DRAFT

FERBER RANCH 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

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. In addition, OCTA has being working towards a comprehensive permitting program to address impacts to aquatic resources. A key component of the Plan and aquatic resources permitting conservation strategy has included the identification and acquisition of habitat Preserves to offset habitat impacts.

The Ferber Ranch 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). This RMP will be reviewed at least every five years and updated as necessary to prioritize management actions based on the changing Preserve needs. The RMP, including subsequent revisions, must be reviewed and approved by the Wildlife and Regulatory Agencies. 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, and "Regulatory Agencies" is defined as the U.S. Army Corps of Engineers (USACE), State Water Resources Control Board (SWRCB), and CDFW as the agencies requiring compensatory mitigation for unavoidable impacts on jurisdictional aquatic resources.

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

- **Public Access** – A goal of this RMP is to provide for managed public access and passive recreational opportunities within the Preserve that are compatible with the protection of biological resources. The RMP identifies a 2.1-mile network of trails within the Preserve approved for passive recreational use based on an evaluation of biological resources as well as coordination with the Wildlife and Regulatory Agencies. The Preserve Manager will implement a public access program that allows for access during limited, designated docent-led hiking and horseback riding days. The current configuration of approved trails does not connect to other regional trails due to 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 maintaining fuel modification zones approved by OCFA, conducting regular maintenance of weeds along existing fire roads, and maintaining safe access for firefighters on existing fire roads.
- **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, Regulatory 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 will establish a permanent, non-wasting endowment to provide funding for the commitments of Preserve management and monitoring in perpetuity.

Chapter 1
Introduction

The long-term Resource Management Plan (RMP) described herein provides guidelines for the management and monitoring of the Ferber Ranch 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) and pursuant to the U.S. Environmental Protection Agency (EPA) and USACE regulations, governing compensatory mitigation for losses of jurisdictional aquatic resources ("Mitigation Rule," Code of Federal Regulations (CFR), Title 33, Parts 325 and 332, and 40 CFR Part 230). The Ferber Ranch 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.

Implementation of the RMP will be handled by an approved entity with sufficient natural land management experience to meet the Wildlife and Regulatory Agencies requirements. 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 and Regulatory 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 and Regulatory Agencies.

1.1 Ferber Ranch Preserve Acquisition

The Ferber Ranch Preserve was purchased by OCTA as part of the M2 Environmental Mitigation Program (EMP) in May 2011. Located in the eastern part of unincorporated Orange County (Figures 1 and 2), the Ferber Ranch Preserve is a component of the overall 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.

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) by the enhancement of connectivity between EMP open space areas and other existing open space areas and preserves. Working collaboratively with the CDFW,[1] USFWS, USACE, and SWRCB, OCTA ultimately decided that the preparation of an NCCP/HCP would best serve as the EMP's main implementation tool.

[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.

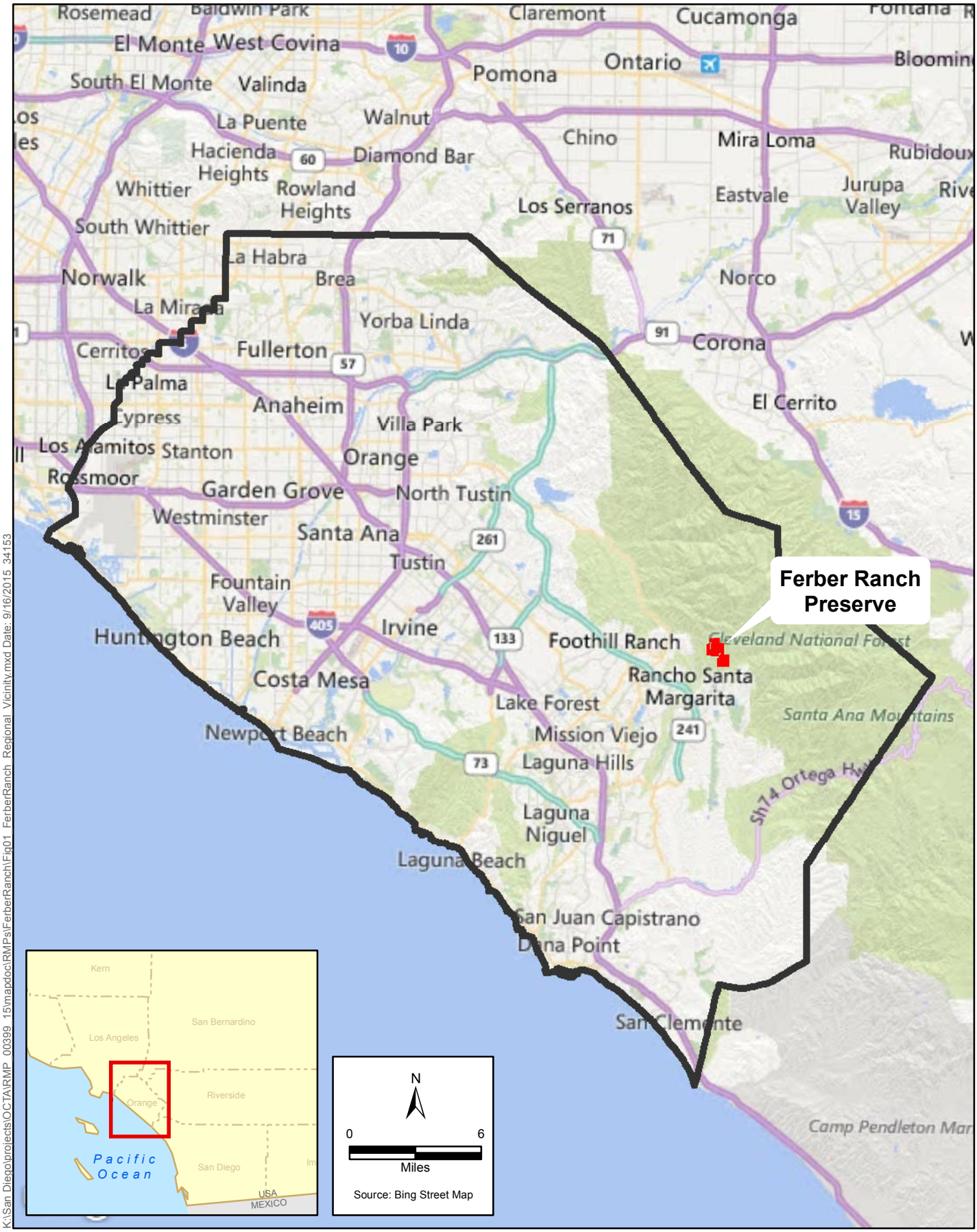

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Figure 1
Regional Vicinity Map
Ferber Ranch Resource Management Plan

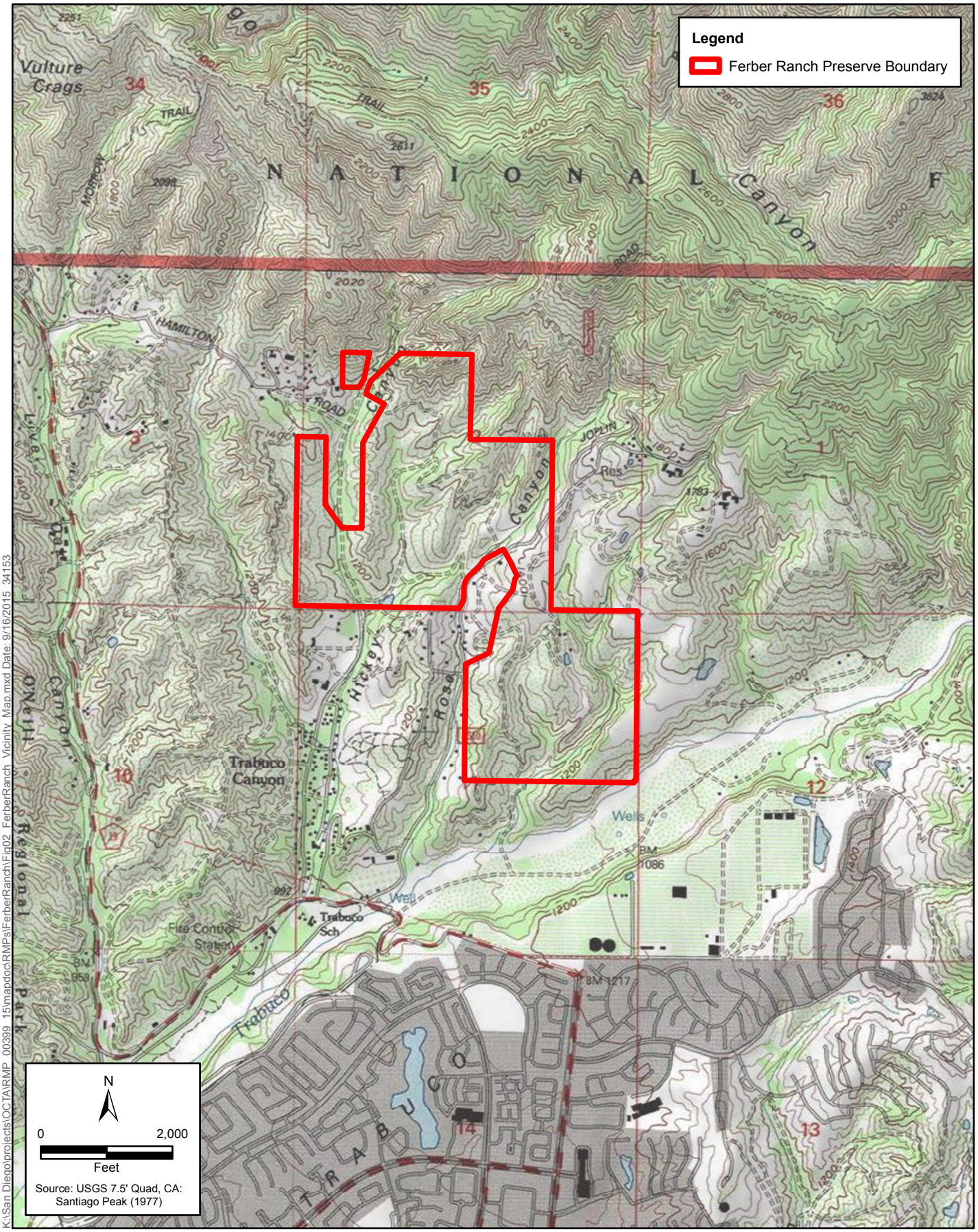

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Figure 2
Preserve Vicinity Map
Ferber Ranch Resource Management Plan

The M2 NCCP/HCP will complement the existing NCCP and HCPs in Orange County, which include the Central and Coastal NCCP/HCP and the Southern Subregion HCP. In support of the goals and objectives listed below, 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 Preserve Area includes the Ferber Ranch Preserve and is comprised of the open space parcels acquired by OCTA as part of the EMP (Figure 3).

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 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 potential to mitigate Covered Activities.
- Adjacent to or in close proximity to already conserved lands.

Through this process, the Ferber Ranch Preserve was selected and acquired. This Preserve satisfies many of the property acquisition criteria that were utilized to evaluate potential fits for 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.

1.1.1 OCTA M2 NCCP/HCP Goals and Objectives Relevant to the Ferber Ranch 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 Ferber Ranch Preserve:

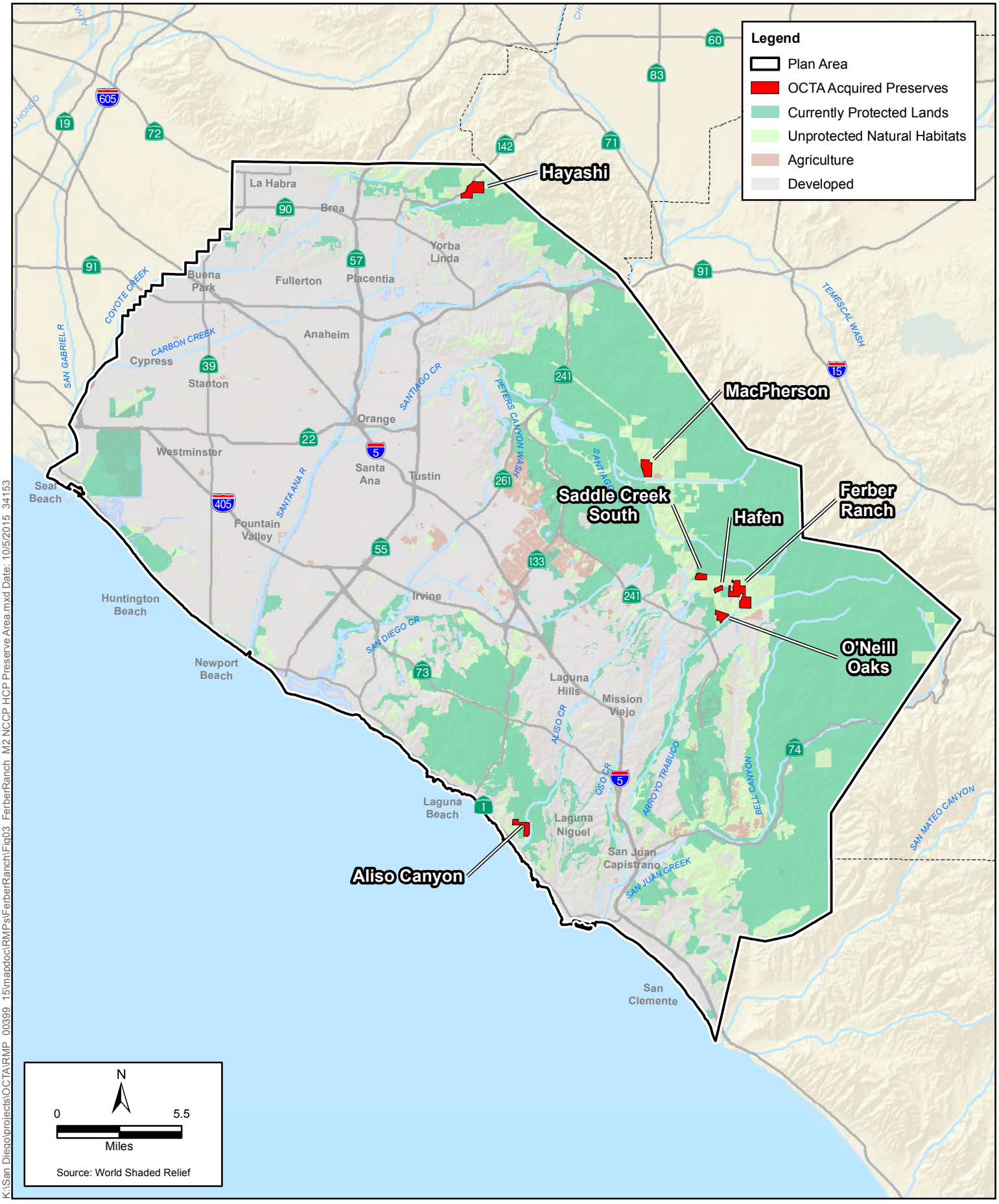

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Figure 3
M2 NCCP/HCP Preserve Area
Ferber Ranch Resource Management Plan

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, enhance, and manage natural landscape 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 and genetic diversity.

Landscape Objective 4.1: OCTA will acquire and/or restore natural landscapes within all the major watersheds (Los Angeles/San Gabriel River, Santa Ana River, San Juan Creek) and a majority of core and linkage areas contributing to the conservation of genetic diversity 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, grassland, 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[2]: Maintain and enhance stream, riparian and wetland functions and services to meet or exceed State and Federal no-net loss policies, benefit Covered Species and promote native biodiversity.

Natural Community Objective 2.1: OCTA will acquire areas with aquatic resources (per CDFW jurisdictional limits which encompass USACE and SWRCB jurisdictional limits). These conservation actions will protect streams and associated riparian and wetlands functions and services by improving the condition of the physical streambed through protection of the site as a whole; management of stream crossings to avoid and minimize any adverse effects of trails and fire access roads; hydrology, aquatic and riparian habitat through invasive species removal, planting or seeding native species and other enhancements.

[2] This Goal and Objective have been modified from the original NCCP/HCP in order to encompass USACE and SWRCB needs.

Species Goal 1: Provide conservation of intermediate mariposa lily within the Plan Area and minimize and mitigate impacts associated with Covered Projects and 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 Projects and Activities.

Species Objective 5.1: OCTA will acquire 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.

Species Goal 6: Provide conservation of orangethroat whiptail within the Plan Area and minimize and mitigate impacts associated with Covered Projects and Activities.

Species Objective 6.1: OCTA will acquire Preserves that have documented occurrences of orangethroat whiptail. OCTA will ensure that appropriate management actions to protect and enhance habitat for orangethroat whiptail are implemented according to requirements to be incorporated into the RMPs for each Preserve.

Species Goal 8: Provide conservation of cactus wren within the Plan Area and minimize and mitigate impacts associated with Covered Projects and Activities.

Species Objective 8.1: 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 Objective 8.3: OCTA will establish policies and procedures to avoid and minimize impacts to cactus wren habitat, including cactus scrub.

Species Goal 9: Provide conservation of coastal California gnatcatcher within the Plan Area and minimize and mitigate impacts associated with Covered Projects and 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 Objective 9.3: OCTA will establish policies and procedures to avoid and minimize impacts to coastal California gnatcatcher habitat, including coastal sage scrub.

Species Goal 12: Provide conservation of bobcat within the Plan Area and minimize and mitigate impacts associated with Covered Projects and Activities..

Species Objective 12.1: OCTA will acquire natural habitat that includes a combination of land cover types important for wildlife movement of large mammals such as bobcat.

Species Goal 13: Provide conservation of mountain lion within the Plan Area and minimize and mitigate impacts associated with Covered Projects and Activities.

Species Objective 13.1: OCTA will acquire natural habitat that includes a combination of land cover types important for wildlife movement of large mammals such as mountain lion.

1.2 Relevant Conservation Plans

A primary reason for selecting the Ferber Ranch Preserve for acquisition was its local and regional biological connectivity between conserved open space areas such as the CDFW Hafen property, Cleveland National Forest, O'Neill Regional Park (part of the Southern Subregion HCP reserve system), the Trabuco Creek corridor, and Whiting Ranch Wilderness Park (part of the Central and Coastal NCCP/HCP reserve), as well as other, nearby open space parcels acquired by OCTA as part of the M2 NCCP/HCP. Figure 4 provides a regional perspective of how the Ferber Ranch Preserve is located within the network of open space lands, and Figure 5 depicts the other reserve areas in the nearby vicinity of the Ferber Ranch Preserve. Additionally, the Preserve is located within the *Foothill/Trabuco Specific Plan* (FTSP) (County of Orange 1991) area. The following section provides a summary of the conservation plans that are relevant to the Preserve.

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. The Preserve is one of the larger landholdings within the FTSP area. The Ferber Ranch Preserve is located primarily within the Trabuco Canyon Residential District (TCR) that is part of the FTSP's Land Use District's designations. A portion of the Preserve's southeastern corner, consisting of a small segment of Trabuco Creek, is located within the FTSP's Open Space Conservation District (OSC). The property's TCR land use designation would have allowed the construction of up to 188 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. The OSC land use designation primarily provides for the preservation of open space lands and wildlife resource values while allowing for compatible recreational uses.

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 four existing trails that cross through the Preserve. These trails are discussed in greater detail in Section 3.1.3*, Ferber Ranch Public Access Plan*.

1.2.2 Other Existing Conservation Programs

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 lands that are outside of the Central Coastal NCCP/HCP Reserve System that have been conserved by The Irvine Company.

