

# M2 NATURAL COMMUNITY CONSERVATION PLAN/HABITAT CONSERVATION PLAN – 2021 ANNUAL REPORT



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## Acronyms and Definitions

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ACOE – Army Corps of Engineers

CAC – Citizen Advisory Committee

Caltrans – California Department of Transportation

CCC – California Coastal Commission

CCF – California Community Foundation

CDFW – California Department of Fish and Wildlife

CEs – Conservation Easements

CHSP – Chino Hills State Park

CNDDDB – California Natural Diversity Database

COI – Certificate of Inclusion

CSS – Coastal Sage Scrub

ECR – Environmental Commitment Report

EFM – Endowment Fund Manager

EMP – Environmental Mitigation Program

EOC – Environmental Oversight Committee. The EOC is made up of two OCTA Board members and representatives from Caltrans, the Wildlife Agencies, ACOE, environmental groups, and the public. The EOC makes recommendations on the allocation of environmental freeway mitigation funds and monitors the execution of a master agreements between OCTA and state and federal resource agencies.

ESA – Endangered Species Act

FMP – Fire Management Plan

GIS – geographic information system

GLA – Glen Lukos Associates

GSOB – Gold Spotted Oak Borer (beetle)

HCP – Habitat Conservation Plan

HMMP – Habitat Mitigation Monitoring Plan

I – Interstate

IA – Implementing Agreement

IRC – Irvine Ranch Conservancy

ISHB – Invasive shot hole borer

ISMP – Invasive Species Management Plan

M2 – The renewed Measure M (or Measure M2)

M2 NCCP/HCP – OCTA M2 Natural Communities Conservation Plan / Habitat Conservation Plan adopted on November 2017. Also referred as Plan.

NCC – Natural Communities Coalition

NCCP – Natural Community Conservation Plan

NCCPA – Natural Community Conservation Plan Act

OC – Orange County

OC Parks – Orange County Parks

OCTA – Orange County Transportation Authority

RMP – Resource Management Plan

SARP – Santa Ana River Mainstem Project

SCAG – Southern California Association of Governments

SR – State Route

TCA – Transportation Corridor Agencies

TOC – Taxpayer Oversight Committee

UCI – University of California Irvine

USFS – United States Forest Service

USFWS – U.S. Fish and Wildlife Service

Wildlife Agencies – the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS), collectively referred to as the Wildlife Agencies



# Executive Summary

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This is the fourth Annual Report for the Orange County Transportation Authority (OCTA) M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP or Plan), covering all activities between January 1, 2021 and December 31, 2021. This report summarizes the tracking of impacts associated with covered freeway improvement projects and other management and monitoring activities on Preserves (Covered Activities), status and activities on the OCTA Preserves, progress on the implementation of OCTA-funded restoration projects, and additional Plan administration and public outreach activities. This Annual Report has been reviewed and approved by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS), collectively referred to as the Wildlife Agencies. In addition, this Annual Report is presented to the OCTA Environmental Oversight Committee (EOC) and is available for a public review.

## Tracking Impacts from Covered Activities

OCTA keeps an accounting of the Plan-to-date impacts on habitat types from all covered freeway improvement projects to ensure impacts stay within the caps established within the Plan. To date, a total of **9.2 acres of habitat impacts have been authorized relative to a cap of 141.0 acres**. In addition, OCTA uses a consistency determination checklist to evaluate how and when avoidance and minimization measures are implemented on covered freeway improvement projects. No projects had consistency determinations drafted, modified, or completed within the timeframe of this Annual Report. Other tracking requirements include:

- *Tracking for Covered Plant Species Policy* – OCTA tracks the credits for covered plant species protection (on Preserves) and restoration/enhancement (restoration projects) relative to allowable impacts. The Plan-to-date balance for each plant species is net positive (intermediate mariposa lily [+1303], many-stemmed dudleya [+180], southern tarplant [+8,377 + 1 acre]).
- *Tracking Impacts on Habitat Types Resulting from Covered Activities within Preserves* – The Plan establishes a cap that no more than 13 acres (approximately 1%) of the natural habitat within the OCTA Preserves will be impacted by Preserve management activities. To date, no measurable permanent impacts have been recorded on the Preserves.
- *Maintaining Rough Proportionality* – The Plan requires implementation of conservation measures roughly proportional in time and extent to impacts on natural communities and Covered Species. To date, four restoration projects, Big Bend, City Parcel, Bee Flat, and UCI Ecological Reserve have received sign-off from the Wildlife Agencies as meeting their success criteria and have achieved conservation credits that keeps the Plan ahead of allowable impacts.

## OCTA Preserves

OCTA acquired seven properties resulting in the protection of 1,236<sup>1</sup> acres of natural habitat (see Figure 1). In all instances, the seven Preserves are located within priority conservation areas and immediately adjacent to other protected lands. These Preserves add to the protection of large blocks of natural open space in areas important for regional conservation. OCTA has completed Resource Management Plans (RMPs) for each Preserve that includes Preserve-specific goals and objectives and define an appropriate level of public access and trail use consistent with protection of biological resources. It is anticipated that Conservation Easements will be completed and recorded in the near future. Currently each Preserve is being managed by OCTA. OCTA is working to identify and potentially transition to long-term Preserve Managers in the near future. OCTA has contracted with the following consulting firms to support Preserve management: (1) Glenn Lukos Associates to provide biological monitoring, oversee implementation of the approved invasive species management plans (ISMPs), assist with public outreach events, and general program needs including Conservation Easement support (2) RECON Environmental to support general Preserve stewardship including maintenance of access roads, tree trimming, and control of public access, and (3) Wildland Res Mgt to complete Fire Management Plans (FMPs). OCTA has hosted numerous Preserve-specific outreach events to educate the public about property value and access and plans to continue this process in the near term as part of a managed access approach. No fires or major events have occurred on the Preserves in 2021, although a level of trespassing and vandalism continues to occur requiring ongoing monitoring and enforcement.

## OCTA-Funded Restoration Projects

OCTA has approved funding for 11 restoration projects and a check dam removal project that will result in over 350 acres of restored habitats and improvement to habitat functions for Covered Species. The restoration projects occur throughout the Plan Area in core habitat areas and within key habitat linkages and riparian corridors (see Figure 1). The restoration projects are on lands that are currently managed and will enhance habitat for Covered Species. OCTA is working with the restoration project sponsors to complete implementation and monitoring of the restoration activities and achieve sign-off from the Wildlife Agencies that the restoration projects meet their success criteria. Each restoration project is at different stages of the process. Wildfires in late 2020, impacted three OCTA funded restoration projects. To date, 4 of the 11 restoration projects have obtained sign-off.

