrigens</i> var. <i>porrigens</i>	climbing bedstraw
SALICACEAE - WILLOW FAMILY	
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood
<i>Salix exigua</i>	narrow-leaved willow
<i>Salix gooddingii</i>	Goodding's black willow
<i>Salix laevigata</i>	red willow
<i>Salix lasiolepis</i>	arroyo willow
SCROPHULARIACEAE - FIGWORT FAMILY	
<i>Scrophularia californica</i>	California figwort
SOLANACEAE - NIGHTSHADE FAMILY	
<i>Datura wrightii</i>	jimson weed
<i>Nicotiana glauca</i> *	tree tobacco
<i>Solanum douglasii</i>	Douglas' nightshade
TAMARICACEAE - TAMARISK FAMILY	
<i>Tamarix ramosissima</i> *	Mediterranean tamarix
VERBENACEAE - VERVAIN FAMILY	
<i>Verbena lasiostachys</i> var. <i>lasiostachys</i>	western verbena
MONOCOTYLEDONES - MONOCOTS	
AGAVACEAE - CENTURY PLANT FAMILY	
<i>Chlorogalum pomeridianum</i>	wavy-leaved soap plant
<i>Hesperoyucca whipplei</i> [<i>Yucca w.</i>]	chaparral yucca
CYPERACEAE - SEDGE FAMILY	
<i>Carex triquetra</i>	trigonus sedge
<i>Cyperus esculentus</i>	yellow umbrella-sedge / nutgrass
<i>Scirpus microcarpus</i>	small-fruited bulrush
IRIDACEAE - IRIS FAMILY	
<i>Sisyrinchium bellum</i>	western blue-eyed grass
JUNCACEAE - RUSH FAMILY	
<i>Juncus dubius</i>	mariposa rush
LILIACEAE - LILY FAMILY	
<i>Calochortus splendens</i>	splendid mariposa lily
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily

PLANT COMPENDIUM FOR THE FERBER RANCH SURVEY AREA

SPECIES	
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	ocellated Humboldt lily
ORCHIDACEAE - ORCHID FAMILY	
<i>Piperia cooperi</i>	chaparral rein orchid
POACEAE - GRASS FAMILY	
<i>Agrostis pallens</i>	San Diego bentgrass
<i>Aristida divaricata</i>	poverty three-awn
<i>Aristida purpurea</i>	purple three-awn
<i>Avena barbata</i> *	slender wild oat
<i>Avena fatua</i> *	wild oat
<i>Bothriochloa barbinodis</i>	cane bluestem
<i>Brachypodium distachyon</i> *	purple false brome
<i>Bromus carinatus</i> var. <i>marginatus</i>	mountain brome
<i>Bromus diandrus</i> *	ripgut grass
<i>Bromus hordeaceus</i> *	soft chess
<i>Bromus madritensis</i> ssp. <i>rubens</i> *	red brome
<i>Bromus sterilis</i> *	poverty brome
<i>Cynodon dactylon</i> *	Bermuda grass
<i>Distichlis spicata</i>	salt grass
<i>Ehrharta calycina</i> *	perennial veldt grass
<i>Elymus condensatus</i> [<i>Leymus</i> c.]	giant wild rye
<i>Elymus triticoides</i> [<i>Leymus</i> t.]	beardless wild rye
<i>Festuca myuros</i> [<i>Vulpia</i> m.]*	foxtail fescue
<i>Festuca perennis</i> [<i>Lolium perenne</i> , <i>L. multiflorum</i>]*	perennial ryegrass
<i>Gastridium phleoides</i> [<i>Gastridium ventricosum</i>]*	nit grass
<i>Hordeum murinum</i> var. <i>leporinum</i> *	hare barley
<i>Lamarckia aurea</i> *	goldentop
<i>Melica imperfecta</i>	little California melic grass
<i>Muhlenbergia microsperma</i>	littleseed muhly
<i>Muhlenbergia rigens</i>	deergass
<i>Phalaris minor</i> *	little-seed canary grass
<i>Phalaris paradoxa</i> *	paradox canary grass
<i>Polypogon monspeliensis</i> *	annual beard grass
<i>Polypogon viridis</i> [<i>Agrostis viridis</i>]*	water bentgrass
<i>Stipa coronata</i> [<i>Achnatherum coronatum</i>]	crested needlegrass
<i>Stipa lepida</i> [<i>Nassella</i> l.]	foothill needlegrass
<i>Stipa miliacea</i> [<i>Piptatherum miliacea</i>]*	smilo grass
<i>Stipa pulchra</i> [<i>Nassella</i> p.]	purple needlegrass
RUSCACEAE - BUTCHER'S-BROOM FAMILY	
<i>Nolina cismontana</i>	chaparral nolina, chaparral beargrass
THEMIDACEAE - BRODIAEA FAMILY	
<i>Bloomeria crocea</i>	common goldenstar
<i>Dichelostemma capitatum</i>	blue dicks
* non-native to the region it was found cf. appears similar to	