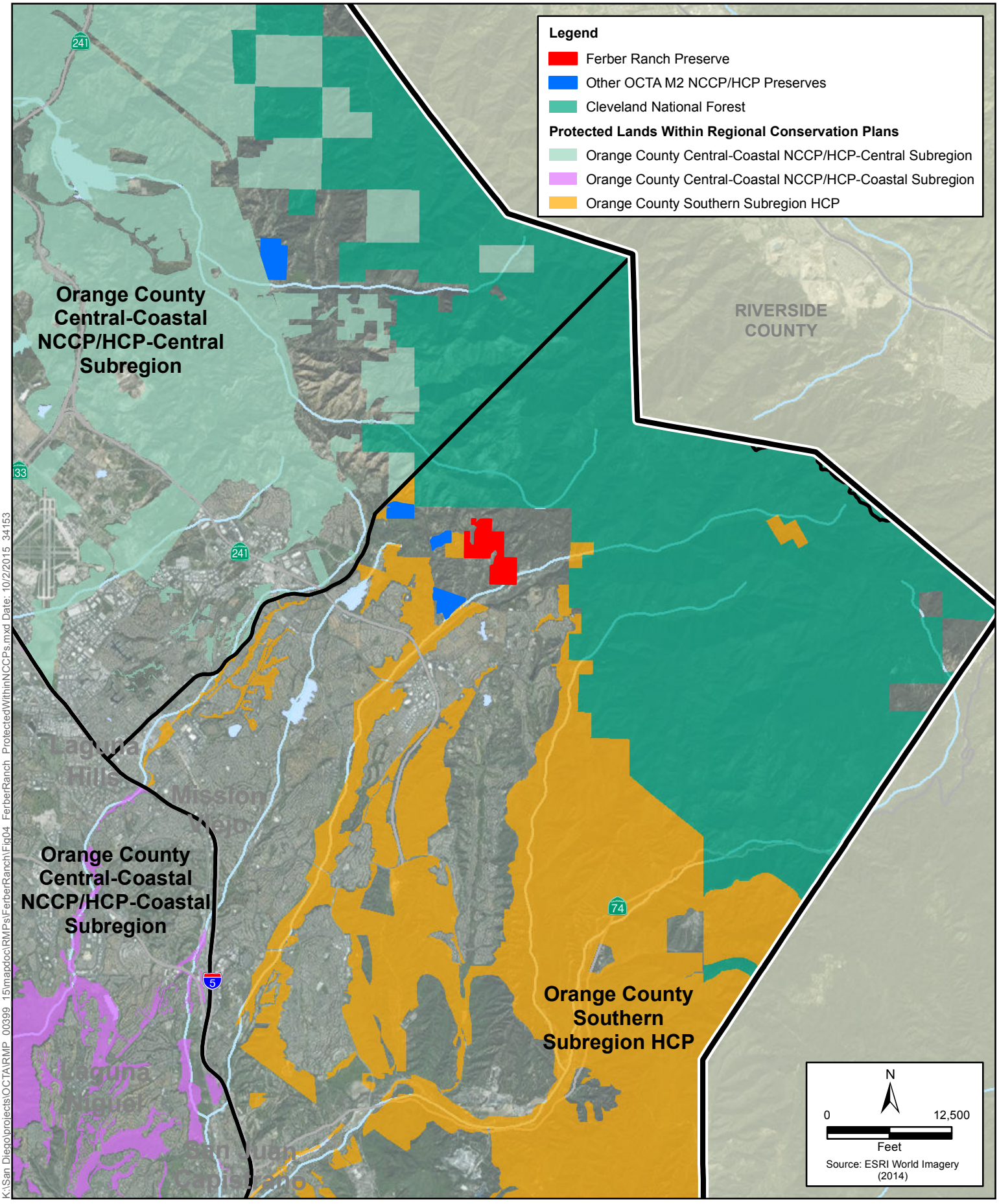

Figure 4
Protected Lands in Boundaries of Regional Conservation Plans
Ferber Ranch Resource Management Plan

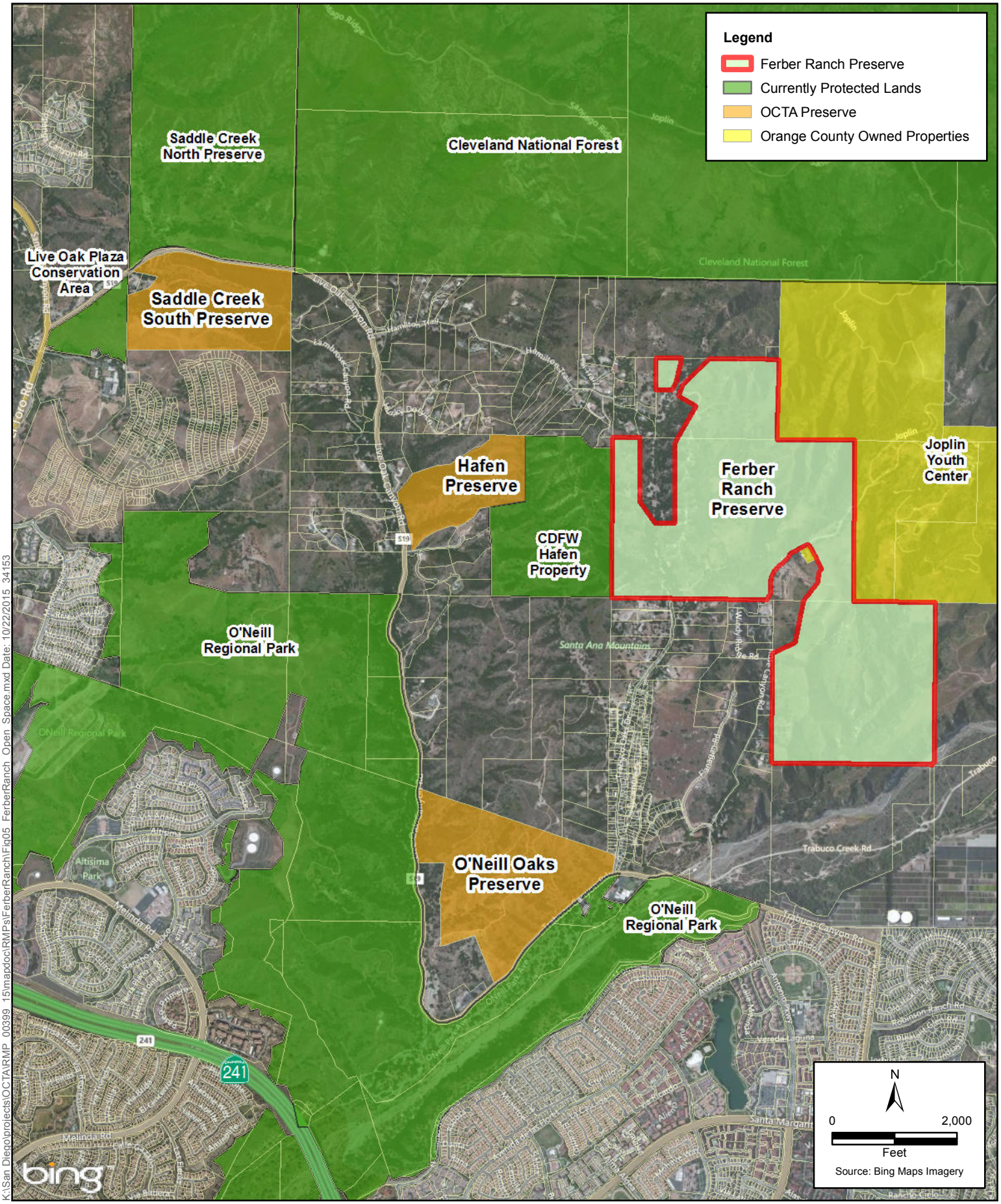

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Figure 5
Open Space in Vicinity of Ferber Ranch Preserve
Ferber Ranch Resource Management Plan

Other focused HCPs in the Plan Area include the Coyote Hills East HCP and Shell-Metropolitan Water District HCP. In addition, Chino Hills State Park is located in the northern portion of the Plan Area and extends into adjacent Riverside and San Bernardino Counties. 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 immediately north of the Ferber Ranch Preserve.

The M2 NCCP/HCP will 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. Acquisition of lands for permanent protection and restoration of open space areas will occur under the EMP by specifically targeting areas that would support and expand existing conservation plans in the Plan Area. The M2 NCCP/HCP conservation strategy included the purchase of seven preserves: Ferber Ranch, Hafen (48 acres), Saddle Creek South (84 acres), O'Neill Oaks (119 acres), Hayashi (298 acres), MacPherson (204 acres), and Aliso Canyon (151 acres). The Ferber Ranch Preserve is in the vicinity of Hafen, Saddle Creek South, and O'Neill Oaks (Figure 3). The Hayashi Preserve is located within the City of Brea and is adjacent to Chino Hills State Park, while the MacPherson Preserve is located within Silverado Canyon. The Aliso Canyon Preserve is located within the City of Laguna Beach and is within the Coastal Reserve of the Central-Coastal NCCP/HCP.

1.3 Permitted Activities and Threats to Conservation

The management program set forth in this document addresses identified permitted activities (i.e., Covered Activities). It also discusses the now-unauthorized encroachment activities that occurred on the Preserve prior to OCTA's acquisition. Prior to its Preserve status, the Ferber Ranch property was owned by the Trabuco Canyon Company, LLC. Within the Company's landholdings were two stables where individuals boarded their horses. These individuals, as well as a select number of neighbors, had discretionary access to the Ferber Ranch property. This access, granted by the Trabuco Canyon Company, LLC, allowed use of the roads and trails for horseback riding and hiking purposes.

As of October 2011, all public access was prohibited on the property by OCTA. In other words, the previous discretionary access granted by the prior owner was formally revoked. Access to the roads and trails within the Preserve is pending adoption of the NCCP/HCP and this RMP.

There are three exceptions to the access for Trabuco Oaks Drive, which includes an existing access easement granted to:

- the Trabuco Canyon Company, LLC,
- an adjacent property owner to the north, and
- emergency access for the Hamilton Trails neighborhood located northwest of the property.

Currently the same individual identified as "adjacent property owner to the north" leases the stabling/boarding area from Trabuco Canyon Company, LLC.

A number of encroachment issues have been documented on the Ferber Ranch Preserve since the acquisition by OCTA, including trespassing by hikers, equestrians, and mountain bikers; cutting of new trails; dumping manure and debris; excavating soil; discharging firearms (alleged hunting); cutting native vegetation; vandalizing existing fences and gates (i.e., wire cutters and other

implements are used to cut fencing and open gates and locks); and thinning and removing native vegetation for fuel modification beyond the OCFA-required fuel modification zone in the southwestern portion of the Preserve. Adaptive management of the Ferber Ranch Preserve as part of the OCTA NCCP/HCP must address these 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) described above.

These threats 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.

The 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 issues and accommodating safe access and recreational use of the site by the general public.

1.4 Preserve Specific Management Objectives and Actions

The Preserve was purchased as part of the EMP because it supports the conservation strategy/biological goals of the M2 NCCP/HCP by providing high quality mitigation for M2 freeway impacts on biological resources. Conservation of Ferber Ranch ensures the preservation and enhancement of regional biological connectivity and the protection of Covered Species and their associated natural habitats. As identified in Section 1.1, *Ferber Ranch Preserve Acquisition*, there are a number of Plan Goals of the M2 NCCP/HCP that specifically apply to the Ferber Ranch Preserve. In addition to the broader Plan Goals, this RMP also identifies Preserve specific management objectives and actions that support the broader Plan Goals and that benefit riparian and aquatic resources under the jurisdiction of the Regulatory Agencies. 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 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
Preserve Management (Chapter 3)		
Public Access (Section 3.1)	Offer managed public access and recreational opportunities within the Preserve that are compatible with the protection of biological resources.	• Identify approved trails for recreation use based on an evaluation of biological resources and land use opportunities and constraints. • Define and implement a managed access program that allows for public access during limited, designated docent led hiking and riding days. • Install gates, signage, and obstructions, as appropriate, to control public 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.
Invasive Species Control Plan (Section 3.2)	Implement an invasive plant species control program to protect natural communities and Covered Species habitat.	• 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 and Regulatory 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.

Category/Goal	Management Objectives	Management Actions
Habitat Restoration (Section 3.3)	Restore closed trails to 70 percent of native habitat cover.	• During the first five years after adoption of the RMP, the Preserve Manager will monitor conditions at 10 to 15 representative trail locations using photo monitoring methods to track progress of passive restoration. • After five years, the Preserve Manager, in consultation with the Restoration Ecologist, may determine the need for active (versus passive) restoration, including invasive plant control and supplemental seeding, to improve the cover and quality of native habitat on closed trails.
Vegetation Management (Section 3.4)	Minimize impacts to native plants and wildlife habitat resulting from management, maintenance, or other activities on the Preserve.	• Pruning, cutting, or clearing of native vegetation will generally be avoided except for maintenance along access roads and approved recreation trails, trimming of fuel modification zones around existing structures, 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.
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.	• 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. • Prior to implementation of the FMP, the Preserve Manager will maintain fuel modification zones in the Preserve approved by OCFA, conduct regular maintenance of weeds along existing fire roads, and maintain existing roads in a condition that will provide safe access for firefighters.

Category/Goal	Management Objectives	Management Actions
Nonnative Animal Species Management (Section 3.6)	Control invasive (nonnative) animal species that are known to impact native wildlife species and habitats.	• 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.	• Collect and dispose of trash and debris regularly to maintain the Preserve in good condition for visitors and minimize impacts to Covered Species and natural communities. • Implement 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. • Monitor and maintain fencing and gates to control public access and trespassing. • Install and maintain signs at key access points to provide visitors with information on Preserve rules, recreational features (including trails), and biological and cultural resources (as appropriate). • 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.	• 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.	• 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.	• Preserve Manager will follow directives set forth in 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.
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.	• 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. • Encourage trail user groups to participate in "self-monitoring and policing" programs.

Category/Goal	Management Objectives	Management Actions
Biological Monitoring and Management (Chapter 4)		
Covered Plant Species (Section 4.1.1) **Plants** Plan Species Goal 1 and Species Objective 1.1	Ensure the long-term viability of Covered Plants by protecting, managing, and enhancing populations and suitable habitat on the Preserve.	• 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 public access and recreational activities • Protect Covered Plants during fire suppression activities • Augment populations
Covered Animal Species (Section 4.1.2) **Reptiles** Plan Species Goal 5 and Species Objective 5.1 and Species Goal 6 and Species Objective 6.1	Ensure the long-term viability of Covered Reptiles by protecting, managing, and enhancing suitable habitat on the Preserve.	• Identify status, threats, and population trends • Identify anthropogenic conflicts • Protect Covered Reptiles and habitat during property maintenance and/or from public access and recreational activities
Covered Animal Species (Section 4.1.2) **Birds** Plan Species Goal 8 and Species Objective 8.1 and 8.3, and Species Goal 9 and Species Objective 9.1 and 9.3	Ensure the long-term viability of Covered Birds by protecting, managing, and enhancing populations and suitable habitat on the Preserve.	• Identify status, threats, and population trends • Identify anthropogenic conflicts • Protect Covered Birds and habitat during property maintenance and/or from public access and recreational activities • Protect Covered Birds and habitat during fire suppression activities
Covered Animal Species (Section 4.1.2) **Mammals** Plan Species Goal 12 and Species Objective 12.1 and Species Goal 13 and Species Objective 13.1	Ensure the long-term viability of Covered Mammals by protecting, managing, and enhancing populations and suitable habitat on the Preserve.	• Identify status, threats, and population trends • Identify anthropogenic conflicts • Develop a fencing approach that protects the Preserve while facilitating wildlife movement • Protect Covered Mammals from hunting • Protect Covered Mammals from public access and recreational use

Category/Goal	Management Objectives	Management Actions
Natural Communities (Section 4.1.3) Plan Natural Communities Goal 1 and Natural Communities Objective (1.1-1.5) and Natural Communities Goal 2 and Natural Communities Objective 2.1	Ensure the long-term viability of natural communities by protecting, managing, and enhancing these resources on the Preserve.	• Maintain updated vegetation map • Identify operational or public use conflicts • Establish long-term monitoring plots to identify vegetation conditions and trends • Monitor and assess quality of aquatic resources • 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 public access and recreational trail use • Protect natural communities from erosion • Protect natural communities from edge effects
Adaptive Management (Section 4.2)	Preserve Manager will manage the Ferber Ranch Preserve in accordance with the principles and procedures for adaptive management.	Key issues for a focused adaptive management approach to address uncertainties of preserve management on the Ferber Ranch Preserve include the following. • Public access and wildlife activity. • Covered Plants and vegetation management. • Trails revegetation. • Olive trees expansion into native habitats. • Vegetation control around cactus patches.
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 report will include updates and anticipated activities for the upcoming year will be provided activities including, but not limited to. • Monitoring of preserved biological resources, including natural communities and Covered Species. • Fire management and control, recreational uses, access, general site maintenance, and encroachment issues. • Habitat restoration and enhancement. • Education and outreach.

Chapter 2
Site Description

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 earlier site evaluations performed by Pacific Soils Engineering (2005) and Dudek & Associates (2005), and a more recent and comprehensive baseline biological survey completed by BonTerra Consulting (2013). A copy of the 2013 Baseline Biological Surveys Technical Report that includes Ferber Ranch is included in Appendix B.

2.1 Preserve Setting, Adjacent Property Owners, and Land Uses

The 399-acre Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon (Figures 1 and 2), and is accessed from Trabuco Oaks Road and Rose Canyon Road. Trabuco Oaks Road becomes Hickey Canyon Road near the OCTA property line. Surrounding land uses include CDFW's Hafen property, Cleveland National Forest, O'Neill Regional Park, the Joplin Youth Center, and areas of low density, rural residential development (Figure 5). The Joplin Youth Center is maintained predominately as open space (although public access is prohibited), and several other adjacent parcels are currently undeveloped.

Other adjacent property owners include Trabuco Canyon Company LLC and the Santa Ana Mountains County Water District. Trabuco Canyon Company LLC retains two parcels adjacent to the Preserve (Figure 5). Horse stables were previously located within both of these parcels. The stable facilities included horse stalls, sheds, and other temporary structures. The northern Trabuco Canyon Company parcel is accessed by Hickey Canyon Road, and the southern Trabuco Canyon Company parcel is accessed by Rose Canyon Road. In addition to using Hickey Canyon Road to access the stables in the northern parcel, people who stabled their horses at both facilities historically were given discretionary access by the previous land owner to use the roads and trails at the Preserve for trail-riding prior to OCTA purchasing this property. The Santa Ana Mountains Water District property consists of a water tank that is used by the District as part of their operations and is accessed by Rose Canyon Road.

Historically, open pit clay or sand mining occurred in the southern portion of the Preserve. An Archaeological Sensitivity Assessment of the Ferber Ranch Preserve was conducted by LSA Associates in 2014, which estimated that the site was developed between 1946 and 1953. This site was determined to be ineligible for the National Register of Historic Places. This site is described as an abandoned clay mine with concrete foundations, a water tank, sluiceways, shallow holding bins, and flat slabs. Other abandoned facilities and structures occur throughout the Preserve, including old concrete building foundations, trailers, corrals, and casual (unfenced) equestrian arenas.

A network of roads occurs within Ferber Ranch, including Rose Canyon Road, Hickey Canyon Road, and many unnamed dirt access roads. In addition, a number of dirt paths exist throughout the Preserve. Hickey Canyon Road is used for limited vehicular access to the adjacent property at the back of the canyon. Rose Canyon Road is used by the County of Orange to access the Joplin Youth Center.

Recent encroachment activities documented on the Preserve include trespassing by equestrians, hikers, and mountain bikers; cutting unauthorized trails; use of firearms; dumping of manure and debris; fuel maintenance activities in the southwest portion of the site; vegetation cutting; and cutting or otherwise damaging existing fences and gates.

2.2 Physical Characteristics

Physical and geological characteristics of the Ferber Ranch Preserve that are relevant for resource management are summarized below. Refer to the Geotechnical Feasibility Study (Pacific Soils Engineering 2005) for an expanded description of these characteristics.