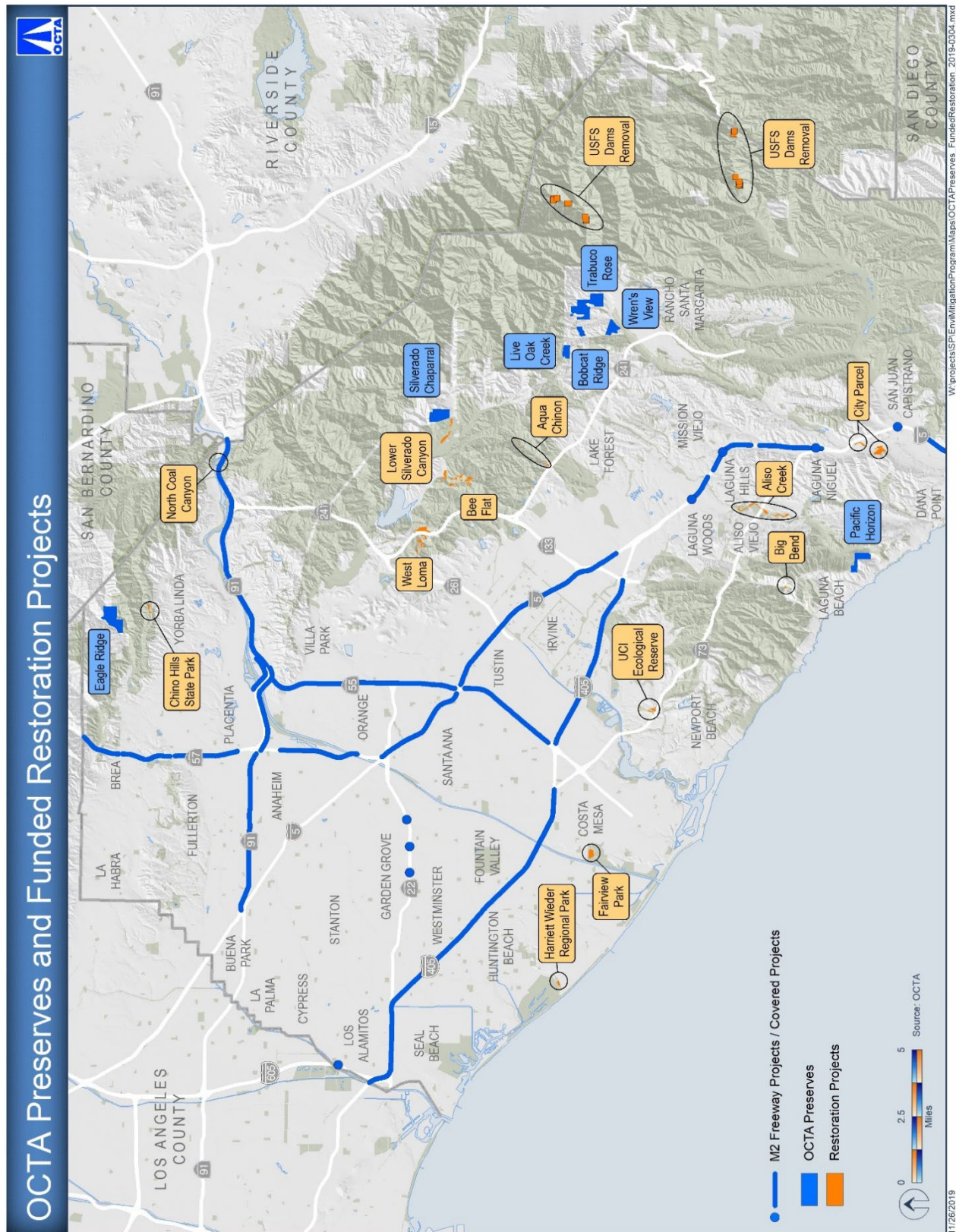
## Additional Conditions for Coverage

As part of the Conservation Analysis (Chapter 6) in the Plan, there were two Covered Species, arroyo chub and many-stemmed dudleya, noted for additional conditions for coverage above and beyond the acquisition of the OCTA Preserves and funding of restoration projects. In 2017, the EOC and Wildlife Agencies approved OCTA to fund the United States Forest Service Dam Removal restoration project

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<sup>1</sup> The acreage of natural habitat preserved is based on best available information used during the preparation of RMPs and may be slightly different from acreages reported in the M2 NCCP/HCP.

Figure 1 - OCTA M2 NCCP/HCP Preserves and Funded Restoration Projects



that, when complete, will satisfy the conditions for coverage of arroyo chub. Work began in 2018 and was completed in 2020. A total of 14 dams were removed using the funds provided by OCTA. For many-stemmed dudleya, OCTA is currently taking steps to protect and enhance an existing population of many-stemmed dudleya on the Pacific Horizon Preserve with the hope that it will expand to help meet or will meet the criteria needed to achieve coverage for many-stemmed dudleya.

## Public Outreach

OCTA has been committed to transparency in how the M2 funds have been and are being used to implement the Plan and the broader Environmental Mitigation Program (EMP). OCTA has conducted a variety of public outreach activities aimed at informing and engaging the public on the overall EMP as well as Preserve-specific issues and events. These have included public meetings during the preparation of the Preserve RMPs, maintaining a website with information and documents related to the program, and engaging in various outreach efforts and encouraging volunteer programs. Many events planned for 2021 were impacted due to stay at home orders and restrictions relating to the COVID-19 epidemic. In 2021, OCTA participated in 3 EMP public outreach events and meetings and 5 Preserve-specific public outreach events.

## Plan Funding

The primary source of funding for the Plan will derive from the M2 transportation sales tax designed to raise money to improve Orange County's transportation system. As part of the M2 sales tax initiative, at least 5% of the revenues from the freeway program will be set aside for the M2 EMP revenues. There are sufficient funds available through the M2 EMP to cover the development and implementation of the Plan. OCTA is currently in a 12-15 year process to accumulate and establish an endowment that will provide a long-term funding source to cover ongoing Preserve management and monitoring, adaptive management, and responses to changed circumstances, in perpetuity. In the short-term, the current M2 EMP revenue stream is used to cover Plan implementation and administration.

## Plan Administration

OCTA is responsible for implementing the Plan and staffing an NCCP/HCP Administrator position. OCTA has designated Lesley Hill as the NCCP/HCP Administrator. Her role includes overseeing Preserve management and monitoring, coordinating with restoration project sponsors, serving as the primary point of contact with the Wildlife Agencies, ensuring avoidance and minimization measures are implemented pursuant to the Plan, tracking impacts and conservation, assisting with public outreach, and preparing this Annual Report.

The Plan outlines how modifications, Minor Amendments, and Major Amendments can be made to the Plan. This Annual Report summarizes Plan modifications that have been made in collaboration with the Wildlife Agencies that address revisions to restoration project design plans and sponsors, minor Preserve boundary adjustments, and approval of a new restoration project since Plan approval. At the recommendation of the Wildlife Agencies, OCTA will be working on a Minor Amendment to the Plan to document the Southern California Edison (SCE) utility poles and maintenance areas within various

Preserves. Additional information will need to be obtained from SCE in order to move forward with this Amendment. No Major Amendments are proposed.