WILDLIFE COMPENDIUM FOR THE SOUTH COUNTY PROPERTIES

Species	Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
AMPHIBIANS				
AMPHIBIA - AMPHIBIANS				
<i>BUFONIDAE</i> - TRUE TOADS				
<i>Anaxyrus boreas</i> [<i>Bufo boreas</i>]	western toad	X		
<i>HYLIDAE</i> - TREEFROGS				
<i>Pseudacris</i> [<i>Hyla</i>] <i>cadaverina</i>	California treefrog	X		
REPTILES				
LEPIDOSAURIA - LIZARDS & SNAKES				
<i>PHRYNOSOMATIDAE</i> - ZEBRA-TAILED, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, & HORNED LIZARDS				
<i>Sceloporus occidentalis</i>	western fence lizard	X	X	X
<i>Uta stansburiana</i>	side-blotched lizard	X	X	X
<i>TEIIDAE</i> - WHIPTAIL LIZARDS				
<i>Aspidoscelis</i> [<i>Cnemidophorus</i>] <i>hyperythra</i>	orangethroat whiptail	X	X	
<i>COLUBRIDAE</i> - COLUBRID SNAKES				
<i>Pituophis catenifer</i>	gopher snake	X		X
BIRDS				
AVES - BIRDS				
<i>ODONTOPHORIDAE</i> - QUAILS				
<i>Callipepla californica</i>	California quail	X	X	X
<i>CATHARTIDAE</i> - NEW WORLD VULTURES				
<i>Cathartes aura</i>	turkey vulture	X	X	X
<i>ACCIPITRIDAE</i> - HAWKS, KITES, EAGLES, & ALLIES				
<i>Elanus leucurus</i>	white-tailed kite	X		
<i>Circus cyaneus</i>	northern harrier	X		
<i>Accipiter cooperii</i>	Cooper's hawk	X	X	X
<i>Buteo lineatus</i>	red-shouldered hawk	X	X	X
<i>Buteo jamaicensis</i>	red-tailed hawk	X	X	
<i>Aquila chrysaetos</i>	golden eagle	X		

WILDLIFE COMPENDIUM FOR THE SOUTH COUNTY PROPERTIES

Species		Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
FALCONIDAE - FALCONS					
<i>Falco sparverius</i>	American kestrel	X			
COLUMBIDAE - PIGEONS & DOVES					
<i>Columba livia</i> *	rock pigeon	X	X	X	X
<i>Columba fasciata</i>	band-tailed pigeon	X	X	X	
<i>Streptopelia decaocto</i> *	Eurasian collared-dove	X			
<i>Zenaidura macroura</i>	mourning dove	X	X	X	X
CUCULIDAE - CUCKOOS & ROADRUNNERS					
<i>Geococcyx californianus</i>	greater roadrunner	X			
TYTONIDAE - BARN OWLS					
<i>Tyto alba</i>	barn owl	X			
STRIGIDAE - TRUE OWLS					
<i>Bubo virginianus</i>	great horned owl	X	X	X	
CAPRIMULGIDAE - GOATSUCKERS					
<i>Phalaenoptilus nuttallii</i>	common poorwill				X
APODIDAE - SWIFTS					
<i>Aeronautes saxatalis</i>	white-throated swift	X			
TROCHILIDAE - HUMMINGBIRDS					
<i>Archilochus alexandri</i>	black-chinned hummingbird	X			
<i>Calypte anna</i>	Anna's hummingbird	X	X	X	X
<i>Calypte costae</i>	Costa's hummingbird	X			X
<i>Selasphorus sasin</i>	Allen's hummingbird	X			
PICIDAE - WOODPECKERS					
<i>Melanerpes formicivorus</i>	acorn woodpecker	X	X	X	X
<i>Picoides nuttallii</i>	Nuttall's woodpecker	X	X	X	X
<i>Picoides pubescens</i>	downy woodpecker	X			
<i>Colaptes auratus</i>	northern flicker	X	X		X
TYRANNIDAE - TYRANT FLYCATCHERS					
<i>Contopus sordidulus</i>	western wood-pewee			X	X
<i>Empidonax traillii</i>	willow flycatcher	X			
<i>Empidonax difficilis</i>	Pacific-slope flycatcher	X			
<i>Sayornis nigricans</i>	black phoebe	X	X	X	X

WILDLIFE COMPENDIUM FOR THE SOUTH COUNTY PROPERTIES

Species		Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
<i>Sayornis saya</i>	Say's phoebe	X			
<i>Myiarchus cinerascens</i>	ash-throated flycatcher	X	X	X	X
<i>Tyrannus verticalis</i>	western kingbird	X			
VIREONIDAE - VIREOS					
<i>Vireo huttoni</i>	Hutton's vireo	X			
CORVIDAE - CROWS & JAYS					
<i>Aphelocoma californica</i>	western scrub-jay	X	X	X	X
<i>Corvus brachyrhynchos</i>	American crow	X	X	X	X
<i>Corvus corax</i>	common raven	X	X	X	X
HIRUNDINIDAE - SWALLOWS					
<i>Tachycineta thalassina</i>	violet-green swallow	X			
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow	X			
<i>Petrochelidon pyrrhonota</i>	cliff swallow	X		X	X
<i>Hirundo rustica</i>	barn swallow	X			
PARIDAE - TITMICE					
<i>Baeolophus inornatus</i>	oak titmouse	X	X		X
AEGITHALIDAE - BUSHTITS					
<i>Psaltriparus minimus</i>	bushtit	X	X	X	X
SITTIDAE - NUTHATCHES					
<i>Sitta carolinensis</i>	white-breasted nuthatch	X			
TROGLODYTIDAE - WRENS					
<i>Campylorhynchus brunneicapillus sandiegensis</i>	coastal cactus wren	X	X	X	X
<i>Thryomanes bewickii</i>	Bewick's wren	X	X	X	X
<i>Troglodytes aedon</i>	house wren	X	X	X	X
POLIOPTILIDAE - GNATCATCHERS & GNATWRENS					
<i>Polioptila caerulea</i>	blue-gray gnatcatcher	X			X
<i>Polioptila californica californica</i>	coastal California gnatcatcher	X	X		
SYLVIIDAE - SYLVIID WARBLERS					
<i>Chamaea fasciata</i>	wrentit	X	X	X	X
TURDIDAE - THRUSHES & ROBINS					
<i>Turdus migratorius</i>	American robin	X			