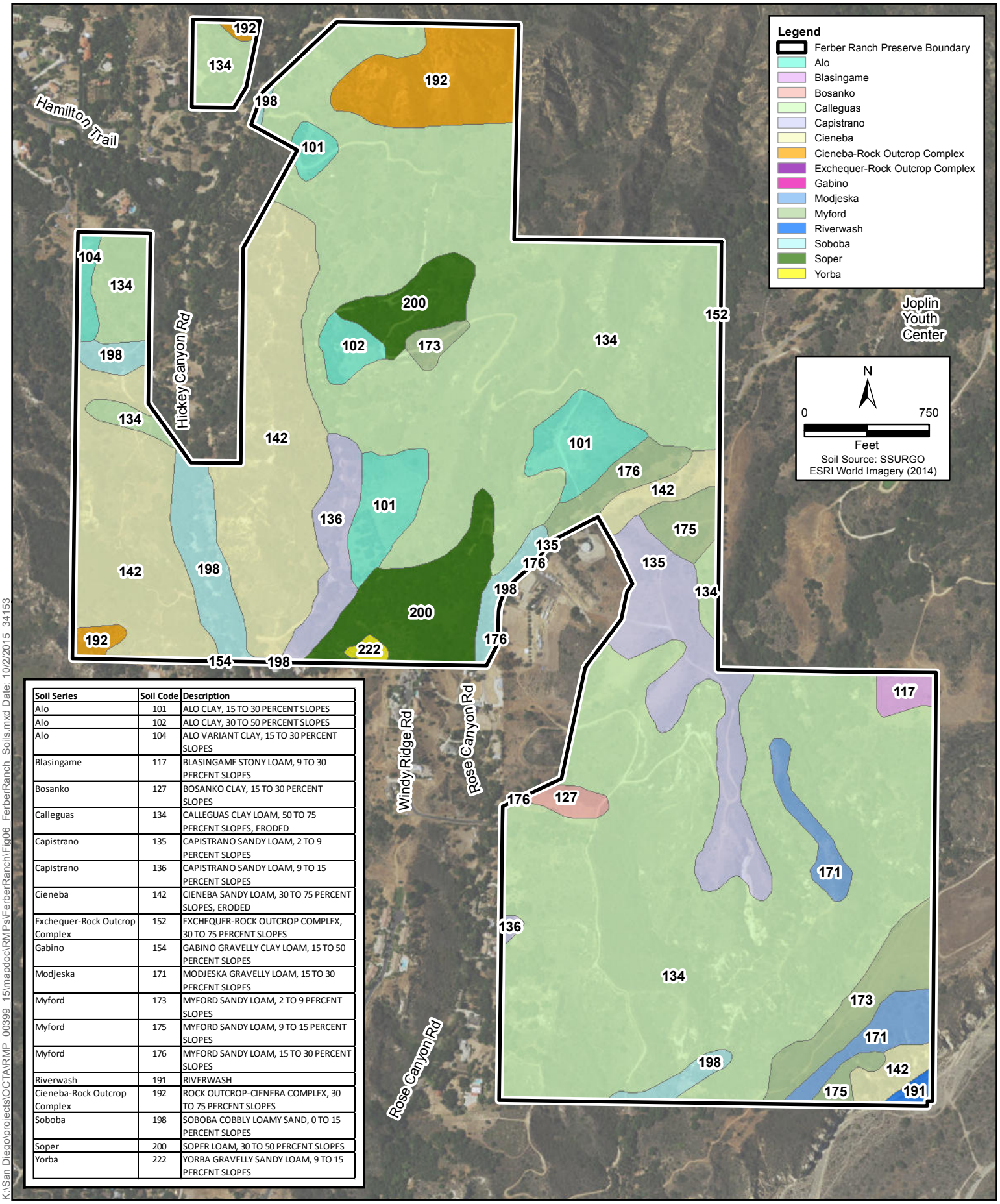
The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 1,100 to 1,650 feet above mean sea level (msl). The site consists of several north-to-northeast-trending ridges that are bisected by similarly trending valleys. Slopes are moderate-to-steep, with local small cliffs (Pacific Soils Engineering 2005).

The site is underlain by sedimentary bedrock units, which are Cretaceous, and Tertiary-aged marine and non-marine deposits (Figure 6). Surficial materials that overlay the bedrock consist of topsoil; colluviums; landslide deposits; recent alluvium; Quaternary terrace deposits; and artificial fill associated with the creation of various roads, detention basins, and other earthworks. Topsoil and colluviums are a result of weathering of the bedrock units. These deposits are anticipated to be generally less than five feet thick except at the base of the hills where the colluviums coalesce with the alluvium and may be 15 feet thick or greater. They typically consist of loosely consolidated, coarse-to-fine grained sands, gravelly sands, and cobbly sands with silt and clay as a result of the weathering process. The Quaternary terrace deposits are found capping many of the ridgelines throughout the Preserve. These deposits were shed off the Santa Ana Mountains from an ancestral Trabuco Canyon outflow, which had a more westerly path than the current canyon bottom. These deposits consist of mixed sand and gravel and are locally over 65 feet thick. Alluvium exists in the active stream and canyon bottoms as a result of recent deposition. These deposits consist of clayey-to-silty sand deposits deposited by recent stream activity. These deposits are generally five to 15 feet thick, with a potential to be deeper in portions of the site. Artificial fill consists of local deposits placed for the construction of access roads, detention basins, and other small pad areas. These deposits are anticipated to be loosely consolidated and probably less than 10 feet thick (Pacific Soils Engineering 2005).

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 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.

- Vegetation mapping and evaluation of habitat conditions.



Soil Series	Soil Code	Description
Alo	101	ALO CLAY, 15 TO 30 PERCENT SLOPES
Alo	102	ALO CLAY, 30 TO 50 PERCENT SLOPES
Alo	104	ALO VARIANT CLAY, 15 TO 30 PERCENT SLOPES
Blasingame	117	BLASINGAME STONY LOAM, 9 TO 30 PERCENT SLOPES
Bosanko	127	BOSANKO CLAY, 15 TO 30 PERCENT SLOPES
Calleguas	134	CALLEGUAS CLAY LOAM, 50 TO 75 PERCENT SLOPES, ERODED
Capistrano	135	CAPISTRANO SANDY LOAM, 2 TO 9 PERCENT SLOPES
Capistrano	136	CAPISTRANO SANDY LOAM, 9 TO 15 PERCENT SLOPES
Cieneba	142	CIENEBA SANDY LOAM, 30 TO 75 PERCENT SLOPES, ERODED
Exchequer-Rock Outcrop Complex	152	EXCHEQUER-ROCK OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
Gabino	154	GABINO GRAVELLY CLAY LOAM, 15 TO 50 PERCENT SLOPES
Modjeska	171	MODJESKA GRAVELLY LOAM, 15 TO 30 PERCENT SLOPES
Myford	173	MYFORD SANDY LOAM, 2 TO 9 PERCENT SLOPES
Myford	175	MYFORD SANDY LOAM, 9 TO 15 PERCENT SLOPES
Myford	176	MYFORD SANDY LOAM, 15 TO 30 PERCENT SLOPES
Riverwash	191	RIVERWASH
Cieneba-Rock Outcrop Complex	192	ROCK OUTCROP-CIENEBA COMPLEX, 30 TO 75 PERCENT SLOPES
Soboba	198	SOBOBA COBBLY LOAMY SAND, 0 TO 15 PERCENT SLOPES
Soper	200	SOPER LOAM, 30 TO 50 PERCENT SLOPES
Yorba	222	YORBA GRAVELLY SANDY LOAM, 9 TO 15 PERCENT SLOPES

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Figure 6
Soils
Ferber Ranch Resource Management Plan

- Focused plant and coastal California gnatcatcher (*Polioptila californica californica*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), 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, but informed by past survey efforts (Dudek & Associates [2005, 2009] and other consultants), as appropriate.

2.3.1 Vegetation

Vegetation and non-vegetated habitat types were originally mapped on the Preserve by Dudek & Associates (2005, 2009). BonTerra Consulting updated the vegetation mapping in 2012 (Figure 7). In general, vegetation and other habitats on site include scrub, riparian, chaparral, woodland, grassland, cliff and rock habitat, and nonnative eucalyptus groves and olive orchards. 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.

Arroyo Willow Thickets

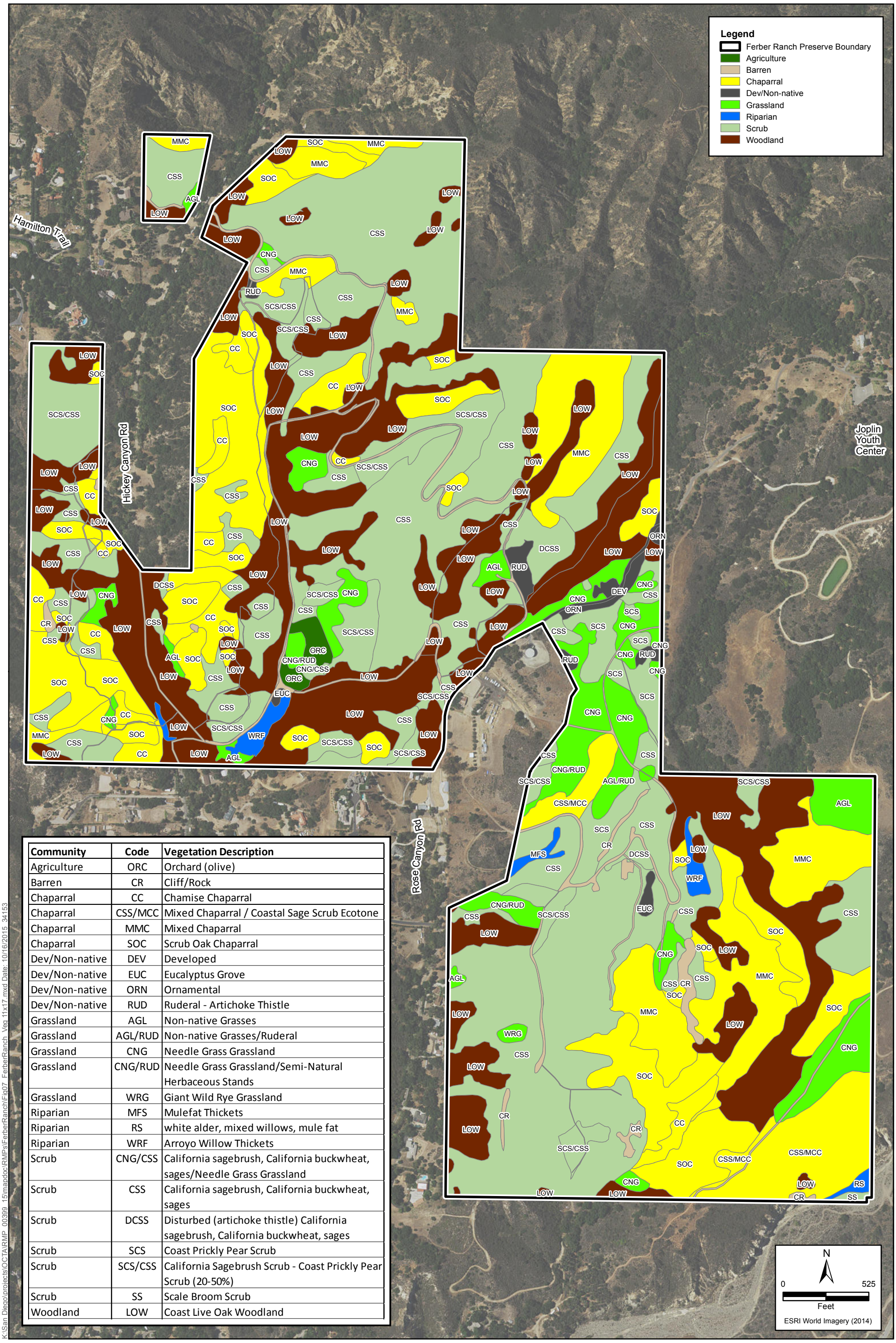
A total of 1.87 acres of arroyo willow thickets occurs on the Preserve. This vegetation type is located in streams on the site and is dominated by arroyo willow (*Salix lasiolepis*). Saltcedar (*Tamarix ramosissima*) is present in the understory, and patches of cattail (*Typha* sp.) occur along the edge of this vegetation type.

California Sagebrush Scrub

A total of 149.57 acres of California sagebrush scrub occurs on slopes on the Preserve. It is dominated by California sagebrush (*Artemisia californica*) with California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), and less than 10 percent of coast prickly-pear (*Opuntia littoralis*). A sub-association of this vegetation type 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. In general, nonnative grasses are found within the understory of most of the outer edges of the California sagebrush scrub community. Native grasses (mostly *Nasella* sp.) are also found throughout this vegetation community. Bare ground is present, mostly within the interior portions of the mapped polygons.

California Sagebrush Scrub/Needle Grass Grassland

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



Community	Code	Vegetation Description
Agriculture	ORC	Orchard (olive)
Barren	CR	Cliff/Rock
Chaparral	CC	Chamise Chaparral
Chaparral	CSS/MCC	Mixed Chaparral / Coastal Sage Scrub Ecotone
Chaparral	MMC	Mixed Chaparral
Chaparral	SOC	Scrub Oak Chaparral
Dev/Non-native	DEV	Developed
Dev/Non-native	EUC	Eucalyptus Grove
Dev/Non-native	ORN	Ornamental
Dev/Non-native	RUD	Ruderal - Artichoke Thistle
Grassland	AGL	Non-native Grasses
Grassland	AGL/RUD	Non-native Grasses/Ruderal
Grassland	CNG	Needle Grass Grassland
Grassland	CNG/RUD	Needle Grass Grassland/Semi-Natural Herbaceous Stands
Grassland	WRG	Giant Wild Rye Grassland
Riparian	MFS	Mulefat Thickets
Riparian	RS	white alder, mixed willows, mule fat
Riparian	WRF	Arroyo Willow Thickets
Scrub	CNG/CSS	California sagebrush, California buckwheat, sages/Needle Grass Grassland
Scrub	CSS	California sagebrush, California buckwheat, sages
Scrub	DCSS	Disturbed (artichoke thistle) California sagebrush, California buckwheat, sages
Scrub	SCS	Coast Prickly Pear Scrub
Scrub	SCS/CSS	California Sagebrush Scrub - Coast Prickly Pear Scrub (20-50%)
Scrub	SS	Scale Broom Scrub
Woodland	LOW	Coast Live Oak Woodland

Figure 7
Vegetation Communities
Ferber Ranch Resource Management Plan

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

Vegetation Types and Other Areas	Acreage
Arroyo Willow Thickets	1.87
California Sagebrush Scrub	149.57
California Sagebrush Scrub/Needle Grass Grassland	0.28
Chamise – Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush Scrub	13.36
Chamise Chaparral	11.90
Cliff/Rock	2.16
Coast Live Oak Woodland	93.23
Coast Prickly Pear Scrub	6.50
Developed	0.61
Disturbed (Bare Ground)	7.79
Eucalyptus Grove	0.53
Giant Wild Rye Grassland	0.38
Laurel Sumac – Lemonade Berry Chaparral with California Sagebrush – California Buckwheat Scrub	32.94
Mulefat Thickets	0.71
Needle Grass Grassland	17.15
Needle Grass Grassland/Semi-Natural Herbaceous Stands	3.94
Orchard	1.51
Scale Broom Scrub	0.30
Scrub Oak Chaparral	44.66
Semi-Natural Herbaceous Stands	7.37
Semi-Natural Woodland Stand	1.42
White Alder Groves	0.45

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 on the Preserve. This vegetation type is located in two large patches in the southern half of the site and represents an ecotone between chaparral and coastal sage scrub. As such, it is co-dominated with a variety of species such as chamise (*Adenostoma fasciculatum*), laurel sumac (*Malosma laurina*), lemonade berry (*Rhus integrifolia*), and California sagebrush.

Chamise Chaparral

A total of 11.90 acres of chamise chaparral occurs on the Preserve. This vegetation type is located on slopes throughout the site. It is dominated by chamise. Sub-dominant species include California sagebrush, California buckwheat, black sage, and chaparral yucca (*Hesperoyucca whipplei*

[*Yucca w*.]). In general, this vegetation community contained a fair amount of bare ground. There was presence of nonnative as well as native grasses along the edges of the mapped polygons depending on its location within the Preserve.

Cliff/Rock

A total of 2.16 acres of cliff/rock occurs on the Preserve. Cliff/rock consists of small 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 (*Acmispon glaber* [*Lotus scoparius*]) and California sagebrush has sprouted in eroded soil along the cliff faces and near the bottom of the cliff.

Coast Live Oak Woodland

A total of 93.23 acres of coast live oak woodland occurs on the Preserve. This vegetation type is located on slopes and drainage bottoms throughout the site and is dominated by mature coast live oak (*Quercus agrifolia*). The understory in upland areas contains coastal sage scrub species; the understory in riparian areas contains mugwort (*Artemisia douglasiana*), western poison oak (*Toxicodendron diversilobum*), hollyleaf redberry (*Rhamnus ilicifolia*), and tree tobacco (*Nicotiana glauca*).

Coast Prickly Pear Scrub

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

Developed

A total of 0.61 acre of developed areas occurs on the Preserve. This mapping unit consists of the paved Rose Canyon Road. No vegetation is present in this area, with the exception of some overstory created by adjacent oak trees.

Disturbed (Bare Ground)

A total of 7.79 acres of disturbed (bare ground) areas comprise the trails and dirt roads on the Preserve. These areas consist of bare ground and contain little to no vegetation.

Eucalyptus Grove

A total of 0.53 acre of eucalyptus grove occurs on the Preserve. This vegetation type is located near the center of the site and consists of mature gum trees (*Eucalyptus* sp.) surrounded by California sagebrush scrub.

Giant Wild Rye Grassland

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

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 Preserve. This vegetation type occurs on slopes throughout the site and represents an ecotone between chaparral and coastal sage scrub. 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.

Mulefat Thickets

A total of 0.71 acre of mulefat thickets occur on the Preserve. 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 site. It is dominated by mule fat (*Baccharis salicifolia*). Scattered patches of mule fat vegetation in other areas of the site were too small to be mapped separately.

Needle Grass Grassland

A total of 17.15 acres of needle grass grassland occurs on the Preserve. This vegetation type occurs on gentle slopes throughout the site. It is characterized by having at least 10 percent relative cover of purple needle grass and foothill needle grass, 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 the Ferber Ranch Preserve. This vegetation type occurs on gentle slopes throughout the site. It is similar to the needle grass grassland described above, but is more heavily disturbed by nonnative ruderal species such as cardoon.

Orchard

A total of 1.51 acres of orchard occurs on the Ferber Ranch Preserve. This vegetation type is located along a trail near the center of the site and consists of large olive (*Olea europaea*) trees. Aerial photographs document that these trees were planted beginning in the late 1940s and through the 1980s. The trees are not irrigated. Small olive trees are sprouting around the mature trees. Olive trees can also be found mixed in with the oak woodlands throughout the Preserves.

Scale Broom Scrub

A total of 0.30 acre of scale broom scrub occurs on the Preserve. This vegetation type is located adjacent to the low flow channel of Trabuco Creek at the southeastern corner of the site. 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.

Scrub Oak Chaparral

A total of 44.66 acres of scrub oak chaparral occurs on the Preserve. This vegetation type is located on slopes throughout the site. It is dominated by dense very mature scrub oak (*Quercus berberidifolia*); chamise is a sub-dominant species.

Semi-Natural Herbaceous Stands

A total of 7.37 acres of semi-natural herbaceous stands occurs on the Preserve. This vegetation type occurs on slopes and plateaus throughout the site. Some of these areas are dominated by nonnative 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 (mapped as sub-associations) are dominated by cardoon.

Semi-Natural Woodland Stand

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

White Alder Groves

A total of 0.45 acre of white alder groves occurs on the Preserve. This vegetation type is located within the floodplain of Trabuco Creek and is dominated by white alder (*Alnus rhombifolia*) trees. Sub-dominant species include arroyo willow, red willow (*Salix laevigata*), Goodding's black willow (*Salix gooddingii*), western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), and mule fat. 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 10 feet tall.

2.3.2 Wildlife

The Preserve provides habitat for a wide variety of wildlife species that are characteristic of scrub habitats, riparian, chaparral, woodland, grassland, cliff and rock habitat, and wetlands. Focused surveys for coastal California gnatcatcher were performed on site by Dudek & Associates in 2005, 2006, and 2008, and BonTerra Consulting in 2012. Focused surveys for bats and least Bell's vireo/southwestern willow flycatcher were performed by BonTerra Consulting and BioResource Consultants in 2012.

Wildlife species observed or detected on site in 2005, 2006, 2008, and 2012 include amphibians such as garden slender salamander (*Batrachoseps major*), Pacific treefrog (*Hyla regilla*), and western toad (*Anaxyrus boreas* [*Bufo boreas*]); reptiles such as orangethroat whiptail (*Cnemidophorus hyperythrus*), western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), and western rattlesnake (*Crotalus viridis*); birds such as Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), golden eagle (*Aquila chrysaetos*), blue-gray gnatcatcher (*Polioptila caerulea*), coastal California gnatcatcher, cactus wren (*Campylorhynchus brunneicapillus*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red tailed hawk (*Buteo jamaicensis*), and barn owl (*Tyto alba*); mammals such as Yuma bat (*Myotis yumanensis*), Brazilian

free-tailed bat (*Tadarida brasiliensis*), California ground squirrel (*Spermophilus beecheyi*), woodrat (*Neotoma* sp.), coyote (*Canis latrans*), common raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), mule deer (*Odocoileus hemionus*), common gray fox (*Urocyon cinereoargenteus*); and a variety of invertebrate species, including butterflies and moths. Refer to Appendix B (Table B02) 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 numerous ridgelines and canyons that provide a variety of travel routes for local wildlife movement. Trails and access roads 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. Baseline studies and ongoing Preserve management have detected all of these species at the Preserve.