### 1.1 Background

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 freeway projects in the 13 freeway segments covered by Measure M2. In 2017, Measure M2 was rebranded as OC Go. The Orange County Transportation Authority (OCTA) prepared a 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. The Plan achieves higher-value conservation than what would be expected through project-by-project mitigation in exchange for a streamlined project review and permitting process for the Measure M2 freeway program as a whole.

### 1.2 Introduction

The purpose of this document is to provide an update on the status of the Plan implementation activities that have occurred during the reporting period for this Annual Report. This Annual Report includes all Plan implementation undertaken in 2021. The information in this report will be used in compliance monitoring to determine if OCTA is properly implementing the M2 NCCP/HCP pursuant to relevant regulations and permit conditions. Annual tracking and reporting of the Plan implementation activities is required by Section 8.4 of the Plan; Section 10.1 of the Implementing Agreement, dated November 2016; the Federal Fish and Wildlife 10(a)(1)(B) Permit No. TE32842C-0, dated June 19, 2017; and the NCCP Permit No. 2835-2017-001-05, dated June 19, 2017.

### 1.3 Compliance Matrix

To satisfy the terms and conditions of the state and federal take authorization, OCTA is required to fulfill the obligations outlined in the Plan and Implementing Agreement (IA). Implementation tasks associated with these regulations are completed or ongoing, as described in Table 1-1. This table summarizes the compliance actions, identifies the Plan sections, briefly describes the compliance requirement, and summarizes the steps OCTA is currently taking. The compliance actions are described in greater detail later in this report.

**Table 1-1. M2 NCCP/HCP Compliance Matrix**

<b>Compliance Action</b>	<b>Plan Section Reference</b>	<b>Description</b>	<b>Summary of OCTA Compliance</b>	<b>Annual Report Section Reference</b>
<b><i>Tracking Impacts</i></b>	5.8.1, 7.1	The NCCP/HCP Administrator will be responsible for collecting and maintaining information that tracks impacts on natural resources resulting from covered freeway improvement projects and other management and monitoring activities on Preserves (Covered Activities) to ensure that the amount of impacts that ultimately occur under the Plan stays below the amount of impacts estimated during Plan development.	OCTA has developed procedures and approaches to track project impacts to ensure they are consistent with the Plan.	Chapter 2
<b>Freeway Improvement Projects</b>	5.8.1.1	The NCCP/HCP Administrator will be responsible for tracking the status of covered freeway improvement projects.	OCTA maintains a table summarizing the status of the M2 freeway improvement projects.	2.1.1
<b>Habitat Types</b>	5.8.1.1, Appendix F	OCTA will record the acres of direct and temporary impacts to natural communities using detailed vegetation mapping completed as part of pre-construction field surveys. The detailed vegetation mapping will be cross-walked and aggregated into the major vegetation types using the Plan. Impacts on natural communities from covered	OCTA has established methods to track the amount of habitat impacts from each covered freeway improvement project. The spreadsheet tracks the cumulative amount of habitat types relative to caps established under the M2 NCCP/HCP.	2.1.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		freeway improvement projects will be measured against caps on impacts on individual habitat types and overall habitat.		
<b>Avoidance and Minimization Measures</b>	5.8.1.1	Based on the project-specific biological surveys, OCTA will ensure covered freeway improvement projects include avoidance and minimization measures into project design per guidelines and criteria included in the Plan.	OCTA has developed a consistency determination checklist used to evaluate how and when avoidance and minimization measures are implemented on covered freeway improvement projects. These checklists are submitted to the Wildlife Agencies for review and approval and measures are then included in the Certificate of Inclusion for the project.	2.1.3
<b>Covered Plant Species</b>	5.6.2.2, 5.8.1.2	To ensure any actual impacts on covered plant species are properly addressed, OCTA will implement a Covered Plant Species Policy that will involve the evaluation of impacts based on project-specific field surveys. The policy will also set forth mitigation of impacts using credits determined through field surveys of Preserves and actions taken to enhance, restore, and create populations of covered plant species as part of restoration projects approved for funding	OCTA has established a ledger to track credits and debits for covered plant species (Table 2-4).	2.2



Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		by OCTA. This policy will require OCTA to maintain a ledger-type accounting system to track credits and debits.		
<b>Preserve Management</b>	5.8.1.3	The Plan establishes that no more than 13 acres (approximately 1%) of the natural habitat within the Preserves will be impacted by Preserve management activities. OCTA and Preserve Managers will track any activities resulting in more than 0.1 acre of new direct effects on natural habitat within the Preserves and record this information in a ledger that will be submitted to the Wildlife Agencies as part of the Plan’s Annual Report.	OCTA has established a process to track and monitor any Preserve management activities that would result in permanent impacts more than 0.1 acres. A ledger has been created. To date, a total of 0.47 acre were impacted by SCE maintenance work on electrical poles located on and adjacent to the Pacific Horizon and Silverado Chaparral Preserves. This work is not covered by the Plan and will require separate mitigation from SCE. No other permanent impacts have been recorded on the Preserves.	2.3
<b>Maintain Rough Proportionality</b>	5.8.2	The Plan specifies that conservation measures must be implemented roughly proportional in time and extent to the impacts on habitat authorized under the Plan. Conservation measures are measured once conservation easements are recorded on Preserves and when restoration projects are signed off as meeting their success criteria (Table 2-6).	OCTA is tracking the progress of the implementation of conservation measures relative to impacts associated with Covered Activities. The Big Bend, City Parcel, Bee Flat, and UCI Ecological Reserverestoration projects have been signed off, and the habitat credits from these restoration projects are	2.4

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
			sufficient to be ahead of impacts to date.	
<b><i>Oversight of M2 Preserve Management and Monitoring</i></b>	5.4, 7.1, 7.2			Chapter 3
<b>Acquisition</b>	5.4	The acquisition of habitat Preserves was a key component of the Plan conservation strategy. Prior to the Plan being completed, OCTA selected and acquired seven Preserves with approximately 1,236 <sup>a</sup> acres of natural habitat. The locations of the Preserves across the Plan Area are shown on Figure 1. The selection of the Preserves, completed in coordination with the Environmental Oversight Committee (EOC) and Wildlife Agencies, was designed to meet the biological goals and objectives of the Plan while also contributing to the collective goals of the existing regional network of protected areas within the Plan Area.	The collection of Preserves acquired by OCTA in the Trabuco Canyon area has created a substantial block of conservation in an area that did not previously exist as protected open space. The Preserves in Laguna Beach (Pacific Horizon), Brea (Eagle Ridge), and Silverado Canyon area (Silverado Chaparral) add to blocks of existing protected open space in Orange County. These Preserves provide for the protection of diverse habitats across the Plan Area.	3.2
<b>Initial Reconnaissance and Baseline Surveys</b>	7.2.7.4	Baseline monitoring establishes conditions at a given point in time. It is a one-time event that characterizes the status of conserved resources, as well as threats and stressors, for planning or future comparisons.	For each of the seven Preserves, OCTA contracted with Bonterra Psomas to complete baseline biological surveys that included detailed vegetation mapping and focused surveys of Covered Species.	3.2 and summarized in the 2018 First Annual Report