WILDLIFE COMPENDIUM FOR THE SOUTH COUNTY PROPERTIES

Species		Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
MIMIDAE - THRASHERS					
<i>Mimus polyglottos</i>	northern mockingbird	X	X	X	X
<i>Toxostoma redivivum</i>	California thrasher	X	X	X	
STURNIDAE - STARLINGS					
<i>Sturnus vulgaris</i> *	European starling	X	X		X
PTILOGONATIDAE - SILKY-FLYCATCHERS					
<i>Phainopepla nitens</i>	phainopepla	X	X	X	
PARULIDAE - WARBLERS					
<i>Oreothlypis [Vermivora] celata</i>	orange-crowned warbler	X			
<i>Geothlypis trichas</i>	common yellowthroat	X			
<i>Cardellina pusilla [Wilsonia pusilla]</i>	Wilson's warbler	X			
EMBERIZIDAE - SPARROWS & JUNCOS					
<i>Pipilo maculatus</i>	spotted towhee	X	X	X	X
<i>Melospiza [Pipilo] crissalis</i>	California towhee	X	X	X	X
<i>Aimophila ruficeps canescens</i>	southern California rufous-crowned sparrow	X			
<i>Spizella atrogularis</i>	black-chinned sparrow	X			
<i>Chondestes grammacus</i>	lark sparrow	X			
<i>Passerella iliaca</i>	fox sparrow		X	X	X
<i>Melospiza melodia</i>	song sparrow	X	X	X	X
<i>Junco hyemalis</i>	dark-eyed junco	X			
ICTERIDAE - BLACKBIRDS					
<i>Euphagus cyanocephalus</i>	Brewer's blackbird	X	X		
<i>Molothrus ater</i>	brown-headed cowbird	X			
<i>Icterus cucullatus</i>	hooded oriole	X			
<i>Icterus bullockii</i>	Bullock's oriole	X		X	
FRINGILLIDAE - FINCHES					
<i>Carpodacus purpureus</i>	purple finch	X			
<i>Carpodacus mexicanus</i>	house finch	X	X	X	X
<i>Spinus [Carduelis] psaltria</i>	lesser goldfinch	X	X	X	X
<i>Spinus [Carduelis] tristis</i>	American goldfinch	X		X	

WILDLIFE COMPENDIUM FOR THE SOUTH COUNTY PROPERTIES

Species		Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
PASSERIDAE - OLD WORLD SPARROWS					
<i>Passer domesticus</i> *	house sparrow	X			
MAMMALS					
MAMMALIA - MAMMALS					
VESPERTILIONIDAE - VESPER BATS					
<i>Myotis yumanensis</i>	Yuma bat	X	X	X	X
<i>Lasiurus cinereus</i>	hoary bat	X			
<i>Lasionycteris noctivagans</i>	silver-haired bat				X
<i>Parastrellus [Pipistrellus] hesperus</i>	canyon bat	X			
<i>Eptesicus fuscus</i>	big brown bat	X			X
MOLOSSIDAE - FREE-TAILED BATS					
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	X	X	X	X
LEPORIDAE - HARES & RABBITS					
<i>Sylvilagus audubonii</i>	desert cottontail	X	X	X	X
SCIURIDAE - SQUIRRELS					
<i>Spermophilus beecheyi</i>	California ground squirrel	X	X		X
<i>Sciurus griseus</i>	western gray squirrel	X	X		
GEOMYIDAE - POCKET GOPHERS					
<i>Thomomys bottae</i>	Botta's pocket gopher	X	X	X	X
MURIDAE - MICE, RATS, & VOLES					
<i>Neotoma fuscipes</i>	dusky-footed woodrat		X		
<i>Neotoma lepida</i>	desert woodrat				X
<i>Neotoma sp.</i>	woodrat			X	
CANIDAE - WOLVES & FOXES					
<i>Canis latrans</i>	coyote	X			X
<i>Urocyon cinereoargenteus</i>	common gray fox	X			
MEPHITIDAE - SKUNKS					
<i>Mephitis mephitis</i>	striped skunk	X			
FELIDAE - CATS					
<i>Lynx rufus</i>	bobcat	X			
EQUIDAE - HORSES & ASSES					
<i>Equus caballus</i>	domestic horse	X			

WILDLIFE COMPENDIUM FOR THE SOUTH COUNTY PROPERTIES

Species		Ferber Ranch	O'Neill Oaks	Hafen	Saddle Creek South
CERVIDAE - DEER					
<i>Odocoileus hemionus</i>	mule deer	X	X		X
BOVIDAE - CATTLE, ANTELOPE, SHEEP, & GOATS					
<i>Bos taurus</i> *	domestic cattle		X		X
INVERTEBRATES					
INSECTA - INSECTS					
PAPILIONIDAE - SWALLOWTAIL BUTTERFLIES					
<i>Papilio zelicaon</i>	anise swallowtail	X			
<i>Papilio rutulus</i>	western tiger swallowtail	X			
PIERIDAE - WHITES, SULFURS, & ORANGETIPS					
<i>Anthocharis sara</i>	Sara orangetip	X			
<i>Pieris rapae</i> *	mustard white	X			
<i>Pontia protodice</i>	common (checkered) white	X			
<i>Colias harfordi</i>	Harford's sulfur	X			
SATYRIDAE - WOOD NYMPHS					
<i>Coenonympha californica</i>	California ringlet	X			
NYMPHALIDAE - BRUSH-FOOTED BUTTERFLIES					
<i>Agraulis vanillae</i>	gulf fritillary	X			
<i>Vanessa cardui</i>	painted lady	X			
<i>Vanessa annabella</i>	west coast lady	X			
<i>Junonia coenia</i>	common buckeye	X			
<i>Adelpha bredowii californica</i>	California sister	X			
<i>Basilarchia lorquini</i>	Lorquin's admiral	X			
LYCAENIDAE - BLUES, HAIRSTREAKS, & COPPERS					
<i>Leptotes marina</i>	marine blue	X			
<i>Icaricia acmon</i>	acmon blue	X			
HETERONEMIIDAE - COMMON WALKINGSTICKS					
<i>Parabacillus hesperus</i>	western short-horned walking stick	X			
* introduced species					

Appendix C

Nesting Bird Policy for Preserve Management

Preserve Managers will implement a Nesting Birds Policy to conform to existing regulations and procedures for protection of nesting birds. Migratory native bird species are protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (50 CFR 10.13). Sections 3503, 3503.5, and 3513 of the California Fish and Game Code make it unlawful to: take, possess, or needlessly destroy the nest or eggs of any bird (3503); take, possess or destroy any birds in the orders of Falconiformes or Strigiformes (birds-of-prey) and the nest and eggs of any such bird (3503.5); and take or possess any migratory nongame bird, or any part thereof, as designated in the MBTA. Under State law, take means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (Fish and Game Code Section 86), and includes take of eggs and/or young resulting from disturbances that cause abandonment of active nests.