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. Three ephemeral blueline streams traverse the Preserve, including Hickey Canyon Creek and Rose Canyon Creek, which run generally north to south (Figure 8). All onsite drainages are tributaries to Trabuco Creek, which crosses the southeastern corner of the Preserve. All four of these drainages are identified in the FTSP as "Foothill/Trabuco Specific Plan Area Streambeds." The site is located within the San Juan Creek Watershed. Note that head cutting and channel incision was observed in the unnamed stream near the Hickey Canyon Road and Hickey Spur intersection near the southwest entrance to the Preserve. Vegetation within these streams includes arroyo willow thickets, coast live oak woodland, mulefat thickets, and white alder groves.

Based on results of boring studies conducted by Pacific Soils Engineering in 1987, groundwater was not encountered except at the base of the alluvium within canyon bottoms. It is anticipated that groundwater, if present, would be found at or slightly above adjacent canyon bottoms. Within the bedrock, groundwater is anticipated as perched seeps within the more permeable units or trapped along the faults, which transect the site (Pacific Soils Engineering 2005).

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 4.80 acres of non-wetland "Waters of the U.S." and 0.45 acres of wetland "Waters of the U.S." under the jurisdiction of the USACE and SWRCB.
- A total of 53.30 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 three different locations within the Ferber Ranch 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 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 Ferber Ranch 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 [CNDDB]), 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

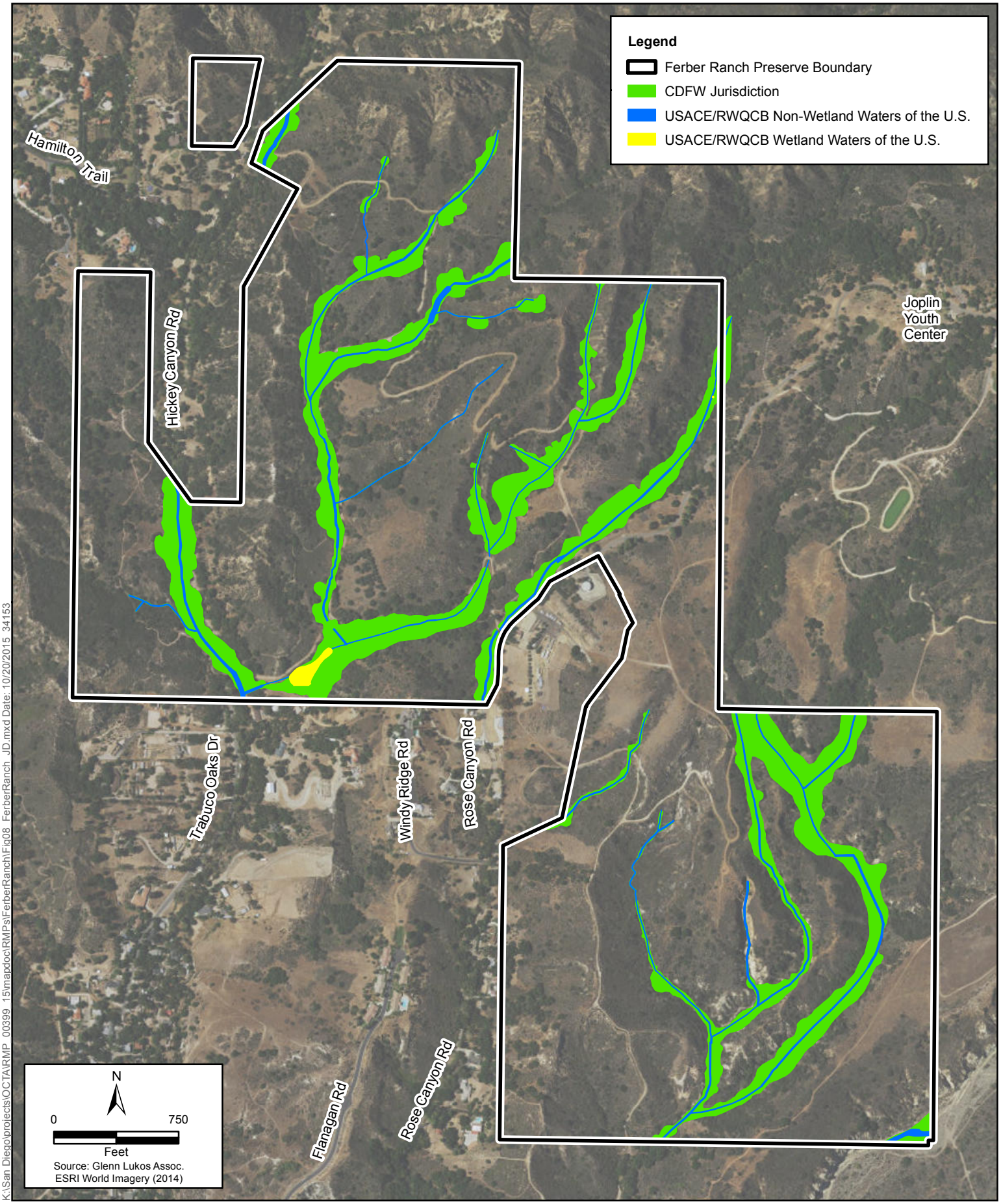

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Figure 8
Jurisdictional Resources
Ferber Ranch Resource Management Plan

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 Dudek & Associates and BonTerra Consulting in 2005, 2006, 2008, 2009, and 2012.

- Vegetation and habitat mapping (Dudek & Associates in 2005 and 2009; BonTerra Consulting in 2012).
- Focused surveys for coastal California gnatcatcher (Dudek & Associates in 2005, 2006, 2008; BonTerra Consulting in 2012). The surveys conducted by Dudek in 2005, 2006, and 2008 covered all areas of suitable habitat. Surveys conducted in 2005 through 2008 were conducted in conformance with the currently accepted protocol of the USFWS.
    - The 2005 surveys resulted in the documentation of two pairs of California gnatcatcher.
    - The 2006 surveys resulted in the documentation of five gnatcatcher pairs, two gnatcatcher individuals, and three gnatcatcher calls.
    - The 2008 surveys resulted in the documentation of three gnatcatcher pairs, one individual gnatcatcher, and one gnatcatcher call. A pair was observed one time within coastal sage scrub in the western half of the Preserve. A gnatcatcher call only was detected in this same area during the next visit and is assumed to be part of the gnatcatcher pair at this location. A second pair was observed one time within coastal sage scrub in the center of the Ferber Ranch Preserve. An individual male was observed on four other survey visits in this same location in the center of the Preserve and is therefore assumed to be part of the gnatcatcher pair at this location. A third pair was observed one time within coastal sage scrub approximately 600 feet southeast of the previously discussed pair.
- Focused surveys for least Bell's vireo and southwestern willow flycatcher (BonTerra Consulting in 2012).
- Focused plant surveys (BonTerra Consulting in 2012).
- 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*), ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*), chaparral nolina/chaparral beargrass (*Nolina cismontana*), chaparral rein orchid (*Piperia cooperi*), Fish's milkwort (*Polygala cornuta* var. *fishiae*), and Coulter's matilija poppy (*Romneya coulteri*).

Special-status wildlife species documented at the Preserve in 2012 include orangethroat whiptail, Cooper's hawk (*Accipiter cooperii*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), coastal cactus wren, coastal California gnatcatcher, Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), hoary bat (*Lasiurus cinereus*), Yuma bat (*Myotis yumanensis*), and bobcat (*Lynx rufus*).

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

	Status				
Species	USFWS	CDFW	CRPR	M2 NCCP/HCP Covered Species	Comments
Calochortus weedii var. *intermedius* Intermediate mariposa lily	None	None	1B.2	Yes	Suitable habitat present on site; species detected during baseline surveys on ridgelines and southern, eastern, and southeastern slopes in rocky gravelly, gravelly sandy, rocky clay, and clay loam soils.
Lilium humboldtii ssp. *ocellatum* Ocellated Humbolt lily	None	None	4.2	No	Suitable habitat is present. Observed during baseline surveys.
Nolina cismontane Peninsular nolina	None	None	1B.2	No	Suitable habitat is present on the Ferber Ranch. Observed during baseline surveys.
Piperia cooperi Chaparral rein orchid	None	None	4.2	No	Suitable habitat is present. Observed during baseline surveys.
Polygala cornuta var. *fishiae* Fish's milkwort	None	None	4.3	No	Suitable habitat is present. Observed during baseline surveys.
Romneya coulteri Coulter's matilija poppy	None	None	4.2	No	Suitable habitat is present. Observed during baseline surveys.

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

4 Plants of Limited Distribution – A Watch List

CRPR Threat Code Extensions

.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)

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

Species	Status			Comments
	USFWS	CDFW	M2 NCCP/ HCP Covered Species	
Aspidoscelis hyperytha [*Cnemidophorus hyperythra*] Orangethroat whiptail	None	SSC	Yes	Observed on the Preserve.
Accipiter cooperii Cooper's hawk (nesting)	None	WL	No	Observed on the Preserve. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.
Aquila chrysaetos Golden eagle (nesting and non-breeding/ wintering)	BGEPA	FP, WL	No	Observed foraging over the Preserve; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.
Circus cyaneus Northern harrier (nesting)	None	SSC	No	Observed foraging on the Preserve. Limited potential to occur for nesting; marginal nesting habitat.
Elanus leucurus White-tailed kite (nesting)	None	FP	No	Observed foraging over the Preserve; may occur for nesting; suitable foraging and nesting habitat.
Campylorhynchus brunneicapillus Cactus wren	None	SSC	Yes	Observed on the Preserve.
Polioptila californica Coastal California gnatcatcher	FT	SSC	Yes	Observed on the Preserve.
Aimophila ruficeps canescens Southern California rufous-crowned sparrow	None	WL	No	Observed on the Preserve.
Lasiurus cinereus Hoary bat[a]	None	None	No	Detected on the Preserve during focused bat surveys
Myotis yumanensis Yuma bat	None	None	No	Detected on the Preserve during focused bat surveys.
Lynx rufus Bobcat	None	None	Yes	Observed on the Preserve.
Puma concolor Mountain lion	None	SPM	Yes	Observed on the Preserve.

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

Legend

State (CDFW)

SSC Species of Special Concern
FP Fully Protected
SPM Specially Protected Mammal
WL Watch List

Federal (USFWS)

FT Threatened
BGEPA Bald and Golden Eagle Protection Act

[a] Not formally listed, but tracked by CDFW as a Special Animal

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, 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 CNDDB 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, California sagebrush scrub/needle grass grassland, and coast prickly pear scrub.
- Chaparral communities, including scrub oak chaparral, chamise – laurel sumac – lemonade berry chaparral with California sagebrush scrub, chamise chaparral, and laurel sumac – lemonade berry chaparral with California sagebrush – California buckwheat scrub.
- Grassland communities, including needle grass grassland, needle grass grassland/ semi-natural herbaceous stands, and giant wild rye grassland.
- Woodland communities, including coast live oak woodland.
- Riparian communities, including arroyo willow thickets, mulefat thickets, scale broom scrub, and white alder groves.
- Jurisdictional areas, including wetlands and 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 arroyo toad (*Anaxyrus californicus* [*Bufo microscaphus californicus*]) and the coastal California gnatcatcher, as summarized below (Figure 10).

- 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 Preserve is 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. The Preserve is within Unit 6 of the designated critical habitat for coastal California gnatcatcher.

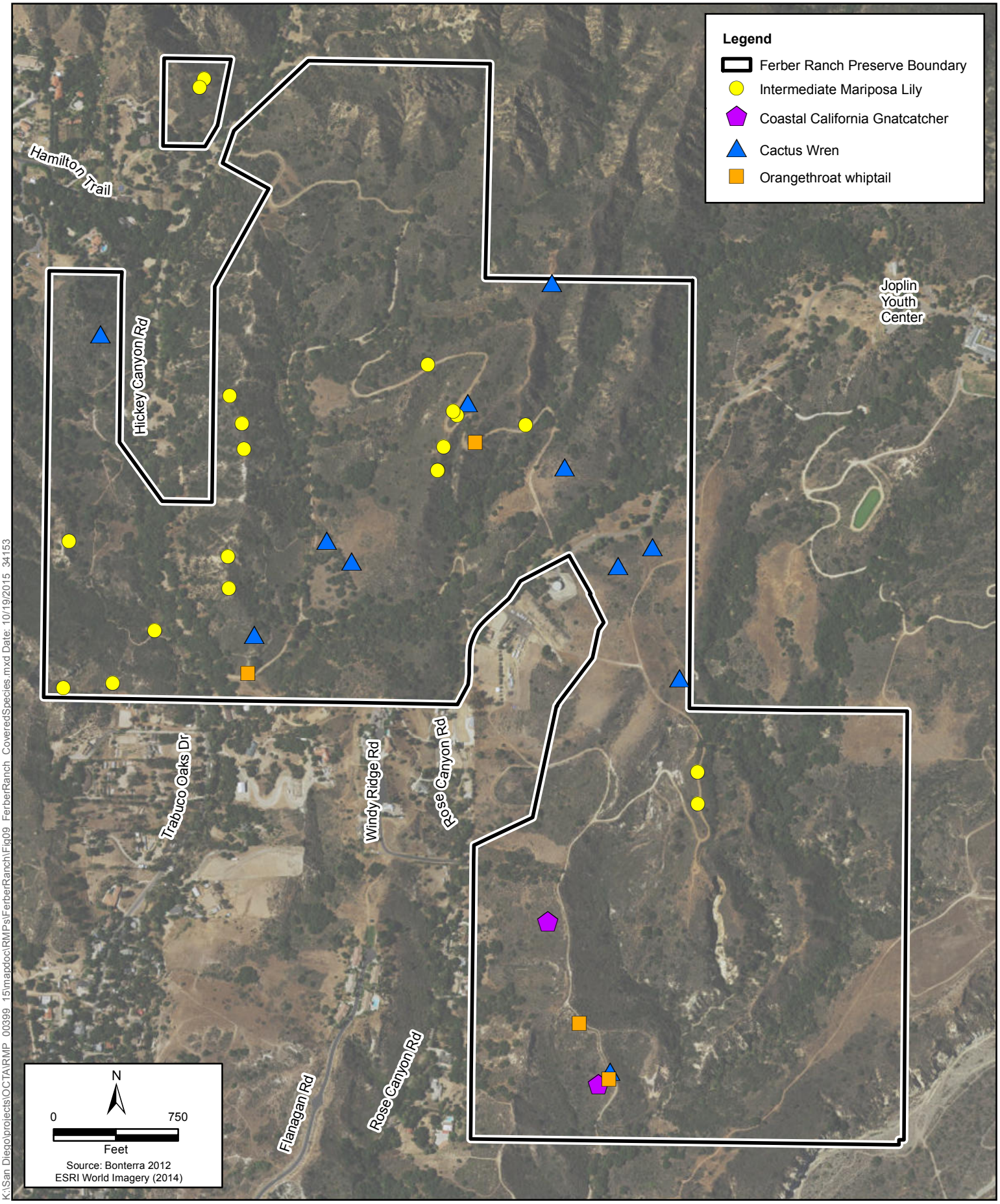

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Figure 9
Covered Plants & Animals
Ferber Ranch Resource Management Plan

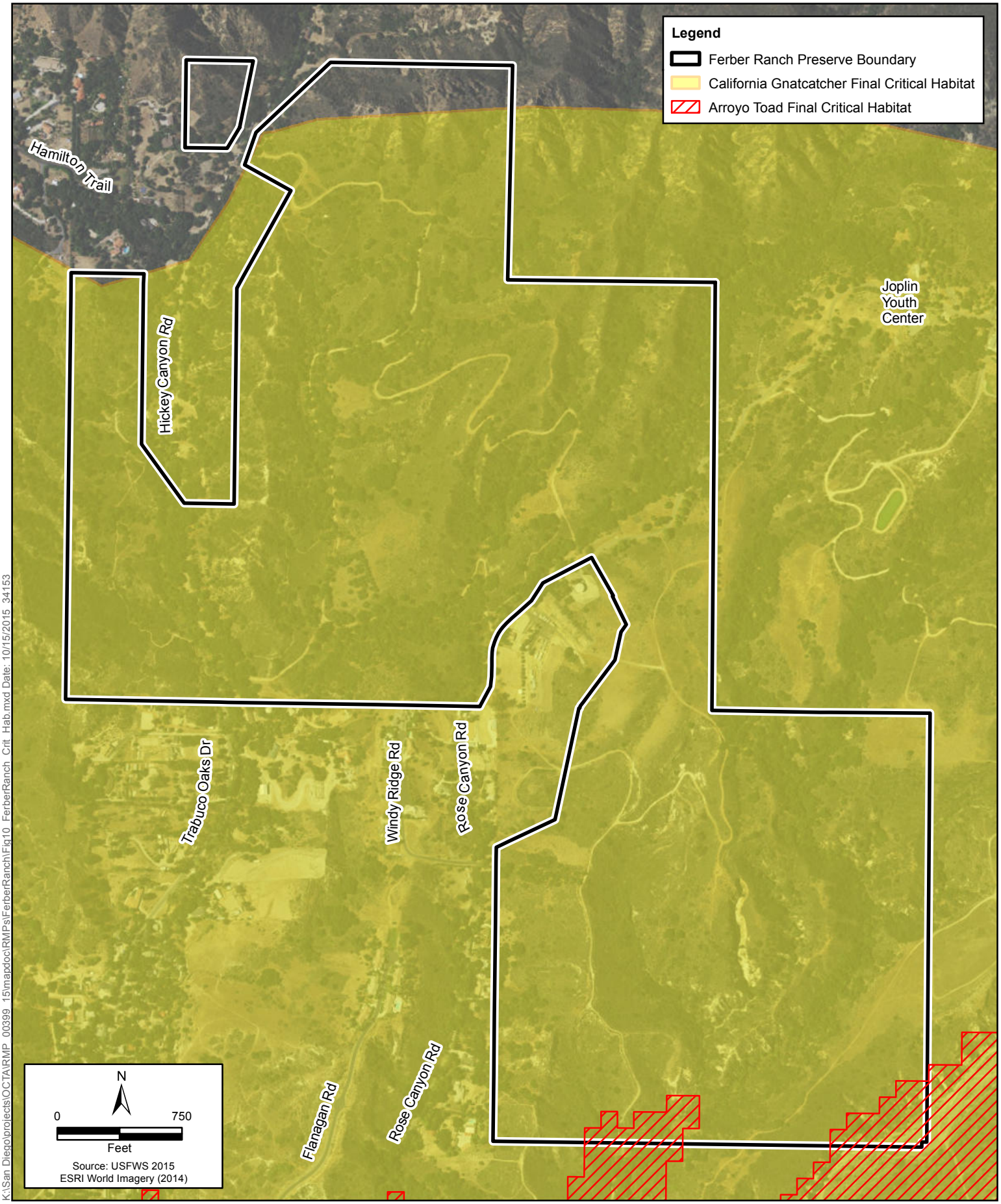

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Figure 10
USFWS Critical Habitat
Ferber Ranch Resource Management Plan

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 / *Calochortus weedii* var. *intermedius*	Yes. Detected in 20 locations (1–12 plants/location) during 2012 baseline surveys (approximately 69 individual plants). Additional occurrences have been noted during ongoing preserve monitoring between 2013 and 2015.	High quality habitat within the Preserve with known occurrences. Populations of intermediate mariposa lily are steady on the Preserve based on initial surveys. Observations from previous years are able to be located in subsequent years.	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 / *Centromadia parryi* ssp. *australis*	None detected during 2012 baseline surveys.	None.	Not applicable.
Many-stemmed dudleya / *Dudleya multicaulis*	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve, including rocky-sandy soils among coastal sage scrub and chaparral.	Response to fire and fire frequency, direct and indirect impacts (trampling/disturbance) from public access and recreational trail use, competition from nonnative plant species.
Fish			
Arroyo chub / *Gila orcutti*	None detected during 2012 baseline surveys.	None.	Not applicable.