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
<b>Preparation of RMPs</b>	7.2.4	A Resource Management Plan (RMP) will be developed for each Preserve that will include Preserve-specific goals and objectives relating to natural communities, Covered Species, and other ecosystem function(s), which demonstrate how the Preserve supports the overall goals and objectives of the OCTA NCCP/HCP.	OCTA has completed RMPs for all seven Preserves. Each RMP was reviewed and approved by the Wildlife Agencies. Draft RMPs were circulated for public review and OCTA held public workshops to obtain input. The Final RMPs are posted on the OCTA EMP website. The RMPs will be reviewed every 5 years and updated as necessary to prioritize management actions based on the changing Preserve needs.	3.2
<b>Recording of Conservation Easements (CEs)</b>	7.2.4.1	<p>Conservation easements will be recorded for each Preserve that will provide a legal mechanism to ensure each Preserve is maintained and managed in perpetuity as a habitat Preserve.</p> <p>Conservation easements will be recorded not later than 2 years from permit issuance. Conservation easements for each Preserve will be held by appropriate entities, depending upon the Preserve Manager.</p> <p>As discussed with the Wildlife Agencies, OCTA has passed the 2 year commitment window and are actively</p>	OCTA is currently working on the preparation of conservation easements for each Preserve and anticipates these will be finalized in the future.	3.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		<p>coordinating with the Wildlife Agencies on the Conservation Easements development. They will be recorded once a Grantee has been identified and approved by all parties for the Preserves.</p>		
<p><b>Identification of Preserve Manager</b></p>	<p>8.2.1.2</p>	<p>For each Preserve, a long-term Preserve Manager will be identified.</p>	<p>OCTA is currently serving as the Preserve Manager for each Preserve. OCTA has contracted with firms (RECON and Glenn Lukos Associates [GLA]) to provide Preserve management and monitoring assistance. High Level Security Services (HLSS) as well as Orange County Sheriff are providing security services for OCTA. OCTA will transition to a long-term Preserve Manager for each Preserve in the near future.</p>	<p>3.2</p>
<p><b>General Stewardship and Preserve Management</b></p>	<p>7.2.5</p>	<p>The M2 NCCP/HCP includes guidelines for management of Preserves. These guidelines are meant to describe the range of management activities that could be needed, depending on a variety of Preserve-specific conditions.</p>	<p>OCTA has completed RMPs for each Preserve that define the Preserve-specific management activities. OCTA is currently serving as the Preserve Manager for each Preserve and has contracted with firms (RECON, GLA and HLSS), to provide Preserve management assistance.</p>	<p>3.2, Appendix C and D</p>
<p><b>Public Access Policy and Enforcement</b></p>	<p>7.2.5.7, 7.2.5.8</p>	<p>The primary purpose of acquiring the Preserves is to meet the biological</p>	<p>For each Preserve, a public access approach was developed for the RMPs that</p>	<p>3.2, 6.1.2</p>

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		requirements of the NCCP/HCP; however, the Preserves provide additional benefits, such as opportunities for passive recreation. Passive recreational use in the Preserves will be managed to be consistent with the protection and enhancement of biological resources.	addressed recreation and allowable uses that are compatible with the biological goals and objectives of the Plan. The RMPs were reviewed and approved by the Wildlife Agencies. OCTA conducts public hikes and equestrian rides at designated Preserves.	
<b>Invasive Species Control Plan and Implementation</b>	7.2.5.1	The control of invasive nonnative plant species is one of the most important components of Preserve management because these species can aggressively out-compete native species, thereby reducing habitat quality within a Preserve.	ISMPs were completed and approved by the Wildlife Agencies for each Preserve. These Plans (authored by GLA) include detailed mapping for existing invasive species and prioritization for invasive species treatment actions. OCTA has begun the implementation of invasive species control on the Trabuco Rose and Pacific Horizon Preserves. Preserve-wide invasive species mapping will be updated every 5 years per the ISMPs.	3.2, Appendix C and D
<b>Fire Management Plan and Fire Response</b>	7.2.5.9	The Plan outlines the requirement for the preparation of a Fire Management Plans (FMPs) for each Preserve.	OCTA has contracted with Wildland Res Mgt to complete a FMP for each Preserve. Work begin in 2018 and a FMP of the Silverado Chaparral Preserve has been drafted and reviewed/approved by Orange County Fire Authority	3.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
			<p>in 2020. It is anticipated that the FMPs will be completed in 2022. The FMPs establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. In 2016, there was a 1.5-acre fire on the Eagle Ridge Preserve. The fire was extinguished quickly and the burn area recovered. No fires within the OCTA Preserves have occurred during the period covered by this Annual Report.</p>	
<p><b>Biological (Effectiveness) Monitoring</b></p>	<p>7.2.7.4 Table 7-1</p>	<p>Effectiveness monitoring assesses status and trends, as well as threats and stressors, and requires biological expertise. Effectiveness monitoring will be completed following the frequency and survey protocols listed in Table 7-1 of the M2 NCCP/HCP in perpetuity.</p>	<p>OCTA has been completing surveys for Covered Species and their habitat within the Preserves based on schedules set forth in the RMPs. In 2021, surveys for covered birds and southwestern pond turtle were completed. OCTA coordinated with the Wildlife Agencies to obtain approval of the coast horned lizard and orangethroat whiptail survey methodology. Those surveys will be completed in 2022 along with covered plant surveys..</p>	<p>3.2, Appendix C</p>
<p><b>Adaptive Management</b></p>	<p>7.2.7</p>	<p>The Plan sets forth the expectation and outlines an approach for the Preserves to</p>	<p>For each Preserve, OCTA has identified key issues for a focused adaptive</p>	<p>3.2</p>

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		be managed using an adaptive management strategy. Adaptive management provides a strategy to improve future management actions through monitoring to evaluate management effectiveness.	management approach as part of the RMP development. These key issues are included as tasks in the monitoring and management of the Preserves.	
<b>Changed Circumstances</b>	8.6.2	Changed Circumstances are defined as those events (flood; fire; drought; invasion by exotic species or disease; toxic spills, vandalism, encroachment, and other illegal human activity; and listing of non-Covered Species) that may affect a species or geographic area covered by this Plan that can reasonably be foreseen by OCTA and the Wildlife Agencies during planning and development of the Plan.	The Plan outlines how Changed Circumstances will be addressed should they occur. During the time period covered by this Annual Report, no events warranting a Changed Circumstance has occurred.	3.2
<b>Bi-annual Meeting of Preserve Managers</b>	7.1, 7.2.7.6	OCTA will host bi-annual meetings involving the Preserve Managers, Monitoring Biologists, the NCCP/HCP Administrator, and the Wildlife Agencies where implementation, policy, and technical issues of Preserve management will be addressed.	Because OCTA is functioning as the Preserve Manager at each of the Preserves, the bi-annual meetings have not been initiated to date. OCTA has been coordinating closely with the Wildlife Agencies on Preserve activity.	N/A
<b>Regional Monitoring</b>	7.2.2	OCTA is not responsible for conducting regional monitoring outside of the	OCTA is continuing to coordinate and collaborate with other regional	6.1.3