Proposed activities with the potential to impact nesting birds (including, but not limited to, vegetation removal and use of heavy construction equipment) should occur outside of the avian breeding season, which generally runs from March 1 to September 15 (as early as January 1 for some birds) to avoid disturbance to breeding birds or destruction of the nest or eggs. Depending on the avian species present, a qualified biologist may determine that a change in the breeding season dates is warranted.

If the Preserve Manager determines that avoidance of the avian breeding season is not feasible, at least two weeks prior to the initiation of project activities, a qualified biologist with experience in conducting breeding bird surveys will conduct weekly bird surveys to detect presence/absence of native bird species occurring in suitable nesting habitat that is to be directly or indirectly disturbed and (as access to adjacent areas allows) any other such habitat within an appropriate buffer distance of the disturbance area. Generally the buffer distance should be 300 feet (500 feet for raptors). If a narrow buffer distance is warranted, the Preserve Manager will have a qualified biologist identify the appropriate buffer distances for raptors and non-raptors and notify Wildlife Agencies. The surveys should continue on a weekly basis with the last survey being conducted no more than three days prior to the initiation of project activities. If a native or nesting bird species is found, the Preserve Manager will do one of the following to avoid and minimize impacts on native birds and the nest or eggs of any birds.

- a. Implement default 300-foot minimum avoidance buffers for all birds and 500-foot minimum avoidance buffers for all raptor species. The breeding habitat/nest site will be fenced and/or flagged in all directions, and this area will not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project.
- b. If a narrower buffer distance is determined appropriate by the qualified biologist, the Preserve Manager will develop a project-specific Nesting Bird Management Plan. The site-specific nest protection plan will be developed collaboratively with Wildlife Agencies and submitted to the Wildlife Agencies, although the Wildlife Agencies will not be responsible for approving the narrower buffer distance and the Nesting Bird Management Plan. The Plan should include detailed methodologies and definitions to enable a qualified avian biologist to monitor and

implement nest-specific buffers based on topography, vegetation, species, and individual bird behavior. This Nesting Bird Management Plan will be supported by a Nest Log that tracks each nest and its outcome. The Nest Log will be submitted to the Wildlife Agencies at the end of each week.

- c. The Preserve Manager may propose an alternative plan for avoidance and nesting birds for Wildlife Agencies' review and approval.

Flagging, stakes, and/or construction fencing should be used to demarcate the inside boundary of the buffer between the project activities and the nest. The personnel working for the Preserve Manager, including any contractors working on site, should be instructed on the sensitivity of the area. The Preserve Manager will document the results of the recommended protective measures described above to demonstrate compliance with applicable State and Federal laws pertaining to the protection of native birds.

The Biological Monitor will be present on site during all grubbing and clearing of vegetation to ensure that these activities remain within the project footprint (i.e., outside the demarcated buffer) and that the flagging/stakes/fencing is being maintained, and to minimize the likelihood that active nests are abandoned or fail due to project activities. The Biological Monitor will send weekly monitoring reports to the Preserve Manager during the grubbing and clearing of vegetation and will notify the Preserve Manager immediately if project activities take, possess, or needlessly destroy the nest or eggs of any bird as well as birds-of-prey and their nest or eggs. Within 48 hours of damage to an active nest or eggs or observed death or injury of birds protected under State law or the MBTA (which includes, but not is limited to, the birds on the Covered Species list), the Preserve Manager will notify the OCTA NCCP/HCP Administrator and Wildlife Agencies.

Appendix D

**Comments and Responses on
Ferber Ranch, O'Neill Oaks, Saddle Creek South, and
Hafen Draft Preserve Resource Management Plans**

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COMMENTS AND RESPONSES ON FERBER RANCH, O'NEILL OAKS, SADDLE CREEK SOUTH, AND HAFEN DRAFT PRESERVE RESOURCE MANAGEMENT PLANS

PREPARED BY:

Orange County Transportation Authority
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Contact: Lesley Hill

September 2017



Draft Resource Management Plans (RMPs) Public Review Summary

RMPs are typically required to be prepared by the United States Fish and Wildlife Service and the California Department of Fish and Wildlife once a Natural Community Conservation Plan/Habitat Conservation Plan (Conservation Plan) has been approved and do not require an official public review process. Due to the high degree of public interest pertaining to recreational access on several OCTA conservation properties (Preserves), OCTA elected to prepare draft RMPs for a number of the Preserves prior to the finalization of the Conservation Plan and also afforded the public an opportunity for input. It is important to note that the primary objective in acquiring the Preserves is to obtain mitigation in exchange for the construction of the M2 freeway projects. The Wildlife Agencies will approve the RMPs, including any access provision, based on consistency with the Conservation Plan.

After the Conservation Plan was released for public review, OCTA received specific comments related to public access to the Preserves. In order to develop a public access program that took these public comments into consideration, OCTA convened three stakeholder focus group meetings in April to June 2015 to help shape public access policies for the Preserves. This work was critical to ensuring that OCTA's Preserves are an asset both to the environment and to the community at large. From this process, OCTA received feedback from regional land managers, Preserve neighbors, user groups, and environmental stakeholders. Additionally, OCTA established a general framework for public access on the OCTA Preserves. The final guidelines can be found in Section 3.1.2 Guiding Principles for Defining a Public Access Plan.