Common / Scientific Name	Observed/ Detected On Site	Potential to Occur/ Status of Suitable Habitat On Site	Potential Threats / Stressors within Preserve
Amphibians and Reptiles			
Coast horned lizard / *Phrynosoma blainvillii*	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.
Orangethroat whiptail / *Aspidoscelis hyperythra beldingi*	Yes. Four locations (two on the northern portion and two on the south portion of Ferber Ranch)	Suitable and occupied habitat is within the Preserve. 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 / *Emys marmorata*	None detected during 2012 baseline surveys.	None.	Not applicable.
Birds			
Southwestern willow flycatcher / *Empidonax traillii extimus*	None detected during 2012 baseline surveys.	Marginal habitat. Not expected to occur on site.	Not applicable.
Least Bell's vireo / *Vireo bellii pusillus*	None detected during 2012 baseline surveys.	Marginal habitat. Not expected to occur on site.	Not applicable.
Cactus wren / *Campylorhynchus brunneicapillus sandiegensis*	Yes. Surveys at the Preserve have documented 11 distinct locations (seven locales north of Rose Canyon Road and four on the southern portion of the Preserve). However, baseline surveys in 2012 only detected four extant locations.	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 / *Polioptila californica californica*	Yes. Baseline surveys documented two known locations. One breeding pair and one individual. Previous surveys have documented up to five breeding pairs on the Preserve (Dudek 2005, 2006, 2009).	Suitable and occupied habitat is within the Preserve. The coastal sage scrub habitat within the Preserve is high quality and appears undisturbed (pers. comm. Sandy DeSimone, 2015) and is in large enough patches to support multiple pairs. 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 / *Lynx rufus*	Camera stations have documented presence during biological monitoring in 2013.[a] This species was also documented as using the property by Bonterra and Dudek.	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 / *Puma concolor*	Camera stations have documented presence during biological monitoring in 2013.[a] This species was also documented as using the property by Bonterra and Dudek.	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.

[a] Ongoing preserve monitoring and wildlife camera monitoring by OCTA and ICF, 2013–2015.

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. There are cultural resources within the Ferber Ranch Preserve in various locations. The results of these surveys are sensitive, and not to be distributed to the public. Therefore, 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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Chapter 3
Preserve Management

The primary purpose of the Ferber Ranch Preserve is to help fulfill the preserve acquisition component of the M2 NCCP/HCP Plan conservation strategy and the compensatory mitigation requirements of the Mitigation Rule for the anticipated Regulatory Agency permits. 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 (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 Ferber Ranch 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 approved 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 and Regulatory 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.
- **Regulatory Agencies.** The USACE, SWRCB, and CDFW will be responsible for reviewing this RMP document for compliance with the long-term management provisions of the Mitigation Rule or their respective State permit regulations, requirements, or guidelines. The Regulatory Agencies will also be responsible for coordination with OCTA, the Preserve Manager, and supporting biologists for compliance with the RMP, the Conservation Easement, and for reviewing and authorizing the permissible uses and beneficial restoration and enhancement activities on the Preserve.

3.1 Public Access

A goal of this RMP is to provide for managed public access and recreational opportunities within the Preserve that are compatible with the protection of biological resources. The Preserve Manager will be responsible for enforcing access restrictions and biological protection measures as part of ongoing access management.

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 public access and 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 by the Trabuco Canyon Company, LLC. Within the Trabuco Canyon Company, LLC landholdings were two stables (one off of Hickey Canyon Road and one off or Rose Canyon Road) where individuals boarded their horses. These individuals, as well as a select number of neighbors, had discretionary access to the Ferber Ranch property. This access, granted by the Trabuco Canyon Company, LLC, allowed use of the roads and trails for horseback riding and hiking purposes. Stable facilities for both of these operations consisted of horse stalls, riding arenas, sheds, and other temporary structures.

The Preserve contains a network of existing dirt roads and trails and is bisected by two vehicular access roads: Hickey Canyon Road and Rose Canyon Road (Figure 11). As previously stated in Section 2.1, *Project Setting*, Trabuco Oaks Road is a County road that becomes Hickey Canyon Road (a private unpaved road) north of the OCTA property line. Hickey Canyon Road provides access (via a recorded access easement) to:

- the Trabuco Canyon Company, LLC,
- an adjacent property owner to the north, and
- emergency access for the Hamilton Trails neighborhood located northwest of the property.

Rose Canyon Road is a privately owned paved road. Rose Canyon Road extends through the middle of the Preserve and provides the only access to the Joplin Youth Center. County staff uses this route on a daily basis as part of normal facility operations. The Joplin Youth Center is not open to the public.

As of October 2011, all public access was prohibited on the property by OCTA. In other words, the previous discretionary access granted by the prior owner was formally revoked. Access to the roads and trails within the Preserve is pending adoption of the NCCP/HCP and this RMP.

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.

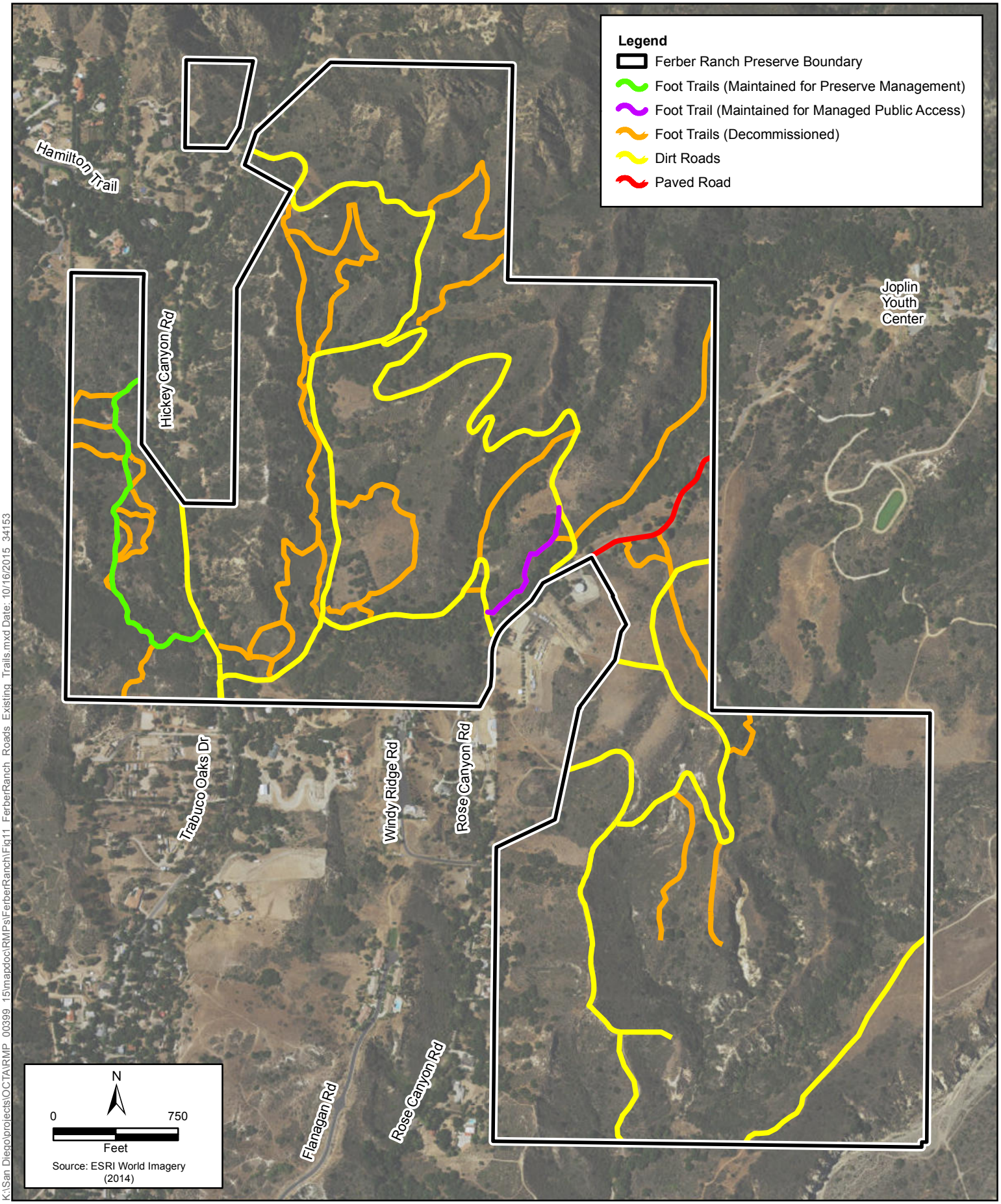


Figure 11
Existing Roads & Trails
Ferber Ranch Resource Management Plan

General principles for public access were drafted that adhered to the M2 EMP objectives and addressed the need to provide complimentary 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/HCP[3] 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 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 and Regulatory Agencies' 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.

d. Permits are anticipated to be issued by the Wildlife Agencies, United States Army Corps of Engineers, and the State Water Resources Control Board (Regulatory Agencies) pursuant to the NCCP/HCP and a comprehensive permitting process with the regulatory agencies. These permits will facilitate with the construction of the M2 freeway improvement projects.

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, as well as the regulatory permits, 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.

[3] 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.

- 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 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, provided by the Preserve Manager, 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 public access opportunities because of significant habitat value[4], 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.

[4] 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.

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 Ferber Ranch 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 Ferber Ranch Preserve is located at the end of two rural roads within unincorporated Orange County. These roads were not designed for higher volumes of traffic, which are anticipated if open public access is allowed. In addition, Rose Canyon Road is a private road. The Preserve does not currently include the necessary space for adequate staging areas (parking/restroom facilities) to facilitate open public access. Signs are posted along Trabuco Oaks Drive that require any existing parking to occur off of the pavement to ensure that the travel way is not blocked (see Figure 12). In addition, the Preserve is surrounded by private property or public lands that currently do not allow public access (see Figure 13). For example, the Ferber Ranch Preserve is partially surrounded by rural residential development. Land owned and managed by CDFW is located directly to the west. CDFW does not currently allow public access. The Joplin Youth Center, a juvenile correctional facility, is located to the northeast; access to this facility is strictly prohibited due to security and privacy related concerns.

Public access on the Preserve will be open during limited, designated docent led hiking and riding days. To date, OCTA has held seven public events at the Ferber Ranch Preserve. In addition, the Preserve Manager (currently OCTA) will initiate a self-managed partnership public access program. The intent will be that key stakeholders (volunteers) will be identified in order to help organize and facilitate additional public access days/events. The stakeholders will be trained to ensure that OCTA upholds its permit responsibility through the NCCP/HCP process. These stakeholders will serve as docents and work closely with the Preserve Manager. If these stakeholders are leading a public access day/event, they will be held responsible and accountable for actions that occur during that event. OCTA is ultimately responsible and accountable to the Wildlife and Regulatory Agencies for the protection of the Preserve.

After the NCCP/HCP is finalized, OCTA anticipates that with the help of community partnerships access events would occur more frequently. This may be in the form of holding either a ride and/or a hike once every other month. This would be in line with the 1(a) and 1(d) of the Draft Model Public Access Framework (Framework). Pursuant to item 2 of the Framework, access is scalable and may increase or decrease from this proposed baseline.

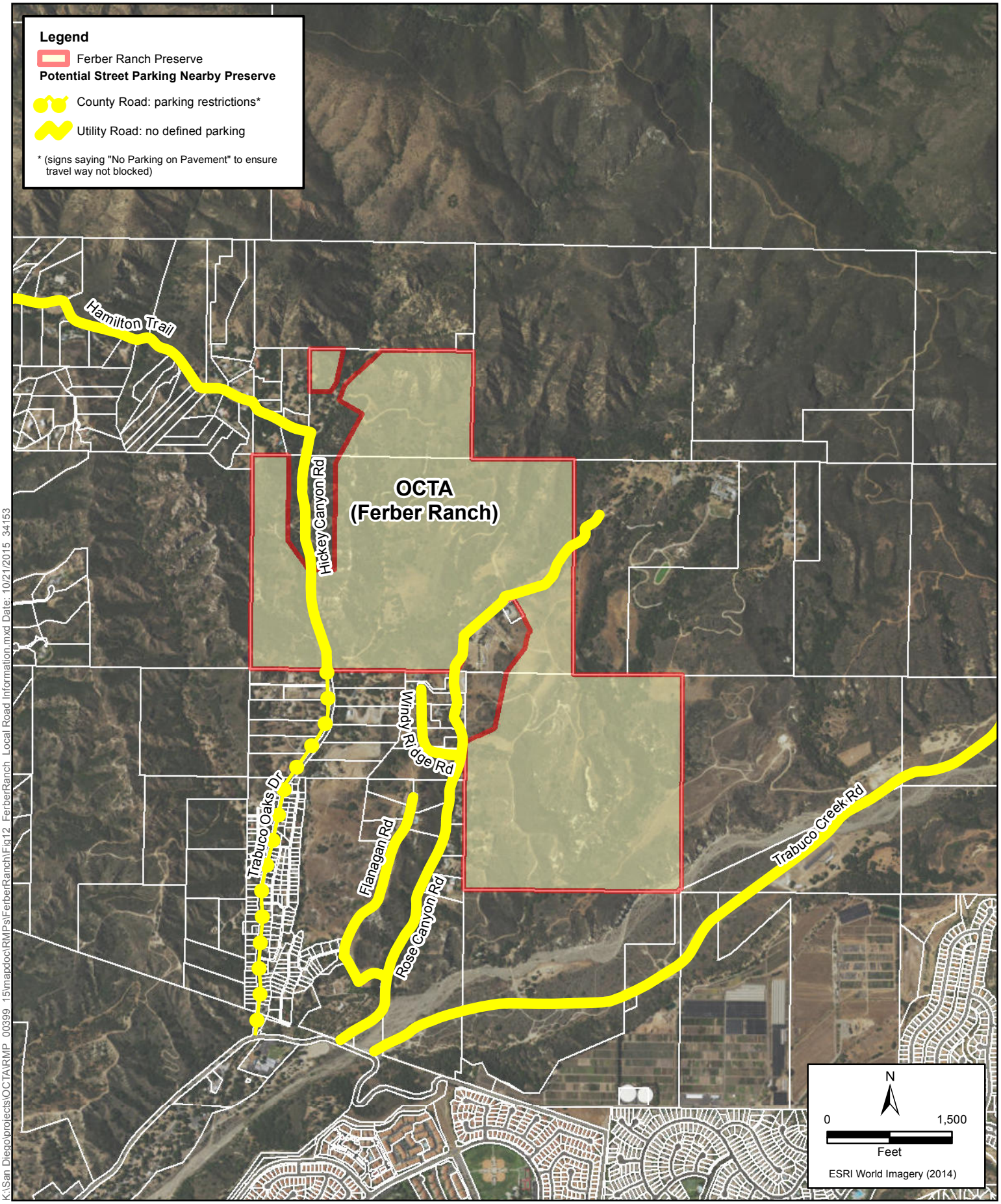


Figure 12
Local Road Information
Ferber Ranch Resource Management Plan

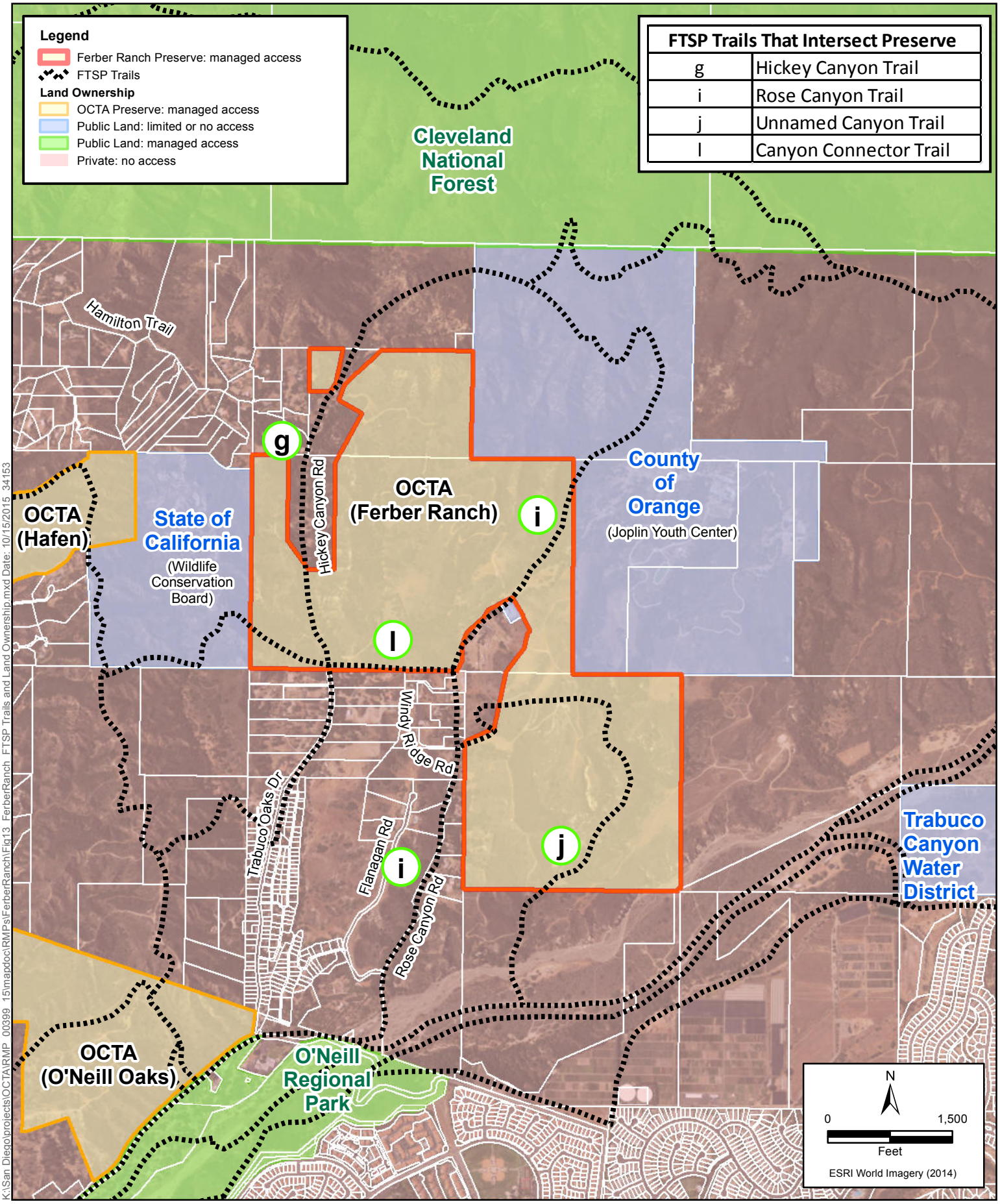


Figure 13
FTSP Trails and Surrounding Land Ownership
Ferber Ranch Resource Management Plan

A long-term Preserve Manager is anticipated to be in place within the next five years. Once the long-term Preserve Manager is established the public access program will be defined and adaptively managed based on the outcome of the previous docent-led access days. The level of public access may increase or decrease, depending on how biological resources respond to the type, amount, and frequency of access. The public access program will adhere to the Guiding Principles and Framework established in Section 3.1.2 and will depend on a variety of factors including the management capabilities of the selected Preserve Manager, as well as community partnerships.

The Preserve Manager will monitor the Preserve related to public access. The intensity (e.g. number of days accessible) of the recreational use at the Preserve will be determined based on the demonstrated ability to implement recreational activities in a manner that does not negatively impact the conserved resources and on the availability of funding and volunteer resources to oversee and monitor the recreational use. The Preserve Manager and OCTA, in coordination with the Wildlife and Regulatory Agencies as necessary, will revise the Public Access Plan to ensure compatibility with biological resource goals and objectives, as warranted.