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		specific Preserves but will contribute monitoring data collected at OCTA Preserves in a format that can be integrated with regional monitoring databases as appropriate.	management and monitoring programs to stay abreast of regional monitoring issues. OCTA has shared monitoring results with other regional entities.	
<b><i>Tracking and Facilitation of M2 Restoration Project Implementation</i></b>	5.5, 7.1	A key component of the M2 NCCP/HCP conservation strategy was OCTA funding restoration projects throughout the Plan Area. OCTA has funded 11 restoration projects, totaling approximately 357 acres of restored habitats, and a dam removal project. The restoration projects will enhance habitat for Covered Species.	OCTA has been providing oversight of the Restoration Project sponsors to ensure the restoration projects meet the following criteria: (1) the restored habitat meets success criteria identified in final restoration plans approved by the Wildlife Agencies; (2) the restoration project area is conserved through a conservation easement, deed restriction, or other mechanism approved by the Wildlife Agencies; and (3) the restoration site will be managed long-term in accordance with an existing management plan that defines the role for managing the biological values of the restoration project location.	4.1, 4.2
<b>'Lessons learned' monitoring of restoration projects</b>	7.3	As warranted and in consultation with the Wildlife Agencies, OCTA will conduct follow-up monitoring of restoration projects (approximately every 5 to 10	To be completed at a later date after restoration projects have been completed	To be presented in subsequent annual reports.



<b>Compliance Action</b>	<b>Plan Section Reference</b>	<b>Description</b>	<b>Summary of OCTA Compliance</b>	<b>Annual Report Section Reference</b>
		years) to evaluate the success of the restoration projects and apply 'lessons learned' to future restoration activities.		
<b>Additional Conditions for Coverage</b>	6.5	As part of the Conservation Analysis (Chapter 6) in the M2 NCCP/HCP, there were two Covered Species, arroyo chub and many-stemmed dudleya, noted for additional conditions for coverage above and beyond the acquisition of the seven OCTA Preserves and funding of restoration projects.	OCTA has been working with the Wildlife Agencies to identify and implement actions to achieve coverage for arroyo chub and many-stemmed dudleya.	Chapter 5
<b>Arroyo Chub</b>	6.5	OCTA will implement a future restoration project focused on improving habitat conditions for arroyo chub.	OCTA has initiated the U.S. Forest Service (USFS) Dam Removal restoration project to provide conservation for arroyo chub. In 2017, the EOC and Wildlife Agencies approved moving forward with USFS Dam Removal project and OCTA has contracted with USFS to remove 14 dams. The restoration activities began in 2018 and were completed in 2020. Monitoring occurred in 2021 and will continue for one more year.	5.1.1, 4.2.12
<b>Many-stemmed Dudleya</b>	6.5	OCTA will protect, enhance, and/or establish a major population (i.e., 500 individuals) of many-stemmed dudleya.	There is a known population (four occurrences with approximately 180 individuals) identified on the Pacific Horizon Preserve.	5.1.2, 3.2.4

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
			OCTA is implementing ongoing Preserve management actions to improve habitat suitability (e.g., reduction of invasive species and minimizing recreational impacts) and will monitor results to determine if the existing population can be expanded to meet the threshold.	
<b>Plan Funding</b>	8.3	Both the Natural Community Conservation Plan Act (NCCPA) and Endangered Species Act (ESA) require that a conservation plan approved pursuant to the respective state or federal law must assure availability of adequate funding to implement the Plan’s conservation actions.	The primary source of funding for the Plan implementation is the M2 transportation sales tax initiative, which included at least 5% for the revenues for the EMP.	Chapter 7
<b>Preserve Management</b>	8.3.3	OCTA will establish an endowment to provide a secure and permanent funding source to cover the Preserve management (including adaptive management) cost in perpetuity.	OCTA has established a strategy to accumulate funds for an endowment to cover Preserve management over an estimated period of 10-12 years. During this accumulation phase, funding for ongoing Preserve management is covered through the M2 sales tax revenue stream.	7.1, 7.2
<b>Effectiveness Biological Monitoring</b>	8.3.3	OCTA will establish an endowment to provide a secure and permanent funding source to cover the	OCTA has established a strategy to accumulate funds for an endowment to cover Preserve management over	7.1, 7.2

<b>Compliance Action</b>	<b>Plan Section Reference</b>	<b>Description</b>	<b>Summary of OCTA Compliance</b>	<b>Annual Report Section Reference</b>
		effectiveness biological monitoring on the Preserves in perpetuity.	an estimated period of 10-12 years. During this accumulation phase, funding for ongoing effectiveness monitoring is covered through the M2 sales tax revenue stream.	
<b>Program Management</b>	8.3.3	OCTA will establish an endowment to fund program management through the permit term.	OCTA will fund program management using the M2 revenue stream until 2041. Between 2041 and 2051 (end of permit term), OCTA will set aside a subfund to continue funding program management.	7.1, 7.2
<b>Changed Circumstances</b>	8.3.3	OCTA will establish an endowment to provide a secure and permanent funding source to cover the responses to Changed Circumstances on the Preserves in perpetuity.	OCTA has established a strategy to accumulate funds for an endowment to cover Preserve management over an estimated period of 10-12 years. During this accumulation phase, funding for ongoing effectiveness monitoring is covered through the M2 sales tax revenue stream.	7.1, 7.2
<b>Plan Administration</b>				Chapter 8
<b>NCCP/HCP Administrator</b>	8.2.1.1	OCTA is responsible for implementing the M2 NCCP/HCP and staffing an NCCP/HCP Administrator position.	The NCCP/HCP is being implemented and administered by OCTA staff.	8.1
<b>Minor Modifications</b>	8.5.2	The Plan allows for minor modifications to the Plan, permits, and implementing agreement if the modifications	OCTA coordinated with the Wildlife Agencies to make a number of minor modifications up through	8.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		are non-substantive and do not meet the threshold of a Minor and Major Amendment.	2018. No additional minor modifications have been implemented.	
<b>Minor or Major Amendments</b>	8.5.3, 8.5.4	The Plan outlines circumstances in which Minor or Major Amendments to the Plan, permits, and Implementing Agreement could be proposed by OCTA and implemented in collaboration with the Wildlife Agencies.	A Minor Amendment is necessary to recognize the SCE powerline as an existing use for which operation and maintenance will be permitted to continue and for which SCE provided restoration will be implemented to offset habitat impacts to maintain long term net habitat value within the Preserve.	8.3
<b>Changed Circumstances</b>	8.6.2	Changed Circumstances are defined as those events that may affect a species or geographic area covered by this Plan that can reasonably be foreseen by OCTA and the Wildlife Agencies during development of the Plan. Changed Circumstances for this Plan include the following reasonably foreseeable events: flood; fire; extended period of reduced precipitation; invasion by exotic species or disease; toxic spills, vandalism, encroachment, and other illegal human activity; and listing of non-Covered Species.	No events meeting the criteria of a Changed Circumstance occurred during the timeframe of this Annual Report.	8.4
<b>Annual Reporting</b>				