The RMPs for the OCTA Trabuco and Silverado Canyons Preserves were released on November 11, 2015. The release included the following OCTA Preserves: Ferber Ranch, Hafen, MacPherson, O'Neill Oaks, and Saddle Creek South. These RMPs were available for public review for a 90-day period through February 8, 2016. OCTA held a press release on November 10, sent an e-blast to OCTA stakeholders, and published a public notice through the County of Orange to notify the public of the RMP comment period. Additionally, the RMPs and comment forms were posted online at www.OCTA.net/RMP. Comments were directed to OCTA contact: Dan Phu, Orange County Transportation Authority, 550 South Main Street, P.O. Box 14184, Orange, CA 92863-1584.

OCTA held two public meetings to solicit public input on November 21, 2015 and December 9, 2015, in Rancho Santa Margarita, and a workshop at the regularly scheduled EOC meeting on December 2, 2015. Hardcopies of the RMPs were made available during the two public meetings.

OCTA received a total of 54 comment letters on the five Draft Trabuco and Silverado Canyons RMPs during the public review period. A breakdown of the general comments and OCTA's responses for the Trabuco Canyon RMPs are found in *Table D-1. Comments and OCTA's Responses on the Draft Trabuco Canyon RMPs*.

Table D-1. Comments and OCTA's Responses on the Draft Trabuco Canyon RMPs

COMMENTERS	COMMENTS	RESPONSE
<p>Audubon Starr Ranch Sanctuary; California Native Plant Society; Cavity Conservation Initiative; Endangered Habitats League; Environmental Coalition; Friends of Coyote Hills; Friends of Harbors, Beaches, and Parks; Hills for Everyone; Huntington Beach Tree Society, Inc.; Orange Park Association; Rural Canyons Conservation Fund; Saddleback Canyons Conservancy; Safe Trails Coalition; Sea and Sage Audubon; Sierra Club Puente-Chino Hills Task Force; Sierra Club Save Hobo Aliso Task Force; Silverado-Modjeska Recreation and Park District; Gloria Sefton; Kristen Petros; Melanie Schlotterbeck; Scott Breeden; Shirley Reynolds; Todd Stearns</p>	<p>Comment 1: General support of the draft RMPs, M2 EMP at large, and meeting the intent of the voter-approved M2.</p>	<p>Thank you for your comments. The participation of the commenter in the public review of this document is appreciated. The commenter's support has been noted for the record. No changes to the RMP were warranted as a result of this comment.</p>
<p>County of Orange; Endangered Habitats League; ETI 357; OC Parks; Saddleback Canyon Riders; Safe Trails Coalition; Alberta Morehouse; Alicia E. Laddin; Ann Brozey; Antonio Smith; Bruce Cramton; Christopher Feliciano; Delma Johnson; James Iacono; John Stahl; Mark and Isabelle Secor; Matthew Agren; Patti Gretzler; Sharon Stancato; Shirley Reynolds; Todd Stearns; Tom Hetzel</p>	<p>Comment 2: The draft RMPs and current site conditions do not provide public access.</p> <p>Some commenters state that because OCTA's acquisition has closed equestrian trails and taken away a previously public use, it has fragmented the equestrian community and has made it unsafe for equestrian riders in Trabuco Canyon.</p> <p>Others state that because they were acquired with taxpayer money, there should be public access available at the Preserves.</p> <p>Some commenters propose public access options for the Preserves that would address the aforementioned comments.</p> <p>Some commenters request better accessibility for disabled visitors to access the Preserves.</p>	<p>OCTA appreciates the interest and feedback provided on the Trabuco and Silverado RMPs. There were a number of comments related to public access and recreational trails as they pertain to the Preserves OCTA has acquired as part of the OCTA M2 EMP.</p> <p><u>Fragmentation of Trabuco Canyon Community</u> In general, many commenters state that access has been blocked and the Trabuco Community has been fragmented due to OCTA's acquisition of the Preserves. As background, all of the Preserves acquired by OCTA were privately owned and there was no formal granting of public access on any of these properties.</p> <p>Prior to acquisition of the Preserves, the Preserves were privately owned, with discretionary access granted by the previous property owner. It is OCTA's understanding that access to some trails was granted to certain private individuals and that other private individuals were trespassing on the Preserves without the owners' permission. Previous permitted or unpermitted access to OCTA Preserves by a limited number of private individuals does not constitute public access. While OCTA recognizes the desire to permit public access on the Preserves, this desire is secondary to legal mandates that OCTA's primary purpose in acquiring the Preserves, be to conserve them in their natural state. Notwithstanding this, OCTA has been collaborating with the Wildlife Agencies and stakeholders alike to identify ways to permit access while protecting the biological integrity of the Preserves. After reviewing comments and receiving feedback from stakeholder focus group meetings about public access to the Preserves, OCTA drafted a Model Public Access Framework that adheres to M2 EMP objectives.</p> <p>OCTA disagrees that its acquisition of the Preserves physically divided the community of Trabuco Canyon. While it may have limited some recreational opportunities for a limited number of private individuals, it did not have any impact on any recognized form of public</p>