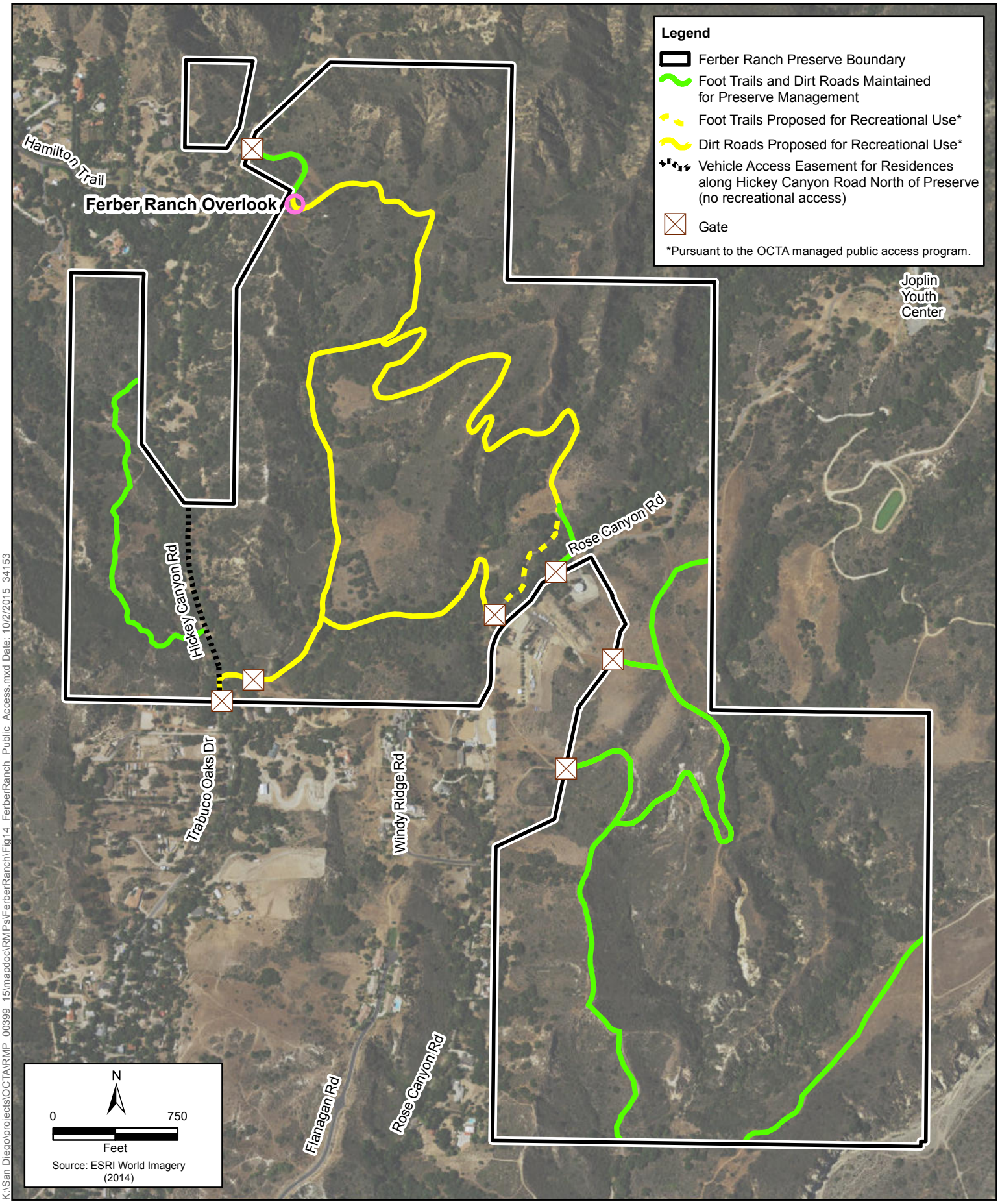
Approved Trails

The final design of the Ferber Ranch approved trails network was determined based on avoidance and minimization of impacts to sensitive biological resources as well as coordination with the Wildlife and Regulatory Agencies. In addition, published scientific research was also reviewed including the paper, *An Efficient Monitoring Framework and Methodologies for Adaptively Managing Human Access on NCCP Lands and Other Reserves in Southern California*" (Irvine Ranch Conservancy 2011) to help finalize the Preserve's trail network.

Based on a review and analysis of the existing trails and biological constraints on the Ferber Ranch Preserve, the trails depicted on Figure 14 will be designated as approved trails for recreational use. A 2.1-mile trail system will be maintained on the northern portion of the Preserve. The trail system will include existing dirt roads and a short, medium width trail that will complete a loop just north of Rose Canyon Road. During approved events, trails will be open during daylight hours only and access will be prohibited during nighttime hours to reduce impacts (noise and light) to wildlife species.

All medium-width paths, sometimes referred to as single-track trails, will be closed to public use (Figure 11), with the exception of the loop trail segment (Figure 14). This segment will be maintained with minimal impacts on conserved biological resources to allow for a complete trail loop system. Providing this small segment of medium-width trail as a trail connection, will keep the trail loop within the interior of the Preserve and limit the use of Rose Canyon Road. Closure and restoration of remaining trails will decrease potential edge effects (indirect impacts) and increase the overall viability of conserved resources. Indirect impacts associated with the proposed trail system have been calculated at 47.5 acres (using a buffer distance of 75 feet around approved trails), which is significantly lower than the 138.5 acres that would be indirectly impacted by allowing access on all of the existing roads and trails. Indirect impacts, such as wildlife flushing and disruption, occur on an ongoing basis when trails are utilized. In addition, trails are known to become dispersal routes for nonnative invasive species.

Access roads south of Rose Canyon Road will be maintained for management (protection and monitoring of the Preserve) and emergency use, but will not be open for recreational use. The southern portion of the Ferber Ranch Preserve has been designated as a wildlife refugia area because it has fewer edge effects, includes sensitive habitats (e.g., larger patches of native grassland), and has been documented as a wildlife movement area.



K:\San Diego\projects\OCTA\RMP 00399 15\mapdoc\RMPs\FerberRanch\Fig14 FerberRanch Public Access.mxd Date: 10/2/2015 34153

Figure 14
Public Access
Ferber Ranch Resource Management Plan

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.

The FTSP identified four trails within the boundaries of the Ferber Ranch Preserve. These trails are named the Hickey Canyon Trail (g), Rose Canyon Trail (i), Canyon Connector Trail (l) and an Unnamed Canyon Trail (j). Many of these trails traverse the Ferber Ranch Preserve and then continue on to privately owned lands and/or publicly owned lands that do not currently allow public access (see Figure 13).

The trails depicted in the FTSP and how they relate to the management of the Ferber Ranch Preserve are discussed in further detail below.

- **Hickey Canyon Trail (g)** – This trail is a dirt road also known as Trabuco Oaks Drive/Hickey Canyon Road (Trabuco Oaks Drive becomes Hickey Canyon Road). Access to this road is currently being provided, and will continue for neighboring parcel owners per existing reciprocal access agreements as well as to the Hamilton Trails neighborhood (located west of the Preserve) in emergency situations. Hickey Canyon Trail continues through the OCTA owned Preserve and then onto private property. In the future, if the adjacent private property owner(s) allow public use of this trail, OCTA would be willing to coordinate and discuss additional use of this trail within the Preserve. Currently, the adjacent private property owner(s) does not encourage/allow public access.
- **Rose Canyon Trail (i)** – Rose Canyon Trail is actually an existing paved road known specifically as Rose Canyon Road. Access to the Rose Canyon Trail/Road will continue uninterrupted as this portion of the trail that bisects the Ferber Ranch Preserve is a paved open roadway. Rose Canyon Road is privately owned by adjacent neighbors. This trail/road currently continues north to a security gate that is owned and operated by the Joplin Youth Center. The route of this trail then becomes unauthorized as it deviates to the west of the paved road, onto the Ferber Ranch Preserve just south of the Joplin Youth Center. It traverses through sensitive oak woodland habitat (within the Ferber Ranch Preserve) and continues north through County owned land. This unauthorized trail is a security issue as public access is prohibited through the County property, due to the operation of the Youth Center. This portion of the trail is also detrimental and causing erosion damage and scarring to oak woodland habitat within the Ferber Ranch Preserve. If the County allows future public access through its property, OCTA would be willing to coordinate and discuss realigning this trail and granting access to another less sensitive location within the Preserve.

- **Unnamed Canyon Trail (j)** – The Unnamed Canyon Trail depicts a trail that traverses the southern portion of the Ferber Ranch Preserve. This trail (as depicted on the FTSP graphic) does not currently exist at the Ferber Ranch Preserve. There is a trail within the southern portion of the Preserve that connects to the private property to the south of the Preserve. Use of a trail at this location would encourage trespassing through private property to the west and to the south of the Preserve. These private property owners have expressed to OCTA that they do not allow public use of their property. In the future, if the adjacent private property owners allow public use of this trail, OCTA would be willing to coordinate and discuss use of a trail within the Preserve to support an offsite connection.
- **Canyon Connector Trail (l)** – A trail exists within the Ferber Ranch Preserve that loosely aligns with the FTSP designated Canyon Connector Trail. This trail traverses from Rose Canyon Road across the Preserve to Trabuco Oaks Drive/Hickey Canyon Road and then ultimately to private property to the west of the Preserve which is currently owned and managed by CDFW. The portion of the trail that connects Rose Canyon Road to Hickey Canyon Road will be available as part of the managed access program for this Preserve. It is a designated fire/management road that is maintained and utilized on a regular basis for Preserve monitoring activities. The western portion of this trail leads into 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. A realignment should be considered as the current depicted western portion of this trail does not exist.

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 does not exist at the Ferber Ranch Preserve. Currently, OCTA has been partnering with OC Parks (O'Neill Regional Park) during public access events in order to minimize impacts on neighbors and streets due to traffic and parking in front of private residences. O'Neill Regional Park is approximately one mile south of the Ferber Ranch 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).

Street parking near the Ferber Ranch Preserve is limited (see Figure 12). Along Trabuco Oaks Drive, the County of Orange has indicated that there are no specific parking restrictions, however, there are signs (No Parking On Pavement) along the entire roadway to ensure parked vehicles are not blocking the travel way. Other streets in the vicinity (Rose Canyon Road, Flanagan Road, Windy Ridge Road, Hamilton Trail) are private roadways with no defined parking status.

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., use of closed trails, illegal dumping of waste materials and debris, and encroachment) in sensitive areas to protect biological resources on the Preserve. Damage caused by unauthorized public 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 to communicate safety measures, resource protection measures, and recreational use and access guidelines to public users. Public outreach and education, including educational materials, docents, and volunteers will supplement Preserve patrol efforts.

All persons using the Preserve for general access or recreational purposes, as well as persons responsible for authorized management and maintenance activities, will be encouraged to participate in "self-monitoring and policing" programs to minimize impacts on protected biological resources. For example, trail user groups will be encouraged to self-monitor and police their community to minimize off-trail activities and other abuses to habitat resources within the Preserve.

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

- **Minor infractions** (e.g., hiking on a closed trail, bringing a dog into the Preserve, unauthorized equestrian use, 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., off-road vehicle use, cutting new trails, dumping, vandalism, encampments [itinerant workers and transients], 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 make adjustments, as needed, to site access and recreational activities (including adjusting hours/days of use and restricting road and preserve access) to ensure protection of biological resources. Repeated offenses (minor and/or major) by the same user or users will provide grounds for permanent loss of access to the entire Preserve as a means of avoiding unacceptable adverse impacts on habitats/species within the Preserve. This will be enforced with the use of local law enforcement as well as public education regarding the reasons for closure and the corrective actions needed to reopen it.

Repeated offenses by multiple users will provide grounds for the temporary closure of trail segments and, when necessary, the entire Preserve as a means of avoiding unacceptable adverse impacts to habitats/species within the Preserve. Such temporary closures, again paired with public education efforts, will also serve to inform users regarding the need and reasons to obey Preserve rules and regulations, thereby reducing future recreational impacts on biological resources of the Preserve.

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

3.2 Invasive Plant Species Control

Invasive plants have been identified as a threat to natural communities and species on the Preserve and invasive plant control is expected to be a long-term, ongoing management issue. High priority invasive plant species identified during baseline surveys include the following.

- Giant reed – this species occurs in scattered patches in coast live oak woodland in Rose Canyon Creek.
- Salt cedar – this species is scattered throughout arroyo willow thickets (1.87 acres).
- Pampas grass – this species occurs in scattered patches within California sagebrush scrub in the southern portion of the Preserve.
- Cardoon – this species is established in California sagebrush scrub, needle grass grassland/semi-natural herbaceous stands, and semi-natural herbaceous stands. While cardoon occurs in scattered patches in California sagebrush scrub, it is more dominant in needle grass grassland/semi-natural herbaceous stands and semi-natural herbaceous stands.

The Preserve Manager will contract with a Restoration Ecologist to prepare an invasive plant treatment plan within two years of RMP adoption. 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. 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 treatment plan will be reviewed and approved by the Wildlife and Regulatory Agencies. The treatment 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. Priority species include (but are not necessarily limited to) giant reed, salt cedar, pampas grass, and cardoon. The mapping of invasive plant species will be maintained over time through surveys completed by the Preserve Manager, Monitoring Biologist, or volunteers, focusing on areas that function as natural conduits for dispersal (trails, streams, disturbed areas). Surveys will be conducted during general stewardship monitoring, biological monitoring, or volunteer patrols. The invasive species map will be updated yearly based on mapping results.
- Specific guidelines for control of giant reed, salt cedar, pampas grass, and cardoon will be identified and any additional target-specific removal methods, as necessary, to supplement or modify methods listed in Appendix C, “Invasive Plant & Habitat Restoration Specifications.”
- 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.
- 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 (giant reed, salt cedar, pampas grass, and cardoon), 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 Ferber Ranch Preserve associated with trail closures (Section 3.1), invasive plant species control (Section 3.2), response to fire events (Section 3.5), and biological monitoring and management (Chapter 4). At this point in time, specific habitat restoration activities have been identified for trail closures. Additional restoration activities associated with other priorities may be warranted in the future based on monitoring and future conditions.

3.3.1 Habitat Restoration of Closed Trails

Many of the existing smaller foot trails on the Preserve will be closed for public access (see Section 3.1 and Figure 9) and initially allowed to passively restore back to natural habitat. During the first five years after adoption of the RMP, the Preserve Manager will monitor conditions at 10 to 15 representative trail locations using photo monitoring methods to track progress of passive restoration. After five years the goal will be to have native plant cover of at least 70 percent of the closed trails. Results of the effectiveness of passive restoration of closed trails will be reported in the Annual Report. After five years, the Preserve Manager, in consultation with the Restoration Ecologist, may determine the need for active (versus passive) restoration, including invasive plant control and supplemental seeding, to improve the cover and quality of native habitat on closed trails.

If active restoration is determined necessary, the Preserve Manager will have the Restoration Ecologist develop a Trail Restoration Plan. This plan will include a fine-scale map of treatment area(s), along with guidelines for (1) site preparation, including any needed soils treatments, grading, supplemental water, and weed control; (2) plant establishment, including planting and seeding palettes and methods; and/or (3) follow-up maintenance, including weed control, supplemental water, pest control, and re-planting/re-seeding. The Trail Restoration Plan should consider current site conditions, including soils, hydrological conditions, accessibility, proximity to municipal water sources, existing invasive plant species, and existing onsite and adjacent biological resources. The Restoration Ecologist will monitor active trail restoration on a quarterly basis for a minimum of one year following implementation. Monitoring will include a qualitative assessment of native plant cover, including progress towards meeting the 70-percent coverage goal; identification of invasive plant species establishment; documentation of unauthorized encroachment and related vandalism and damage; and identification of necessary remedial actions, including additional native seeding, adjustments to invasive plant control methods and timing, and modifications to site protection measures.

3.4 Vegetation Management

Pruning, cutting, or clearing of native vegetation will generally be avoided except for maintenance along access roads and approved recreation trails, trimming of fuel modification zones around existing structures, 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 D). The Preserve Manager will be responsible for ensuring all staff working within the Preserve understands and follow procedures set forth for vegetation management.

3.4.1 Vegetation Management along Access Roads

The Preserve Manager will have General Maintenance staff to perform vegetation management along the designated access roads within the Preserve to allow for vehicle access for preserve management and fire protection activities. Vegetation management will be a combination of physical trimming of vegetation and application of herbicide treatment along the edges of access roads. Impacts on narrow endemic plant populations, including intermediate mariposa lily, will be avoided by flagging known occurrences and avoiding herbicide treatments 10 feet from known occurrences.

3.4.2 Vegetation Management around Existing Structures

OCFA policy for maintaining a defensible space requires selective thinning of vegetation 100 feet around habitable structures. The Preserve Manager will coordinate with the County of Orange and the surrounding property owners to monitor new development adjacent to the Preserve to ensure all fuel maintenance activities are accommodated outside the Preserve boundary. Proposed new habitable structures will be placed at a minimum of 100 feet from the Ferber Ranch Preserve line to avoid fuel maintenance within the Preserve.

There are three existing structures adjacent to the Preserve that require fuel maintenance zones be maintained within the Ferber Ranch Preserve (Figure 15). OCTA, in coordination with the OCFA and property owners, has established guidelines and boundaries for the vegetation management around these existing structures. The OCFA's goal for providing defensible space for these properties is to maintain slope stability through the selective thinning of existing vegetation within a maintenance zone that extends 100 feet from habitable structures. The boundaries of each fuel modification zone will be staked with clearly visible markers to ensure that fuel modification is restricted to the appropriate locations.

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 worked 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 (see Figure 15).

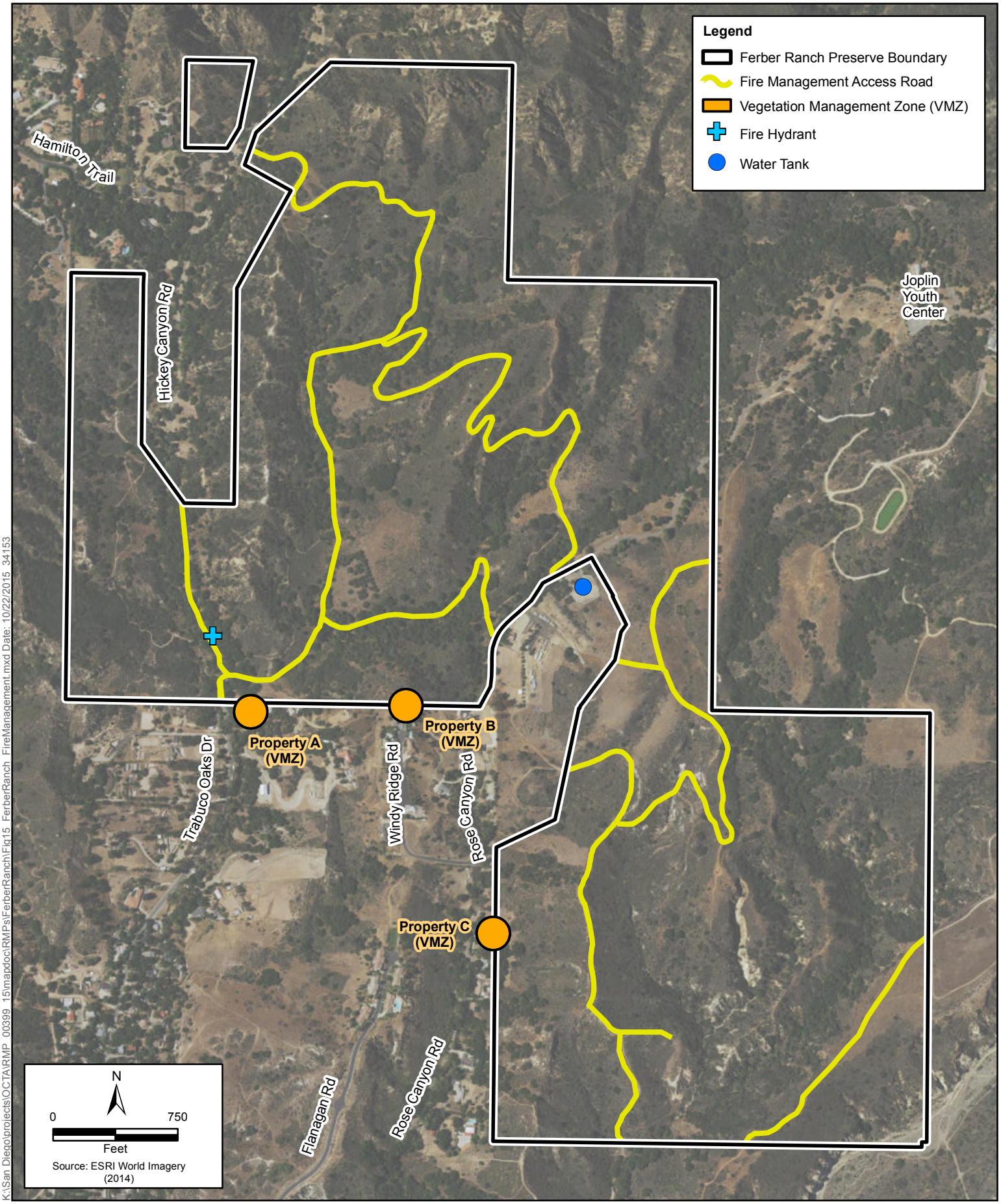


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Figure 15
Vegetation Management Zones and Other Fire Management Factors
Ferber Ranch Resource Management Plan

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 (e.g., native grassland). A map will be prepared that shows fire management and ESLs consistent with the OCFA regional fire management program and will include the following.

- 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., needlegrass grassland, coast prickly pear scrub, and locations of previously recorded cactus wren and coastal California gnatcatcher 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.

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 Manger, 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.

- Close trails 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 users to call and report suspicious activity or fires to the 911 dispatch center.
- Post signs instructing Preserve users 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, Wildlife Agencies, and Regulatory Agencies as necessary, to determine if habitat restoration is warranted. The OCTA NCCP/HCP Administrator and Preserve Manager will work with the Wildlife Agencies, Regulatory 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 and Regulatory 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.
- Empty all trash receptacles located on the Preserve on a regular basis.