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
<b>Annual Report</b>	8.4	OCTA will prepare an Annual Report summarizing activities over the reporting year (January 1 to December 31). Annual reporting will involve report submittal to the Wildlife Agencies by March 1 of each calendar year (or other date as agreed upon by OCTA and the Wildlife Agencies).	This is the fourth Annual Report and covers all activities in 2021.	
<b>Public Meeting</b>	8.4	A public meeting on the report will be held within 60 days of the report submittal or in conjunction with EOC meetings.	A public meeting will be held in summer 2022 to present the Annual Report, and this document will be posted on the OCTA EMP website.	
<p><sup>a</sup> The acreage of natural habitat preserved is based on best available information using during the preparation of RMPs and may be slightly different from acreages reported in the M2 NCCP/HCP.</p>				

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## Chapter 2

# Tracking Impacts from Covered Activities

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The primary goal of the Plan is to obtain authorization for take of Covered Species under the Natural Community Conservation Plan Act (NCCPA) and Endangered Species Act (ESA) for the implementation of covered freeway improvement projects and other management and monitoring activities on Preserves (Covered Activities). This chapter provides tracking of impacts associated with Covered Activities to ensure implementation stays within the impact caps and procedures outlined in the Plan.

## 2.1 Covered Freeway Improvement Projects

### 2.1.1 Status of OCTA M2 Freeway Improvement Projects

Freeway improvement projects covered by this Plan are defined to include all habitat or ground-disturbing impacts resulting from the M2 transportation planning and project implementation process. There are 13 discrete proposed freeway project areas in which freeway segments have been identified for coverage under the Plan. These proposed projects are designed to reduce congestion, increase capacity, and improve traffic flow of Orange County's important transportation infrastructure. The freeway improvement projects are, in all instances, along existing freeways and will include lane additions, interchange improvements, and associated facility upgrades. These freeway improvement projects do not include the construction of new freeways.

Table 2-1 summarizes the current status of the OCTA M2 freeway improvement projects. As the planning and implementation of the OCTA M2 freeway improvement projects progresses, the grouping and organization of segments may be adjusted. The list of segments may be slightly different than the set of projects and segments included in the M2 NCCP/HCP.

**Table 2-1. OCTA M2 Freeway Improvement Projects Status**

<b>Project</b>	<b>Location</b>	<b>2021 Phase</b>	<b>Expected Construction Start Date</b>	<b>Anticipated Completed Construction</b>	<b>NCCP/HCP Notes</b>
<b>Ongoing:</b>					
<b>Project B</b>	I-5, I-405 to Yale Ave <i>Segment 1</i>	Design/Ad/Award	September 2025	March 2029	<ul style="list-style-type: none"> <li>• NCCP/HCP Consistency Determination Checklist (Checklist) and Certificate of Inclusion (COI) complete</li> <li>• 1602 permit anticipated</li> </ul>
	I-5, Yale Ave to SR-55 <i>Segment 2</i>		April 2025	September 2028	
<b>Projects C and D<sup>a</sup></b>	I-5, Oso Pkwy to Alicia/La Paz Rd Interchange <i>Segment 2</i>	Construction	April 2019	January 2024	<ul style="list-style-type: none"> <li>• NCCP/HCP Checklist and COI complete</li> <li>• 1602 permits per segment</li> </ul>
	I-5, Alicia Pkwy to El Toro Rd <i>Segment 3</i>	Construction	October 2020	October 2024	
	I-5, SR-73 to Oso Pkwy/Avery Pkwy Interchange <i>Segment 1</i>	Construction	January 2020	September 2024	
<b>Project D</b>	I-5, I-5/El Toro Interchange	ENV	TBD	No schedule past ENV	<ul style="list-style-type: none"> <li>• NCCP/HCP checklist complete and COI pending</li> <li>• No 1602 permit anticipated</li> </ul>
<b>Project F</b>	SR-55, I-405 to I-5 <i>Segment 1</i>	Ad/Award/Design	May 2022	May 2026	<ul style="list-style-type: none"> <li>• No Covered Species</li> <li>• NCCP/HCP checklist and COI complete</li> <li>• 1602 permit obtained (all concrete impacts)</li> </ul>
	SR-55, I-5 to SR-91 <i>Segment 2</i>	ENV (12/2016 – 3/2020)	August 2026	September 2029	<ul style="list-style-type: none"> <li>• NES(MI) complete</li> <li>• No Covered Species</li> <li>• NCCP/HCP checklist and COI pending</li> </ul>



<b>Project</b>	<b>Location</b>	<b>2021 Phase</b>	<b>Expected Construction Start Date</b>	<b>Anticipated Completed Construction</b>	<b>NCCP/HCP Notes</b>
<b>Project G</b>	SR-57 (NB), Oranewood Ave to Katella Ave (Segment 1a)	ENV (4/2016 – 3/2019)	April 2025	November 2027	• NCCP/HCP checklist and COI complete
	SR-57 (NB), Lambert to Tonner Canyon	ENV (Expected to begin – 2023)	No schedule past ENV	No schedule past ENV	• Pending
<b>Project I</b>	SR-91, SR-55 to Lakeview Ave <i>Segment 1</i>	Design/Ad/Award	February 2024	September 2027	• NCCP/HCP checklist and COI complete • Permit to be issued per segment
	SR-91, La Palma Ave to SR-55 <i>Segment 2</i>		August 2024	March 2028	
	SR-91, Acacia St to La Palma Ave <i>Segment 3</i>		May 2025	September 2028	
<b>Project J</b>	SR-91, SR-241 to Riverside County Line <sup>b</sup>	ENV (9/2007–10/2012)	TBD (contingent upon future widening in Riverside County)	No schedule past ENV	• Full build out not yet scheduled
<b>Project K</b>	I-405, I-605 to SR-73	Construction	On-going	February 2024	• All permits obtained
<b>Project L</b>	I-405, I-5 to SR-55	ENV (12/2014–late 2018)	No schedule past ENV	No schedule past ENV	• NCCP/HCP checklist and COI complete • 1602 permit anticipated
<b>Project M</b>	I-605, I-605/Katella Interchange	Design/Ad/Award	April 2024	December 2025	• NCCP/HCP checklist and COI complete • 1602 permit anticipated
<b>Completed:</b>					
<b>Project A</b>	I- 5, SR-55 to SR-57	Completed		January 2021	

<b>Project</b>	<b>Location</b>	<b>2021 Phase</b>	<b>Expected Construction Start Date</b>	<b>Anticipated Completed Construction</b>	<b>NCCP/HCP Notes</b>
<b>Project C</b>	I-5, Vista Hermosa to PCH	Completed		July 2017	
<b>Project D</b>	I-5, I-5/Ortega Interchange	Completed		January 2016	
<b>Project E</b>	SR-22 Access Improvements	Completed		December 2014	
<b>Project G</b>	SR-57 (NB), Katella to Lincoln	Completed		April 2015	
	SR-57 (NB), Orangethorpe to Yorba Linda	Completed		November 2014	
	SR-57 (NB), Yorba Linda to Lambert	Completed		May 2014	
<b>Project H</b>	SR-91 (WB), I-5 to SR-57	Completed		June 2016	
<b>Project I</b>	SR-91 (WB), Tustin Interchange to SR-55	Completed		July 2016	
<b>Project J</b>	SR-91, SR-55 to SR-241	Completed		March 2013	
	SR-91 (EB), SR-241 to SR-71	Completed		January 2011	

<sup>a</sup> Project C and portions of Project D were combined. This included Project C: (I-5, south of El Toro “Y” Area to Avenida Pico) and Project D: (I-5 between SR-73 and El Toro Road through Lake Forest, Laguna Hills, Laguna Niguel, Laguna Woods, Mission Viejo, and San Juan Capistrano)

<sup>b</sup> This project extends to the I-15. The OCTA NCCP/HCP only covers those anticipated impacts within Orange County (to the County line).