COMMENTERS	COMMENTS	RESPONSE
		<p>transportation or create any physical barriers. To the extent the acquisition limited private access for a select number of private individuals, this furthers the primary purpose of OCTA's acquisition.</p> <p>OCTA recognizes that regional trails planning evolves and changes over time. OCTA will participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made. This requirement will be extended to the Preserve Managers if and when OCTA transfers ownership and responsibility for managing a Preserve to another entity.</p> <p><u>Taxpayer/Public Use of Preserves</u> Regarding taxpayers being able to access the Preserves, the OCTA Preserves are managed conservation properties and pursuant to the taxpayer approved Measure M2 and mitigation measures adopted by OCTA, the primary purpose for acquiring the Preserves is not to provide public access, but to maintain the Preserves as natural habitat. It is accurate that these Preserves were acquired with sales tax money, however, the main purpose of these funds was to acquire mitigation properties in exchange for the M2 freeway projects. These Preserves require a higher level of conservation protection and stewardship.</p> <p>OCTA recognizes the importance of public access on the Preserves and, as stated earlier, has been collaborating with the Wildlife Agencies and stakeholders alike to identify ways to permit access while protecting the biological integrity of the Preserves. Please refer to Chapter 3 of each Preserve RMP for more details regarding public access on the specific Preserve. This section provides a history of the public access of the Preserve, the Guiding Principles for Defining a Public Access Plan, the Preserve-specific public access plan, and education and enforcement efforts of the public access plan.</p> <p>Public access, while important, is secondary and must be provided in a manner which is not inconsistent with the primary purpose of the Preserves. The primary purpose of acquiring the Preserves is to meet the biological requirements of the NCCP/HCP. Because of this, and noted by some commenters, OCTA undertook some additional fencing and installation of gates at some of the Preserves when activities that were detrimental to the protection of the biological resources were discovered. These included trespassing, degradation of cactus, illegal dumping, and tree cutting. OCTA had no choice but to prohibit public access when the aforementioned issues were discovered that were incompatible with OCTA's preservation mandate. The majority of the fencing that OCTA installed was three-strand, smooth wire fencing – the type and placement of this fencing was designed to limit human access but still allow wildlife movement. A section of O'Neill Oaks included the installation of barbed wire fencing to keep livestock off of the Preserve. Additionally, one commenter stated that waterways have been barbed wired and should be opened for access on the Ferber Ranch and MacPherson Preserves. This fencing was not installed by OCTA, but was remnant interior barbed-wire fencing. In regards to the remnant interior fencing, the Preserve Manager will identify and inventory fencing and develop a plan for possible removal methods.</p>

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		<p><u>Public Access Options</u> Several commenters suggested public access options (e.g. permit and self-managed access), which OCTA had considered and discussed during the public access focus group meetings. These options are outlined in the RMP section Guiding Principles for Defining a Public Access Plan in the Draft Model Public Access Framework. In Chapter 3 of each RMP, there is a Preserve-specific Public Access Plan that suggests a proposed plan, given the conditions of each Preserve. OCTA will need to continue to gauge the success of the current docent-led approach as it relates to protection of the biological resources. In addition, due to request from the community and high participation of the docent-led equestrian riding events, OCTA has increased the frequency through partnership with local equestrian groups such as Equestrian Trails, Inc. at some of the OCTA Preserves. However, enabling self-policing of the Preserves could present additional challenges such as trespassing on to adjacent private properties, vandalism, and degradation of biological resources.</p> <p>Overall, no changes to the RMP were warranted as a result of these comments. However, OCTA will continue to assess whether it should expand its docent-led equestrian rides and hikes program to accommodate interested public members wishing to access the Preserves.</p> <p><u>Disabled Visitors Access</u> OCTA provides bus service within the County of Orange and does not provide service near the commenter's place of residence. If the commenter is able to make arrangements to arrive at O'Neill Regional Park, then it is possible that OCTA may be able to make accommodations for the event.</p> <p>The OCTA Preserves are within wilderness lands that contain certain inherent dangers (i.e. dirt roads, steep roads, and wild animals). The Americans with Disabilities Act (ADA) generally requires that persons with disabilities not, by reason of such disability, be excluded from or denied the benefits of programs or services of a public entity. To the extent that OCTA has public events within the Preserves, it will make efforts to ensure qualified disabled individuals are not denied the opportunity to participate in such events. However, the ADA does not generally require public agencies to modify conditions of land or construct facilities to facilitate disabled access to wilderness areas. OCTA has and will continue to accommodate guests to the best of our abilities during public events. Many events are held at Ferber Ranch which has a wide maintenance road that could accommodate guests with special needs. If special accommodations are needed, please contact OCTA (Ms. Marissa Espino [714-560-5607]) within a reasonable timeframe to make arrangements to assure accessibility to the event.</p>

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<p>County of Orange; Environmental Coalition; ETI 357; Saddleback Canyons Conservancy; Saddleback Canyon Riders; OC Parks; Delma Johnson; Isabelle Secor; James Iacono; Patti Gretzler; Sharon Stancato</p>	<p>Comment 3: The draft RMPs and current site conditions are inconsistent with the County of Orange’s planning documents, specifically the Foothill/Trabuco Specific Plan (FTSP), the County of Orange General Plan, and the Orange County Master Plan for Regional Riding and Hiking Trails.</p>	<p>Some commenters expressed concerns that the Preserves did not adhere to planning documents relevant to the Preserves. These comments are categorized into the following topics: trail designation, fencing, and vegetation management.</p> <p><u>Trails</u> A number of comments specifically questioned OCTA’s compliance with the Foothill/Trabuco Specific Plan (FTSP), the County of Orange General Plan, and the Orange County Master Plan for Regional Riding and Hiking Trails. The County of Orange FTSP was adopted in 1991 and has been amended at various times since. The Recreational Element of the FTSP includes a map (Exhibit II-8 of the FTSP) showing local trails within the FTSP boundary. This document enables the County of Orange to require developers, in some situations, to dedicate use of public trails and provide other public benefits in exchange for development of the property. As previously discussed, OCTA acquired the Preserves from private property owners who had kept these properties vacant to preserve in their natural state and thus, by mandate, cannot develop the Preserves. Thus, the acquisition and establishment of the Preserves by OCTA is not subject to County approval and the County may not impose conditions on the acquisition.</p> <p>A number of these trails intersect with four of the OCTA Preserves (see Figure 9-1 of the Environmental Impact Report/Statement to the M2 NCCP/HCP). The FTSP identifies policies for local riding and hiking trails (Section 5.0 of the FTSP) that occur on private property. Additionally, the County of Orange Master Plan of Regional Riding and Hiking Trails provides the public with non-motorized connections between county, state, and federal lands. The identification of local riding and hiking trails in the FTSP and the Master Plan of Regional Riding and Hiking Trails does not establish a legal right to pass through these trails. OCTA will coordinate with the County to the extent that regional trail planning efforts do not conflict with OCTA’s primary objective of maintaining and protecting the Preserves for their habitat value.</p> <p>Nonetheless, OCTA recognizes that regional trails planning evolves and changes over time. OCTA will participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made. This requirement will be extended to the Preserve Managers if and when OCTA transfers ownership and responsibility for managing a Preserve to another entity.</p> <p>For additional information regarding public access to trails on the Preserves, please refer to the response for Comment 2.</p> <p>The implications and intent of the FTSP and other County planning documents were clarified in the RMPs Chapter 1 Relevant Conservation Plans.</p> <p><u>Preserve Fencing</u> Some commenters expressed concerns with the use of chain link fencing.</p>