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 for visitors and minimize impacts on Covered Species and natural communities. Secure litter containers (e.g., closed, wildlife-proof garbage cans and recycling bins) will be provided at access points at Preserve boundaries, as appropriate. If necessary, regularly scheduled garbage collection will be implemented to minimize attraction of nuisance species.

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 and Preserve visitors to educate the public about the importance of minimizing edge effects such as nighttime lighting and noise.

3.7.3 Fencing

OCTA has installed fencing around the exterior of the property using three-strand, smooth wire. Fence type and placement was designed to limit human access but maintain wildlife movement. In addition, gates have been installed to control access to access roads and trails. The Preserve Manager will be responsible for monitoring and maintaining fencing and gates to control public access and trespassing. 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 public access, including the old mining location on the southern part of the Preserve. 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.

There is remnant barbed wire fencing within the interior of the Ferber Ranch Preserve. The Preserve Manager will identify interior fencing that should be removed and develop a plan for removal methods.

3.7.4 Signage

The Preserve Manager will be responsible for installing and maintaining signs at key access points to provide visitors with information on Preserve rules, recreational features (including trails), and biological and cultural resources (as appropriate). The Preserve Manager should install signs at Preserve boundaries, selected roads, and natural features to indicate permitted and prohibited uses in the Preserve, including appropriate visitor behavior, trail use, safety, and resource protection. Signage may include (but is not limited to) the following.

- Speed limit signs along roads within the Preserve that are accessible to vehicles.
- Road/trail map signs that indicate roads and trails that are open to the public, as well as trail closures.
- Interpretative signs or kiosks that provide information on protected resources.
- Temporary signage indicating active habitat restoration/enhancement areas.
- Rules and regulations signs that indicate prohibited activities including (but not necessarily limited to) 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. These activities will not include imported rock, other hardscape, or standard engineered structures without prior authorization from the Regulatory Agencies and exhausted evaluation and exclusion of bioengineering options.

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 recreational, operational, and safety uses within the Preserve.

- Allow limited passive recreational activities within the Preserve (e.g., hiking and equestrian uses) during daylight hours; refer to Section 3.1, *Public Access*, for additional information on conditionally allowed recreational uses within the Preserve.
- Allow residents along Hickey Canyon Road to traverse the Preserve along Hickey Canyon Road per easement agreement.
- 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 road and trail stream crossings with the least environmentally damaging practices and designs including minor grading of streambanks for small at-grade crossings that are left natural and stabilized with native plantings or other approved material.
- Allow for the replacement of road or trail stream crossings with the least environmentally damaging design limited to bridges, bottomless arch culverts, or embedded round culverts as long as natural stream processes are maintained through avoidance or recreation of the channel cross-section through the structure.

3.8.2 Prohibited Uses

The following activities are prohibited in the Preserve because they are not compatible with Preserve management and 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 and Regulatory Agencies.
- Recreational activities within the Preserve such as the following.
    - 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.

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 trees within the Trabuco Canyon area were identified as being affected by the pest polyphagous shot hole borer/fusarium. 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 goldspotted oak borer beetle, polyphagous shot hole

borer/fusarium, 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. There are cultural resources within the Ferber Ranch Preserve in various locations. The results of these surveys are sensitive, and not to be distributed to the public. Therefore, this information will be kept confidential and not included in

this RMP. The ASA includes directives of how and where cultural resources needed 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.

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, developing an informational website, installing educational kiosks, providing outdoor experiences, etc. The Preserve Manager will coordinate with special interest groups and the Wildlife Agencies to encourage volunteer opportunities, such as trash pick-up and invasive species removal, to support RMP goals and objectives. Other activities to encourage on the Preserve include the Audubon Christmas bird counts that could supplement Preserve monitoring data and inform management strategies.
- Encourage Trail User Groups to participate in "Self-Monitoring and Policing" Programs – the Preserve Manager will collaborate with local and regional trail user groups to minimize instances of off-trail activities and other abuses to habitat resources within the Preserve.

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 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 and Regulatory 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 and the compensatory mitigation requirements of the Mitigation Rule for the anticipated Regulatory Agency permits. However, the Preserve will also provide recreational benefits and 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 Ferber Ranch 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, CNDDB, 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. Monitoring and adaptive management of the jurisdictional waters and associated riparian habitat and adjacent buffers is to ensure the maintenance and/or improvement of aquatic resource functions and services (i.e., condition) in compliance with the Mitigation Rule or other permit conditions by the Regulatory Agencies. 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 and Regulatory 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 and Regulatory 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 and Regulatory 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 1.1.1, 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, SDMMP 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 and Regulatory 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.

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 Ferber Ranch Preserve

Type	Frequency	Protocols/Methods
Vegetation		
Comprehensive	10 Years	Conduct comprehensive vegetation mapping using the classification system from *A Manual of California Vegetation,* second edition,[a] and *Vegetation Classification Manual for Orange County* (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		
Plants		
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 will to determine appropriate survey times (generally between March and July).
Reptiles		
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.

Type	Frequency	Protocols/Methods
Birds		
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]
Least Bell's vireo	4 years	Conduct a total of three surveys (mid-May, June, early July). With the exception of timing and number of visits, surveys will follow the USFWS least Bell's vireo survey guidelines.[f]
Mammals		
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.

[a] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens 2009. *A Manual of California Vegetation*, second edition. California Native Plant Society. Sacramento CA.

[b] Deutschman, D., S. Strahm, D. Bailey, J. Franklin and R. Lewison 2008. *Improving Statistical Sampling and Vegetation Monitoring for Open Space in Central Orange County*. Prepared for The Nature Reserve of Orange County (NROC).

[c] California Native Plant Society (CNPS). 2001. *CNPS Botanical Survey Guidelines*. Sacramento CA. Available: <http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf>. Accessed: August 29 2012.

[d] Corn, P. S., and R. B. Bury. 1990. *Sampling Methods for Terrestrial Amphibians and Reptiles*. USDA Forest Service, General and Technical Report PNW-GTR-256, 34 pp.

[e] USFWS. 1997. *Coastal California Gnatcatcher* (Polioptila californica californica) *Presence/Absence Survey Guidelines.* Report from Carlsbad, California, Field Office, Dated July 28, 1997.

[f] USFWS. 2001. *Least Bell's Vireo Survey Guidelines.* Report from Carlsbad, California, Field Office, dated January 19, 2001. 3 pp.

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 *A Manual of California Vegetation,* second edition.[a] and *Vegetation Classification Manual for Orange County* (release pending).
Covered Species		
Plants		
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]
Reptiles		
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.
Birds		
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.
Least Bell's vireo	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 least Bell's vireo
Mammals		
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.

[a] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens 2009. *A Manual of California Vegetation*, second edition. California Native Plant Society. Sacramento CA.

[b] California Native Plant Society (CNPS). 2001. *CNPS Botanical Survey Guidelines*. 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 include intermediate mariposa lily, which has been detected on the Preserve, and many-stemmed dudleya, which is considered potentially occurring based on the presence of suitable habitat. These species have similar threats and management needs and thus, are addressed together. Identified threats include off-road activity and equestrian activity (Appendix B); additional threats may include invasive plant species, other recreational activities, and road maintenance. 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 1.1.1).

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 vegetation management along access roads, trail use, and other 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 CNDDB). 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 and/or from Public Access and Recreational Activities (Priority 1)

- Implement specific management actions where baseline surveys indicate Covered Plant populations are directly or indirectly impacted by anthropogenic (operational or recreational) threats. Specific management actions may include (but are not limited to) modifications to vegetation management activities along access roads, invasive plant control, public access, and trail use management.
- Within five years of RMP adoption, implement targeted monitoring to assess potential conflicts with vegetation management along access roads. 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 (potentially occurring) and orangethroat whiptail (detected). 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, other recreational activities, and road maintenance. 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 1.1.1).

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 four 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, vegetation management along access roads, and other potential disturbance activity. Record incidental observations of Covered Reptile Species.
- Evaluate the need to implement targeted monitoring to assess potential conflicts with vegetation management along roads and/or with public access and recreational trail use. Monitoring targets may include (but are not limited to) observations of trampling species and/or presence of juveniles. Monitoring may include quantitative methods and an experimental design.
- Refine Covered Species map, based on monitoring results.

Management Task 4.1.2.1.c: Protect Covered Reptiles and Habitat during Property Maintenance and/or from Public Access and Recreational 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 public access and recreational trail use along roads and 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) vegetation management along access roads, invasive plant and animal control, and public access and 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 and coastal California gnatcatcher; both species have been detected 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, 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 2-4), 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 potential habitat is very marginal. 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 1.1.1).

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, vegetation management along access roads, 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 and/or from Public Access and Recreational 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) vegetation management along access roads, invasive plant and animal control, public access and trail use management, and habitat restoration.
- Evaluate vegetation management methods along access roads as well as public access and recreational trail use within five years of RMP adoption to determine if modifications are needed to protect Covered Birds and habitat.
- Evaluate the need to implement targeted monitoring to identify significant impacts on bird populations or habitat from invasive animal species (e.g. cowbirds), vegetation management along roads, or from public access and recreational trail use. 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 been detected 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 1.1.1).

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)

- Utilize 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: 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 public access on the Preserve.

Management Task 4.1.2.3.e: Protect Covered Mammals from Public Access and Recreational Use (Priority 1)

- The Preserve Manager, Monitoring Biologist, and OCTA will evaluate wildlife movement monitoring data in conjunction with public access and recreation uses within two years of RMP adoption to determine whether these uses should be limited or prohibited within the Preserve to minimize human-wildlife interactions.
- Implement targeted monitoring to determine effectiveness of trail closures in enhancing Covered Mammals use of the site or, specifically, wildlife movement. Monitoring targets may include a number of animal occurrences over time or amount of movement. Monitoring may include quantitative methods and an experimental design.
- 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, public access and trail use management, and habitat restoration.

4.1.3 Natural Communities

Natural communities considered in this section include scrub, chaparral, grassland, woodland, and riparian habitats, along with jurisdictional wetlands and non-wetland waters of the U.S. and waters of the State. 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 1.1.1).

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, public access and 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 and Assess Quality of Aquatic Resources (Priority 1)

- CRAM will be updated using the existing baseline scores. This will be completed every 5 or 10 years depending on qualitative changes observed through the annual monitoring efforts. If no changes are clearly recorded in the overall habitats, species occurrences or erosional conditions on roads and trails, a CRAM can be updated every 10 years. If a large natural event occurs such as a fire or flood, CRAM should be completed at the next five year interval to assess changes to the system and help guide adaptive management, restoration, and enhancement activities.

Management Task 4.1.3.e: 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.f: 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.g: 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.h: Protect Natural Communities from Public Access and Recreational Trail Use (Priority 1)

- Evaluate the effects of public access and recreational trail use on natural communities within five years of RMP adoption to determine if modifications are needed to protect sensitive natural communities.
- Implement targeted monitoring, as warranted, to assess potential conflicts with public access and recreational trail use. Monitoring targets may include (but are not limited to) vegetation cover and composition and invasive species cover. Monitoring may use quantitative or semi-quantitative methods and an experimental design, and will be conducted in conjunction with other non-quantitative efforts to monitor trail use and activity (stewardship monitoring).
- Where recreational impacts are identified, protect sensitive natural communities by limiting and adjusting access during the certain seasons, trail closures, or trail realignments, as appropriate.

Management Task 4.1.3.i: 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.j: 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 Ferber Ranch Preserve include the following.

- **Public Access and Wildlife Activity.** Use wildlife movement cameras to monitor and gauge wildlife activity to evaluate changes in the Ferber Ranch Preserve public access policies. This monitoring would be collected while the levels of public access are being reviewed and potentially changed.
- **Covered Plants and Vegetation Management.** Closely monitor the response of Covered Plant Species (e.g., intermediate mariposa lily) to vegetation management actions along the side of access roads.
- **Trails Revegetation**. Collect photo monitoring of the revegetation of closed trails to determine if passive restoration was successful. If not, determine if active restoration is needed.
- **Olive Trees Expansion into Native Habitats**. Monitor the expansion of olive trees into native habitat and determine if management actions are necessary.
- **Vegetation Control around Cactus Patches**. Research current approaches for vegetation management around cactus patches to determine if this is needed at the Ferber Ranch 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. 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, recreational uses, 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, Wildlife Agencies, and Regulatory 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.
- Modifications of resource-protection measures, including the designation of restricted areas of the Preserve, road closures, and seasonal limitations on recreational use, among other measures.
- 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 road repair, site-specific erosion control, and debris clean-up, among other activities.
- Modification of educational and outreach activities, including additional site tours, new signage, interpretive handout materials, and additional community coordination and outreach efforts.
- Changes to the frequency of managed access events consistent with the Public Access Plan.

Chapter 5
Financial Section

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 Ferber Ranch.

- **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 public 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 Ferber Ranch 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 Ferber Ranch 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, and Regulatory 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.

An initial estimate of the endowment funding requirements has been developed by OCTA as part of the M2 NCCP/HCP preparation. The final endowment funding requirements will be based on a Property Analysis Report (PAR) or PAR-like analysis that will be completed by OCTA within five years of signing the IA. This analysis will itemize and define the long-term obligations at each Preserve 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, and Regulatory Agencies as necessary, for the review and approval for the PAR analysis and determination of the permanent endowment funding requirements.

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

Chapter 6
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Appendix A

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

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Appendix A

Table A-1 – Checklist for Ongoing Preserve Management and Biological Monitoring Actions

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
Preserve Management (Chapter 3)						
Public Access (Section 3.1)	Implement a managed access program that allows for public access during limited, designated docent led hiking and riding days.	Ad hoc	○			
	Install, monitor, and maintain gates, signage, and obstructions, as appropriate, to control public access.	Part of monthly visits		○		
	Monitor and control permitted activities and unauthorized activities (e.g., use or creation of unauthorized trails).	Part of monthly visits		○		
	Implement a public education and outreach program focused on public access.	Ad hoc	○			
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		○		
	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				○
Habitat Restoration (Section 3.3)	During the first five years after adoption of the RMP, the Preserve Manager will monitor conditions at 10 to 15 representative trail locations using photo monitoring methods to track progress of passive restoration.	Quarterly				○
Vegetation Management (Section 3.4)	Pruning, cutting, or clearing of native vegetation will generally be avoided except for maintenance along access roads and approved recreation trails, trimming of fuel modification zones around existing structures, and installation of erosion control measures, if necessary.	As needed, but following nesting bird policy and seasonal restrictions	○			

Table A-1 – Checklist for Ongoing Preserve Management and Biological Monitoring Actions

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
Fire Management (Section 3.5)	The Preserve Manager will maintain fuel modification zones in the Preserve approved by OCFA, conduct regular maintenance of weeds along existing fire roads, and maintain existing roads in a condition that will provide safe access for firefighters.	Annual	○			
Nonnative Animal Species Management (Section 3.6)	The Preserve Manager will work towards controlling the spread of invasive ant species.	Part of monthly visits		○		
	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		○		
	Implement and enforce feral and domestic animal restrictions and control.	Part of monthly visits		○		
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	○	○		
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	○	○		
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		○		
	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	○	○		

Table A-1 – Checklist for Ongoing Preserve Management and Biological Monitoring Actions

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
	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 adjacency guidelines.	Ad hoc	○			
Management of Cultural Resources (Section 3.10)	Manage the Preserve in a manner that does not impact sensitive archeological resources.	Ad hoc	○			
Public Outreach and Education (Section 3.11)	Hold public meetings.	Annual	○			
	Provide educational and interpretative materials and maintain website.	Ongoing	○			
	Implement outreach and volunteer program.	Ongoing	○			
	Encourage trail user groups to participate in "self-monitoring and policing" programs.	Ad hoc and part of monthly visits	○	○		
Biological Monitoring and Management (Chapter 4)						
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 three to five 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		○		

Table A-1 – Checklist for Ongoing Preserve Management and Biological Monitoring Actions

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
	Conduct protocols surveys of Covered Reptile Species.	Every 4 years			○	
Covered **Bird** Species (Section 4.1.2)	Conduct periodic monitoring and assessment of Covered Bird Species and their habitat.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Bird Species.	Every four years			○	
	Update and maintain database of cactus patches and cactus wren nest.	Annual	○	○		
Covered **Mammal** Species (Section 4.1.2)	Conduct periodic monitoring and assessment of Covered Mammal Species and their habitat.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Mammal Species.	Every four years			○	
	Monitor fencing to evaluate ways to facilitate wildlife movement while maintaining control of unauthorized access.	Part of monthly visits		○		
Natural Communities (Section 4.1.3)	Conduct comprehensive update of vegetation map.	Every 10 years			○	
	Monitor vegetation plots/transects to track vegetation conditions and trends.	Every four years			○	
	Monitor and assess quality of aquatic resources using CRAM methodology.	Every four years			○	
	Monitor threats to natural communities from nonnative species, invasive pests or disease, unauthorized public access, erosion, and/or edge effects.	Part of monthly visits		○		
Adaptive Management (Section 4.2)	Monitor public access and wildlife activity during the initial establishment of managed public access program.	Quarterly				○

Table A-1 – Checklist for Ongoing Preserve Management and Biological Monitoring Actions

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
	Monitor effectiveness of methods to protect Covered Plants from vegetation management activities along access roads.	Annual				○
	Monitor success of revegetation of closed trails through photo monitoring to determine if additional habitat restoration is warranted.	Quarterly				○
	Monitor olive trees expansion into native habitat to determine if control methods are warranted.	Quarterly				○
	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	10 years	B										X										X								
Targeted Monitoring																														
Monitor public access and wildlife activity	Five years after beginning of access plan					X	X	X	X	X																				

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
Monitor effectiveness of covered plant protection along access roads	Seven years after adoption					X	X	X	X	X	X	X																		
Monitor success of passive revegetation of closed trails through photo monitoring to determine if additional habitat restoration is warranted	Five years after RMP adoption					X	X	X	X	X																				
Monitor olive trees expansion into native habitat to determine if management activities are warranted	Every few years after RMP adoption					X			X																					
Evaluate vegetation growth surrounding cactus patches to determine if vegetation management is warranted	Every few years after RMP adoption						X		X																					

B = Baseline Survey

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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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Appendix B available as a separate PDF file

BaselineBioReportSouthCounty.PDF

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Appendix C

Invasive Plant & Habitat Restoration Specifications

Weed Species/Invasive Plant Control

The Preserve Manager will contract with a Restoration Ecologist to prepare an invasive plant treatment plan within two years of RMP adoption. 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. 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 treatment plan will include specific guidelines for control of high priority species, such as giant reed, salt cedar, pampas grass, and cardoon. These methods will supplement or modify the methods describe below in this Appendix.

Removal of all existing nonnative plant material will use the methods described below, followed by a "grow-and-kill" program that is intended to exhaust the nonnative plant seed bank in the soil to minimize the re-establishment of these species. All nonnative plant/weed control activities will occur during the non-nesting bird season (September 16 to January 31). If control of invasive/weed species is performed during the nesting bird season, nesting bird surveys will be performed, as described in Appendix D of the Ferber Ranch RMP. Appropriate methods of weed control will be determined through consultation among the Restoration Ecologist, the Restoration Contractor, and Preserve Manager staff, based on site conditions and will include one or more of the methods described below. Only herbicides approved by the United States Environmental Protection Agency for wetland areas will be used within drainage areas and areas near surface water. Specific herbicide application rates and methods will be based on the manufacturer's specifications and will follow the general guidelines summarized below.

- Herbicides will be applied in a manner that ensures that each plant receives a comprehensive and fully effective treatment, and that resprouting from root materials is minimal. Application methods will follow the manufacturer's specifications regarding application and safety procedures. Herbicide application will only be performed by licensed Applicators and will comply with State and local regulations. All application tasks will be performed by or under the supervision of a licensed Applicator that has a Qualified Applicator Certificate or Qualified Applicator License issued by the California Department of Pesticide Regulation.
- Application will consist of one or more of the following methods: (1) spot applications (foliar spray) to individual plants where weed coverage is sparse; (2) broadcast applications (foliar spray) to dense patches of weed species; (3) "painting" of freshly cut stumps; (4) "slash and paint" application to gashes cut in tree trunks; and (5) other ecologically and horticulturally suitable methods determined by the Restoration Ecologist and Preserve Manager. Applications shall be on a spray-to-wet basis, and coverage shall be uniform and complete. Contact with native shrub and grass species shall be avoided as much as possible. In the event of gusty winds or winds in excess of five miles per hour, all work will be temporarily

discontinued to protect Applicators and adjacent natural resources. Treatments shall also be temporarily discontinued in the event of rainfall since rainfall reduces the effectiveness of the herbicide.