I- = Interstate; SR- = State Route; ENV = Environmental; TBD = to be determined; PCH = Pacific Coast Highway; NB = northbound; WB = westbound; EB = eastbound

## 2.1.2 Tracking of Habitat Impacts from Covered Freeway Improvement Projects

OCTA has implemented a process to track habitat impacts resulting from covered freeway improvement projects that includes the following steps:

1. Biological field surveys are completed as part of project-specific environmental compliance (California Environmental Quality Act/National Environmental Policy Act). This involves vegetation mapping based on field surveys typically using detailed vegetation categories. The detailed vegetation categories are cross-walked to the broad habitat types addressed in the Plan.
2. Grasslands anticipated to be impacted by the freeway improvement projects are in most cases maintained and composed of nonnative grass species. Due to the largely compromised value of this habitat type, an additional assessment is made to determine if impacts on nonnative grassland should be counted against the Plan's allotted impact caps. If it can be shown that the nonnative grassland areas meet all of the following criteria, impacts on nonnative grassland will **not** be counted:
  - a) The nonnative grassland is within the median or interchanges (between on and off-ramps and the freeway or contained within clover leaves) OR within the narrow (i.e., less than 100-foot wide) strips between the freeway and adjacent development or ornamental landscaping;
  - b) The nonnative grassland is regularly maintained; and
  - c) The nonnative grassland does not provide live-in habitat or is not located within a significant dispersal corridor for Covered Species.

This determination is made on a project-by-project basis using project-specific biological surveys that will be further assessed in collaboration with OCTA and the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Services (USFWS) (collectively, the Wildlife Agencies). The final impact acreages will be included in the NCCP/HCP Annual Report and tracking spreadsheet.

3. For each individual freeway improvement project, OCTA completes a quantification of impacts (both permanent and temporary) on each habitat type by overlaying the impact footprint with the vegetation mapping. Temporary impacts, which will require revegetation to previous conditions per restoration plans reviewed and approved by the Wildlife Agencies, are still included in this impact tracking because the impacts estimate in the Plan included both permanent and temporary impacts.

OCTA keeps an accounting of the Plan-to-date impacts on habitat types for all freeway improvement projects included under the Plan to ensure impacts stay within the caps listed in Table 5-7 of the Plan. Table 2-2 provides a program-to-date overview of habitat types impacted by OCTA M2 freeway improvement projects in comparison to caps established within the Plan. A detailed table of habitat impacts for each individual covered freeway project is included in Appendix A.

**Table 2-2. OCTA M2 Freeway Improvement Project Program-to-Date Habitat Impact Tracking Sheet<sup>a</sup>**

<b>Plan Vegetation Types</b>	<b>Plan Caps</b>	<b>Impacts (Program to Date)<sup>b</sup></b>	<b>Balance</b>
Chaparral	5.0	-	5.0
Coniferous Forest	-	-	-
Grassland	108.1	6.460	101.7
Riparian	5.0	0.957	4.0
Scrub	10.0	1.705	8.3
Water	0.4	0.12	0.28
Wet Meadow/Marsh	2.5	-	2.5
Woodland	10.0	-	10.0
<b>TOTALS</b>	<b>141.0</b>	<b>9.2</b>	<b>131.8</b>

<sup>a</sup> Values are in acres.

<sup>b</sup> See Appendix A for summary of impacts from each individual covered freeway project.

### **2.1.3 Consistency Determinations for Covered Freeway Improvement Projects**

OCTA has developed a consistency determination checklist to evaluate how and when avoidance and minimization measures and restoration of temporary impacts are implemented on covered freeway improvement projects. These consistency determinations are forwarded to the Wildlife Agencies for review and approval. The avoidance and minimization measures are then incorporated into the project-level Environmental Commitment Record (ECR) as well as the OCTA/California Department of Transportation (Caltrans) Certificate Of Inclusion (COI). The ECR is a document utilized to track a project's environmental commitments from design to post-construction. The COI enables OCTA to extend the incidental take authorization of Covered Species to Caltrans. Table 2-3 includes a summary of the consistency determinations that have been drafted, modified, or completed within the timeframe of this Annual Report.

**Table 2-3. OCTA M2 Freeway Improvement Project Consistency Determinations**

<b>Project ID</b>	<b>Date of Biologist Review</b>	<b>Incorporated into ECR?</b>	<b>COI Signed?</b>	<b>Wildlife Agency Concurrence?</b>	<b>Restoration of Temporary Impacts Anticipated?</b>
Project C EA 0K0200	5/30/18	Yes	Yes	Yes	Yes
Project B EA 0K6700	7/9/18	Yes	Yes	Yes	No
Project L EA 0K710K	1/29/18	Yes	Yes	Yes	Yes
Project M EA 0K8700	6/7/18	Yes	Yes	Yes	No
Project D EA 0M9800	12/10/19	<b>Pending</b>	<b>Pending</b>	<b>Pending</b>	No
Project F EA 0J3400	11/11/2019	N/A	N/A	Yes	No
Project G EA 0M9700	3/12/19	Yes	Yes	Yes	No
Project I EA 0K9800	3/28/19	Yes	Yes	Yes	Yes

## 2.2 Tracking for Covered Plant Species Policy

The OCTA M2 NCCP/HCP includes three plant species (intermediate mariposa lily, many-stemmed dudleya, southern tarplant) on the Covered Species list. These covered plant species are narrow endemics that have highly restrictive habitat requirements, localized soil requirements, or other ecological factors that limit their distribution. To ensure any actual impacts on covered plant species are properly addressed, the M2 NCCP/HCP established the Covered Plant Species Policy (see Section 5.6.2.2 of the M2 NCCP/HCP). This policy requires the evaluation of impacts on the covered plant species be based on project-specific field surveys and sets forth a process to track mitigation of impacts using credits determined through field surveys of Preserves and actions taken to enhance, restore, and create populations of covered plant species as part of restoration projects funded by OCTA. OCTA has been implementing a process to maintain a ledger-type accounting system to track credits and debits.