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		<p>As background, the fencing of certain parts of the Preserves was necessitated due to trespassing, degradation of biological resources, and other illegal activities that were incompatible with OCTA's preservation goal. The FTSP prohibits use of chain link fencing within the planning area except during construction. OCTA has not installed this type of fencing at any of the OCTA Preserves. There is remnant chain link fencing found on the southern perimeter of the O'Neill Oaks Preserve as well as on segments of the Saddle Creek South Preserve that was installed before OCTA purchased these lands. In Chapter 4 of the RMP "Management Task 4.1.2.3.c: Develop a Fencing Plan that Protects the Preserves While Facilitating Wildlife Movement" addresses the commenter's input. This guideline states that within two years of adoption of the RMPs, fencing will be inventoried and mapped during baseline surveys or general stewardship and any modifications to fencing will be determined. The fencing installed by OCTA must be wildlife friendly to ensure wildlife movement. OCTA will inventory and map the fencing within the Preserves. The chain link fencing will be removed and replaced with wildlife-friendly fencing as appropriate.</p> <p>Since OCTA's acquisition of the Preserves, OCTA installed fencing around the exterior of certain parts of Ferber Ranch (three-strand smooth wire) as well as around certain parts of O'Neill Oaks. Placement of barbed wire fencing was required along the western side of O'Neill Oaks in order to keep the livestock from entering the Preserve. Fence type and placement were strategically placed related to the aforementioned issues, as appropriate, while enabling wildlife movement. OCTA coordinated (before and after the fencing effort) with the appropriate staff at the Wildlife Agencies to determine the appropriate height and location of the fencing. OCTA will continue with similar efforts for future fence installations.</p> <p>O'Neill Oaks RMP Section 3.7.3 Fencing has been amended to clarify that this fencing will be replaced and recognizes that it is inconsistent with the FTSP.</p> <p><u>Vegetation Management</u> Some commenters requested that the RMPs Vegetation Management Section be revised to make reference to and comply with the FTSP.</p> <p>Because they are located within the FTSP planning area, the Trabuco Preserves must adhere according to the FTSP. These comments are noted, and the Vegetation Management sections of the Trabuco Canyon RMPs have been revised to make reference to and show compliance with the FTSP's Tree Management/Preservation. OCTA is aware that the FTSP may affect Preserve management. OCTA has and will continue to manage the Preserves in alignment with the FTSP.</p>
James Iacono; Mark and Isabelle Secor; Sharon Stancato	Comment 4: Emergency fire access is insufficient for residents nearby the Ferber Ranch Preserve.	To the extent that access may be necessary through the Preserves in the event of an emergency, OCTA will cooperate with residents and first responders in providing such access. The Orange County Fire Authority (OCFA) is responsible for fire control within the Preserve, and their first priority will be to protect life and property. OCTA worked closely with the OCFA to identify fire management guidelines, including specific fire and

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		<p>brush maintenance zone specifications and access route locations that minimize impacts on sensitive biological resources, and will identify areas that should be avoided to preserve sensitive biological resources. The Preserve Manager, in coordination with OCTA and OCFA, will identify fire management guidelines and develop the Fire Management Plan (FMP) within two years from adoption of the RMP. Currently, residents in the Hamilton Trails neighborhood located northwest of the property have the means to access Trabuco Oaks Drive in the event of an emergency. OCFA has access to the Preserves and will provide emergency access across the Preserves to residents who may need additional evacuation routes. Additional emergency procedures and access may be provided in the Preserve-specific FMP.</p>
Saddleback Canyon Riders	<p>Comment 5: OCTA's Preserve trails should connect to regional trails. Some commenters propose new trail designations and suggest changes to OCTA's proposed trails.</p>	<p>OCTA will coordinate with local agencies and stakeholder groups to address regional trail planning to the extent that proposed trails in the FTSP and other regional trails planning efforts intersects with the OCTA Preserves. However, OCTA will coordinate with the County to the extent that regional trail planning efforts do not conflict with OCTA's primary objective of maintaining its Preserves for their habitat value. It is important to note that the majority of the Preserves that OCTA owns are largely surrounded by private properties with limited or no public access. OCTA must keep this in mind when permitting any sort of access on its Preserves as to not inadvertently encourage trespassing onto adjacent private properties.</p> <p>A connection with a regional trail system that traverses a Preserve would need to meet the following criteria:</p> <ol style="list-style-type: none"> 1. The connection will not conflict with maintenance and enhancement of the habitat values of the Preserves. 2. The connection would not result in a change in the amount and type of public access that would threaten the biological integrity of the Preserves. 3. The connection cannot facilitate or encourage trespassing and/or unwanted public access within an adjoining property of the Preserve. 4. The regional trail must be designated and approved as a public access trail by a local planning entity with land use authority. 5. The connection does not result in OCTA exceeding its cap of direct habitat disturbance on its Preserves. <p>If future updates or changes to trail use are warranted and approved by the Wildlife Agencies, they will be captured as part of the OCTA RMP updates (reviewed every 5 years). These updates will be shared with the Environmental Oversight Committee. No further edits are warranted to the OCTA RMP at this time.</p>
Ron Rempel	<p>Comment 6: RMPs were based on insufficient or inaccurate analysis methods for management and monitoring.</p>	<p>The RMPs have been developed in collaboration with and ultimately subject to approval by the Wildlife Agencies. Based on OCTA's collaboration with the Wildlife Agencies, revisions to the NCCP/HCP have been made to include more recent scientific information and best management practices. Monitoring and adaptive management on the Preserves will be a cooperative effort between OCTA, the Preserve Manager, Monitoring Biologist and other supporting biologists, external entities conducting research on the Preserve, and the Wildlife Agencies. These revisions however, did not result in a change to the overall conservation strategy for the NCCP/HCP or the RMPs.</p>