- All herbicide application in the vicinity of surface waters or other sensitive natural resources will be performed using strict avoidance measures under the supervision of Preserve Manager staff. Only non-ionic surfactants shall be used for approved herbicides in the vicinity of surface waters.
- Sprayed vegetation shall be left undisturbed for seven days to allow the herbicide to be distributed throughout the entire plant. Visible effects of herbicide application consist of wilted foliage, brown foliage, and disintegrated root material.
- All treated plant materials shall be removed by a string trimmer or other appropriate equipment and disposed of in a landfill off site.
- The steps listed above shall be repeated two to three times every two to three weeks following the initial treatment as part of a "grow-and-kill" program to remove seedling weed species.

The discussion below describes the most prominent nonnative invasive plants (giant reed, artichoke thistle, and salt cedar) that have been documented in the Preserve. Each of these plants are considered principle target species for control or elimination because of their ability to compete with native species, and/or their effects on the general health of the environment.

Giant Reed (*Arundo donax*) – Target Species

Giant reed is a highly invasive member of the grass family that has spread throughout the wetlands of the western United States. Although not reproducing by seeds, giant reed rapidly spreads through riparian areas by vegetative means. For instance, pieces of stalks that break off and then become embedded into soil will grow a new plant. If allowed to obtain sufficient height, the tall stems will arch-over and when touching the ground will grow. Often it is introduced into areas as illegally dumped green waste.

Giant reed provides little, if any, habitat for native species. It uses roughly three times the amount of water as native species, usurps habitat of native species, can choke waterways during flood events causing infrastructure damage, and can rapidly spread wildfires.

Giant reed stores its energy underground, and so merely cutting it down will not eradicate it. It grows best during the spring and early summer months when temperatures begin to rise and soils are still relatively moist. During the winter, although still active, this species grows much slower. It will grow exceedingly rapidly following a wildfire.

Currently at the Preserve, giant reed occurs in scattered patches within the coast live oak woodland along Rose Canyon Creek.

Artichoke Thistle (*Cynara cardunculus*) – Target Species

Artichoke thistle is a perennial herbaceous weed supporting very large basal rosettes of leaves, sometimes up to four feet across, and bright purple flowers on flowering stalks that can reach up to five feet in height. It is commonly associated with disturbed sites, particularly grazed sites within coastal influences. It does well in clay soils, and as a result is a threat to the populations of intermediate mariposa lily (Covered Plant Species) that occur at the Preserve.

Artichoke thistle will germinate in mid-winter, but can still grow from seeds well into June or July depending upon rainfall. It usually flowers in mid to late spring. Its most rapid growth is during cool wet months, and summer heat tends to slow growing. It can obtain densities of over 20,000 plants per acre (Thomsen et al. 1986). Seeds can last up to five years in the soil. Its negative effects are both direct and indirect. With its dense stands of robust and sharp spines, it limits wildlife movement. Likewise, its dense stands completely shade out native plants and usurp food and water from natives. Because of its deep tap roots and its ability to resprout from its underground parts, grazing, mowing, or prescribed fire are generally ineffective in the long run.

Artichoke thistle is established at the Preserve within the following vegetation types: California sagebrush scrub, needle grass grassland/semi-natural herbaceous stands, and a sub-association of semi-natural herbaceous stands. Artichoke thistle coverage in California sagebrush scrub consists of scattered patches, whereas it was more dominant in needle grass grassland/semi-natural herbaceous stands and semi-natural herbaceous stands.

Salt Cedar (*Tamarisk ramosissima*) – Target Species

Tamarisk is one of the most well-known and extremely invasive species found throughout the world. *T. ramosissima* is one of five invasive tamarisk species known in California (Baum 1978 as reported in UC Press 2000). Native to central Asia, it is thought to have been introduced by the Spaniards. It is generally a small tree, which produces feathery pink inflorescences with copious numbers of seeds. It is reported that one plant can produce up to 500,000 seeds (DiTomaso 1996). The thin leaves have salt glands, and it is often possible to observe salt crystals on them. It can reproduce from either seeds or vegetatively from broken-off pieces of leaves and stems.

The effects of tamarisk are many, and include the changing of soil chemistry by the release of salt as the leaves degrade. This in turn can inhibit germination and growth of many plants (Anderson 1996). It re-sprouts quickly following fires, and as a result, can quickly dominate riparian habitats (UC Press 2000). Tamarisk is a phreatophyte. These plants quickly send down a deep tap root to the water table, at which point secondary roots spread laterally (UC Press 2000). As a result, tamarisk has significant effects on local water resources. It has been reported that in the Colorado Desert, within a few weeks of removal of tamarisk from a desert wash, open water ponds had become established (ICF 2012).

Tamarisk represents a major threat to the riparian habitats at the Preserve and downstream within Trabuco Creek. Because of the copious amount of seed produced and the extremely aggressive nature of the species, any individuals of this species should be removed immediately. All new seedlings should be immediately removed by hand pulling if possible. If not, then they should be sprayed right away to prevent any additional seeds from getting into the soil. The most common control technique is cut-and-daub using triclopyr (as Garlon4™or Garlon 3A™) or glyphosate. Each of these herbicides is approved for use within or adjacent to water. Follow-up inspections should be carried out throughout the year during routine patrols.

Within the Preserve, salt cedar has only been identified scattered within the arroyo willow thickets.

Ongoing Control of Target Species

If native plant establishment occurs after initial weed control, follow-up nonnative species control will largely consist of hand-pulling invasive species. Herbicide use shall occur only in areas where

native species will not be affected and only after consulting the Preserve Manager. The site-protection measures described in Section 3.2 of the RMP will be implemented as appropriate throughout all weed-control activities.

The Preserve Manager and Restoration Ecologist will assess site conditions in the closed footpath areas and invasive plant species removal areas during ongoing management and assessment activities performed in these areas for up to five years to determine the need for additional follow-up weed control or adjustments to control methods.

Habitat Restoration & Plant Establishment

Native plant establishment will occur in closed footpaths if the Restoration Ecologist determines that native plant recruitment is insufficient in these areas, and will consist of native plants typical of the native vegetation types adjacent to each of the trails. Depending on the type of habitat being restored, the plant palettes will provide a mix of grass, herbaceous, and shrub species that are locally native and appropriate for Ferber Ranch vegetation types. The seed mixes and quantities in Tables C-1 through C-8 are based on the vegetation types and acreage associated with each of the closed trails. The source of cuttings and seed material will be within a 20-mile radius of the Ferber Ranch Preserve, unless otherwise approved by the Resource Wildlife and Regulatory Agencies.

Plant establishment will consist of the use of the seed mixes and cuttings summarized in Tables C-1 through C-8 and will be performed between October 1 and January 31 when weather and soil conditions are suitable for native plant establishment. In this way, seasonal rains can be used to facilitate seed mix germination and plant establishment. Specific timing will be determined by the Restoration Ecologist, in coordination with the Preserve Manager and the Restoration Contractor.

- Because the closed footpaths are only accessible by foot, seed mixes will be applied by hand. All seeds will be clearly labeled showing type of seed, test date, supplier name, seed source, and percentage of the following: pure seed, crop seed, inert matter, weed seed, noxious weeds, and total germination content. All material will be delivered to the appropriate trail location in original, unopened containers bearing the manufacturer's guaranteed analysis of the seed material. All seed mixes will be stored in a dark, cool place and will not be allowed to become damp. A granular myccorhizal inoculant may be used in the seed mixes to facilitate plant establishment and to enable native plants to out-compete weed species.
- The Restoration Ecologist will identify the location of each of the seed mixes based on the approximate seed mix application area for each vegetation type shown in Tables C-1 through C-8 and will conduct field inspections during seed mix application.
- Soil surfaces will be disked or raked prior to application to provide roughened, loose soils suitable for seed mix germination and establishment.
- Because the closed footpaths do not have vehicular access and are not near municipal water sources, seasonal rainfall will be used to germinate and establish seed mix species.
- Coast prickly-pear (*Opuntia littoralis*) pads will be salvaged and planted in closed trails within coast prickly pear scrub the same time that seeding is performed. The Restoration Contractor will ensure that *Opuntia littoralis* pads are the only species salvaged for restoration activities. *Opunita ficus indica*, a nonnative cactus, is known from the Preserve, and pads of this species shall not be salvaged for restoration activities. Locations will be determined by the Restoration Ecologist in coordination with the Restoration Contractor.

- Up to 20 mulefat cuttings will be planted in trails within mulefat thickets the same time that seeding is performed. Locations will be determined by the Restoration Ecologist in coordination with the Restoration Contractor.

The Preserve Manager and Restoration Ecologist will assess site conditions during ongoing management and assessment activities at the frequencies described in Section 3.2 of the RMP for up to five years to determine the need for additional seed mix application, follow-up weed control, and/or additional monitoring activities.

Table C-1
California Sagebrush Scrub Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.61 acre
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed	90	60	4.0	2.4
Artemisia californica	California sagebrush	15	50	5.0	3.1
Artemisia dracunculus	tarragon	–	–	1.0	0.6
Asclepias fascicularis	narrow-leaf milkweed	–	–	0.5	0.3
Baccharis pilularis ssp. *consanguinea* [*B. pilularis*]	coyote brush	2	40	1.0	0.6
Bloomeria crocea	common goldenstar	–	–	0.5	0.3
Clarkia purpurea	winecup clarkia	–	–	0.5	0.3
Dichelostemma capitatum	blue dicks	–	–	1.0	0.6
Elymus condensatus [*Leymus c.*]	giant wild rye	70	80	0.5	0.3
Eriogonum fasciculatum	California buckwheat	10	65	4.0	2.4
Eriophyllum confertiflorum	golden-yarrow	30	60	0.5	0.3
Hazardia squarrosa	saw-toothed goldenbush	15	20	0.5	0.3
Marah macrocarpus	wild cucumber	95	80	0.5	0.3
Mimulus aurantiacus var. *puniceus*	orange bush monkeyflower	5	70	1.0	0.6
Mirabilis laevis var. *crassifolia* [*M. californica*]	wishbone bush	7	10	0.5	0.3
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting	10	25	0.5	0.3
Salvia apiana	white sage	70	50	1.0	0.6
Salvia mellifera	black sage	70	50	1.5	0.9
Stipa lepida [*Nassella l.*]	foothill needlegrass	60	60	1.0	0.6
Stipa pulchra [*Nassella p.*]	purple needlegrass	70	60	1.0	0.6
			Total	**30.0**	**18.1**
Germ: germination; lbs: pounds					

Table C-2
Chamise – Laurel Sumac – Lemonade Berry Chaparral
With California Sagebrush Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.17 acre
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed	90	60	6.0	1.0
Adenostoma fasciculatum var. *fasciculatum*	common chamise	–	–	5.0	0.9
Artemisia californica	California sagebrush	15	50	3.0	0.5
Chlorogalum pomeridianum	wavy-leaved soap plant	–	–	1.0	0.2
Eriogonum fasciculatum	California buckwheat	10	65	1.0	0.2
Hazardia squarrosa	saw-toothed goldenbush	15	20	1.0	0.2
Heteromeles arbutifolia	toyon	95	40	2.0	0.3
Keckiella cordifolia	heart-leaved penstemon	40	40	2.0	0.3
Lonicera subspicata var. *denudata*	southern honeysuckle	–	–	2.0	0.3
Marah macrocarpus	wild cucumber	95	80	0.5	0.1
Mimulus aurantiacus var. *puniceus*	orange bush monkeyflower	5	70	2.0	0.3
Mirabilis laevis var. *crassifolia* [*M. californica*]	wishbone bush	10	15	1.0	0.2
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting	10	25	1.0	0.2
Salvia apiana	white sage	70	50	1.0	0.2
Salvia mellifera	black sage	70	50	1.0	0.2
			Total	**31.0**	**5.4**
Germ: germination; lbs: pounds					

Table C-3
Chamise Chaparral Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.10 acre*
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed	90	60	6.0	0.6
Adenostoma fasciculatum var. *fasciculatum*	common chamise	–	–	5.0	0.5
Chlorogalum pomeridianum	wavy-leaved soap plant	–	–	2.0	0.2
Eriogonum fasciculatum	California buckwheat	10	65	3.0	0.3
Heteromeles arbutifolia	toyon	95	40	2.0	0.2
Keckiella cordifolia	heart-leaved penstemon	40	40	2.0	0.2
Lonicera subspicata var. *denudata*	southern honeysuckle	–	–	2.0	0.2
Marah macrocarpus	wild cucumber	95	80	1.0	0.1
Mimulus aurantiacus var. *puniceus*	orange bush monkeyflower	5	70	2.0	0.2
Mirabilis laevis var. *crassifolia* [*M. californica*]	wishbone bush	7	10	1.0	0.1
Salvia apiana	white sage	70	50	1.5	0.2
Salvia mellifera	black sage	70	50	1.5	0.2
			Total	**30.0**	**3.1**

Germ: germination; lbs: pounds

* 0.03 acre was rounded up to 0.10 acre

Table C-4
Coast Live Oak Woodland Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.36 acre
Acmispon americanus [*Lotus purshianus*]	American lotus	90	60	4.0	1.4
Artemisia douglasiana	mugwort	10	50	3.0	1.1
Epilobium canum	California fuchsia	–	–	2.0	0.7
Eucrypta chrysanthemifolia	common eucrypta	–	–	0.5	0.2
Lathyrus vestitus ssp. *Vestitus*	chaparral sweet pea	–	–	0.5	0.2
Marah macrocarpus	wild cucumber	95	80	0.5	0.2
Muhlenbergia rigens	deergrass	60	50	1.0	0.4
Phacelia cicutaria	caterpillar phacelia	95	80	2.0	0.7
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting	10	25	1.0	0.4
Rhamnus ilicifolia	hollyleaf redberry	–	–	2.0	0.7
Rosa californica	California rose	–	–	2.0	0.7
Sisyrinchium bellum	western blue-eyed grass	95	75	1.0	0.4
Solanum douglasii	Douglas' nightshade	90	20	1.0	0.4
Stipa lepida [*Nassella l.*]	foothill needlegrass	60	60	1.5	0.5
Stipa pulchra [*Nassella p.*]	purple needlegrass	70	60	1.5	0.5
Symphoricarpos mollis	creeping snowberry	–	–	1.0	0.4
Verbena lasiostachys var. *lasiostachys*	western verbena	50	50	1.0	0.4
			Total	**27.0**	**9.8**

Germ: germination; lbs: pounds

Table C-5
Coast Prickly Pear Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.1 acre*
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed	90	60	4.0	0.4
Artemisia californica	California sagebrush	15	50	5.0	0.5
Artemisia dracunculus	tarragon	–	–	1.0	0.1
Asclepias fascicularis	narrow-leaf milkweed	–	–	0.5	0.10
Baccharis pilularis ssp. *consanguinea* [*B. pilularis*]	coyote brush	2	40	1.0	0.1
Bloomeria crocea	common goldenstar	–	–	0.5	0.10
Clarkia purpurea	winecup clarkia	–	–	0.5	0.10
Dichelostemma capitatum	blue dicks	–	–	1.0	0.10
Elymus condensatus [*Leymus c.*]	giant wild rye	70	80	0.5	0.10
Eriogonum fasciculatum	California buckwheat	10	65	4.0	0.40
Eriophyllum confertiflorum	golden-yarrow	30	60	0.5	0.10
Hazardia squarrosa	saw-toothed goldenbush	15	20	0.5	0.10
Marah macrocarpus	wild cucumber	95	80	0.5	0.10
Mimulus aurantiacus var. *puniceus*	orange bush monkeyflower	5	70	1.0	0.1
Mirabilis laevis var. *crassifolia [M. californica]*	wishbone bush	7	10	0.5	0.10
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting	10	25	0.5	0.10
Salvia apiana	white sage	70	50	1.0	0.1
Salvia mellifera	black sage	70	50	1.5	0.20
Stipa lepida [*Nassella l.*]	foothill needlegrass	60	60	1.0	0.1
Stipa pulchra [*Nassella p.*]	purple needlegrass	70	60	1.0	0.1
Opuntia littoralis	coast prickly-pear	10 pads/0.1 acre			
			Total	**30.0**	**3.4**

Germ: germination; lbs: pounds

* 0.03 acre rounded up to 0.1 acre

Table C-6
Laurel Sumac – Lemonade Berry Chaparral
With California Sagebrush – California Buckwheat Scrub
Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.1 acre[a]
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed	90	60	6.0	0.60
Artemisia californica	California sagebrush	15	50	3.0	0.30
Chlorogalum pomeridianum	wavy-leaved soap plant	–	–	1.0	0.10
Deinandra fasciculata [*Hemizonia f.*]	fascicled tarweed	10	25	1.0	0.10
Eriogonum fasciculatum	California buckwheat	10	65	4.0	0.40
Hazardia squarrosa	saw-toothed goldenbush	15	20	1.0	0.10
Heteromeles arbutifolia	toyon	95	40	2.0	0.20
Isocoma menziesii var. *vernonioides*	coastal goldenbush	20	40	0.5	0.10
Keckiella cordifolia	heart-leaved penstemon	40	40	2.0	0.20
Lonicera subspicata var. *denudata*	southern honeysuckle	–	–	2.0	0.20
Malosma laurina	laurel sumac	-	-	3.0	0.30
Marah macrocarpus	wild cucumber	95	80	0.5	0.10
Mimulus aurantiacus var. *puniceus*	orange bush monkeyflower	5	70	2.0	0.20
Mirabilis laevis var. *crassifolia* [*M. californica*]	wishbone bush	10	15	1.0	0.10
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting	10	25	1.0	0.10
Rhus integrifolia	lemonade berry	95	40	3.0	0.3
Salvia apiana	white sage	70	50	1.5	0.20
Salvia mellifera	black sage	70	50	1.5	0.20
			Total	**33.0**	**3.30**

Germ: germination; lbs: pounds

[*] 0.01 acre was rounded up to 0.10 acre

Table C-7
Needle Grass Grassland Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.34 acre
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed	90	60	6.0	2.0
Asclepias fascicularis	narrow-leaf milkweed	–	–	1.5	0.5
Bloomeria crocea	common goldenstar	–	–	1.5	0.5
Clarkia purpurea	winecup clarkia	–	–	1.0	0.3
Deinandra fasciculata [*Hemizonia f.*]	fascicled tarweed	10	25	2.0	0.7
Dichelostemma capitatum	blue dicks	–	–	2.0	0.7
Eriophyllum confertiflorum	golden-yarrow	30	60	1.0	0.3
Lupinus bicolor	miniature lupine	98	85	1.0	0.3
Melica imperfecta	little California melic grass	90	60	2.0	0.7
Mirabilis laevis var. *crassifolia* [*M. californica*]	wishbone bush	7	10	2.0	0.7
Phacelia minor	wild canterbury-bell	–	–	1.0	0.3
Stipa coronata [*Achnatherum coronatum*]	crested needlegrass	–	–	1.0	0.3
Stipa lepida [*Nassella l.*]	foothill needlegrass	60	60	4.0	1.4
Stipa pulchra [*Nassella p.*]	purple needlegrass	70	60	4.0	1.4
Sysrinchium bellum	blue-eyed grass	50	60	1.0	0.1
			Subtotal	**31.0**	**10.2**
Germ: germination; lbs: pounds					

Table C-8
Scrub Oak Chaparral Seed Mix

Botanical Name	Common Name	Percent Purity	Percent Germ	Lbs per acre	Lbs per 0.21 acre
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed	90	60	6.0	1.3
Adenostoma fasciculatum var. *fasciculatum*	common chamise	–	–	3.0	0.6
Chlorogalum pomeridianum	wavy-leaved soap plant	–	–	1.5	0.3
Deinandra fasciculata [*Hemizonia f.*]	fascicled tarweed	10	25	2.0	0.4
Eriogonum fasciculatum	California buckwheat	10	65	4.0	0.8
Hazardia squarrosa	saw-toothed goldenbush	15	20	1.0	0.2
Heteromeles arbutifolia	toyon	95	40	2.0	0.4
Keckiella cordifolia	heart-leaved penstemon	40	40	2.0	0.4
Lonicera subspicata var. *denudata*	southern honeysuckle			2.0	0.4
Marah macrocarpus	wild cucumber	95	80	0.5	0.1
Mimulus aurantiacus var. *puniceus*	orange bush monkeyflower	5	70	2.0	0.4
Salvia apiana	white sage	70	50	1.5	0.3
Salvia mellifera	black sage	70	50	1.5	0.3
Quercus berberidifolia	scrub oak	Container stock 5 plants/0.1 acre			
			Total	**29**	**5.9**
Germ: germination; lbs: pounds					

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Appendix D
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.