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Cavity Conservation Initiative; Environmental Coalition; Friends of Harbors, Beaches and Parks; Hills for Everyone; Ron Rempel; Saddleback Canyon Riders; Saddleback Canyons Conservancy; Sierra Club Puente-Chino Hills Task Force; Sierra Club Save Hobo Aliso Task Force; Delma Johnson	Comment 7: Requests for clarification or additional information; notes constraints on parking, restrooms, and staging areas, and lack of trail easements.	Some of the comments requested additional clarification or consistency in data inclusion across the RMPs. The documents have been updated to reflect requested clarifications and address constraints, as appropriate. These revisions, however, did not result in a change to the overall conservation strategy of the RMP.
Saddleback Canyons Conservancy	Ferber Comment: References to "Santa Ana Mountains County Water District" is incorrect.	Thank you for your comments. The participation of the commenter in the public review of this document is appreciated. The County database has the SAMCWD as the official owner for this property (APN 842-041-03). No changes to the RMP are required as a result of this comment.
	Ferber Comment: Figure 12 identifies Rose Canyon Road as a "county road", but owned by private property owners in most locations along its length & not just maintained by the County	Comment noted. Figure 12 has been modified to show Rose Canyon Road as a private road. No further changes to the RMP are required as a result of this comment.
	Ferber Comment: Regarding Section 3.4.1 (pg. 3-18), herbicide treatment should be avoided where oak trees are located, and especially where roots of oaks are exposed. This is particularly important vis-à-vis the Hafen and O'Neill Oaks properties, which border the oak canopy at Live Oak/Trabuco Canyon Roads and is protected under the FTSP's objectives (FTSP at I(C)(2.0)(a)(2)(d); page I-6).	Comment noted. The RMP has been modified to clarify herbicide treatment. OCTA does not spray any herbicides along Live Oak or Trabuco Canyon Roads. Treatment is used on interior fire access roads and does not affect oak trees (oaks and or roots and not treated). No further changes to the RMP are warranted.
	Saddle Creek South Comment: Use less disruptive non-chemical methods to control invasive species. Appendix C, Section 2.8.1, to the extent possible, we request avoidance of use of glyphosate for eradication of invasive plants.	Comment noted. The RMP has been modified to clarify herbicide treatment. Glyphosate is a commonly used herbicide for biologically sensitive areas and approved by the Wildlife Agencies. It has been used sparingly for Preserve management and may be used in the future for the treatment of invasive weed eradication.
Environmental Coalition	Ferber Comment: Why is the Invasive Plant & Habitat Restoration Specifications Appendix only included in the Ferber RMP? Can it be included in all?	Comment noted. Invasive Species mapping and eradication plans are being developed for all of the Preserves. At the time of the draft release for the RMPs, specifications were developed by a consultant and as such were incorporated as a reference document for Ferber Ranch.
	Ferber Comment: A description of the Weed Abatement Zones for the Ferber Preserve would be helpful.	Comment noted. Additional text has been added to the RMP to reflect a more detailed description of the vegetation management zones on the Ferber Ranch Preserve.
	Ferber Comment: What is the concern with vegetation surrounding cactus patches on Ferber Preserve?	Comment noted. Vegetation surrounding cactus patches is an important habitat condition for the cactus wren. They prefer some bare ground in order to forage and feed their young. No further changes to the RMP are warranted based on this comment.

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	Saddle Creek South Comment: Why is the Land IQ Summary Report on included in the Saddle Creek South RMP? Can it be included in all?	Comment noted. The Land IQ report was developed out of an interim contract to cover land management services on Saddle Creek South. This was a specific management contract which only covered Saddle Creek South. The summary report includes site specific recommendations only for this Preserve and was included as appendix as a reference document.
	Saddle Creek South Comment: Does OCTA plan to conduct an ALTA survey for SCS?	Comment noted. ALTA surveys and in some cases, property boundary surveys, have been completed for some of the OCTA Preserves. It is anticipated OCTA will complete some form of land survey in the future to delineate property boundary prior to the SCS being transitioned to a long-term land manager.
	Hafen Comment: What is the significance of surrounding vegetation and success/failure of cactus patched and cactus wren on Hafen?	Comment noted. Vegetation surrounding cactus patches is an important habitat condition for the cactus wren. They prefer some bare ground in order to forage and feed their young. No further changes to the RMP are warranted based on this comment.
	Hafen Comment: Incorrect statement in Hafen RMP that Ferber connects to the Cleveland National Forest. Clarify.	Comment noted. The RMP was edited to clarify proximity to the Cleveland National Forest.