### 2.2.1 Covered Plant Species Credits/Debits Ledger

OCTA has developed a process to track credits for covered plant species protection (on Preserves) and restoration/enhancement (restoration projects). Each covered activity must include an assessment of the potential for covered plant species to occur and complete focused surveys as appropriate. Table 2-4 provides a ledger of covered plant species credits and debits as of December 31, 2021.

**Table 2-4. Covered Plant Species Credits and Debits Ledger <sup>a</sup>**

Plant	Credits	Impacts <sup>b</sup>	Debits <sup>c</sup>	Balance	Year Surveyed	Project Element	Source
Intermediate Mariposa Lily	151			+151	2015	Pacific Horizon (Aliso Canyon) Preserve	Baseline surveys (Bonterra Psomas 2015a)
	69			+220	2013	Trabuco Rose (Ferber Ranch) Preserve	Baseline surveys (Bonterra Consulting 2013)
	74			+294	2013	Bobcat Ridge (Hafen) Preserve	Baseline surveys (Bonterra Consulting 2013)
	18			+312	2015	Silverado Chaparral (MacPherson) Preserve	Baseline surveys (Bonterra Psomas 2015b)
	283			+595	2013	Wren’s View (O’Neill Oaks) Preserve	Baseline surveys (Bonterra Consulting 2013)
	2			+597	2013	Live Oak Creek (Saddle Creek South)	Baseline surveys (Bonterra Consulting 2013)
	356			+953	2013 - 2019	Monitoring at Trabuco Rose Preserve	Biological monitoring of the Trabuco Rose Preserve between 2013 and 2019 resulted in an estimated population of 356 intermediate mariposa lily plants being identified.
	10			+963	2018	Monitoring at Bobcat Ridge Preserve	Biological monitoring of the Bobcat Ridge Preserve in 2018 resulted in 10 new observations of intermediate mariposa lily plants (GLA 2019b).
	100			+1,063	2019	Monitoring at Silverado Chaparral	Biological monitoring of the Silverado Chaparral Preserve in 2019 (GLA 2020).
	27			+1,090	2019	Monitoring at Bobcat Ridge	Biological monitoring of the Bobcat Ridge Preserve in 2019 (GLA 2020).
	213 <sup>2</sup>			+1,303	2019	Monitoring at Wrens View	Biological monitoring of the Wrens View Preserve in 2019 (GLA 2020).
		0	0	+1,303			No impacts from Covered Activities to date.
<b>Current Balance:</b>				<b>+1,303</b>			

<sup>2</sup> Wrens View monitoring documented 223 new occurrences, however approximately 10 are not being counted as they are within the routinely disturbed access road footprint.

Plant	Credits	Impacts <sup>b</sup>	Debits <sup>c</sup>	Balance	Year Surveyed	Project Element	Source
Many-stemmed Dudleya	60			+60	2017	Pacific Horizon (Aliso Canyon) Preserve	Baseline surveys (Bonterra Psomas 2017)
	40			+100			Biological monitoring of the Pacific Horizon Preserve in 2018 observed a population of 100 individuals (GLA 2019b).
	80			+180		Monitoring at Pacific Horizon	Biological monitoring of the Pacific Horizon Preserve in 2019 (GLA 2020).
		0	0	+180			No impacts from Covered Activities to date.
<b>Current Balance:</b>				<b>+180</b>			
Southern Tarplant	1,513			+1,513	2018	Harriett Wieder Restoration Project	The Bolsa Chica Conservancy began seeding activities as part of the restoration project in early January 2018. Surveys in August 2018 totaled 1,513 plants of southern tarplant (Bolsa Chica Conservancy 2018).
	6,864			+8,377		Harriett Wieder Restoration Project	The Bolsa Chica Conservancy 2019 annual report totaled 8,377 plants of southern tarplant (Bolsa Chica Conservancy 2019). An increase of 6,864 occurrences.
	51,000			+59,377		Fairview Park Resotraiton Project	The city of Costa Mesa documented just over an acre of Southern tarplant in the 2019 annual monitoring report.
		0	0	+59,377			No impacts from Covered Activities to date.
<b>Current Balance:</b>				<b>+59,377</b>			

<sup>a</sup> Credits and debits measured in number of individual plants.

<sup>b</sup> Cumulative impacts cap is 500.

<sup>c</sup> The amount of debits required is calculated using a 3:1 mitigation ratio.

### 2.2.1.1 Documents Referenced for Covered Plant Species Credits and Debits

Bolsa Chica Conservancy. 2018. *Harriett Wieder Regional Park Habitat Restoration Project: Southern Tarplant Survey 2018*.

Bolsa Chica Conservancy. 2018. *Harriett Wieder Regional Park Habitat Restoration Project: Southern Tarplant Survey 2019*.

- BonTerra Consulting. 2013. *Draft Biological Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. December.
- Bonterra Psomas. 2015a. *Baseline Biological Surveys Technical Report for the Aliso Canyon (Pacific Horizon) Property, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California*. October.
- BonTerra Psomas. 2015b. *Baseline Biological Surveys Technical Report for the MacPherson Property, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. September.
- Endemic Environmental Services. 2019. Fairview Park Riparian and Wetlands Mitigation Project Quarterly Report. Submitted to the City of Costa Mesa. September.
- Endemic Environmental Services. 2019. Fairview Park Riparian and Wetlands Mitigation Project. Submitted to the City of Costa Mesa. December.
- Glenn Lukos Associates (GLA). 2019a. *Annual Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose Preserve*. Prepared for OCTA. February.
- Glenn Lukos Associates (GLA). 2019b. *Biological Monitoring Report for OCTA M2 Preserves – Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.
- Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.
- Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.
- Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.



## 2.3 Tracking Impacts on Habitat Types Resulting from Covered Activities within Preserves

The M2 NCCP/HCP establishes that no more than 13 acres (approximately 1%) of the natural habitat within the acquired Preserves will be impacted by Preserve management activities that will result in new permanent impacts on habitat. The 13 acres of anticipated impacts within the Preserves may be concentrated within a few of the Preserves or be spread evenly throughout each of the Preserves. Potential impacts include activities such as construction of new trails, access roads, recreation facilities, and maintenance structures. OCTA and Preserve Managers have been tracking any activities resulting in more than 0.1 acre of new direct effects on natural habitat within the Preserves and will record this information in a ledger to be included in this Annual Report.

OCTA will ensure that the overall cap across all Preserves is not exceeded. If degraded habitat and/or existing developed areas (e.g., roads and trails) within the Preserves are restored and converted to native habitat, OCTA will also be able to use credits from these activities, subject to review and approval by the Wildlife Agencies, to offset impacts within the Preserves. OCTA will track impacts and credits within the Preserves for each of the individual habitat types, but will be held to a cap only for the overall amount of natural habitat impacted.

A total of 0.45 acre of permanent impacts have been recorded at Pacific Horizon Preserve due to maintenance work performed by SCE at electrical poles located on and adjacent to the Preserve. Additionally, minor impacts occurred at Silverado Chaparral estimated at 0.02 acre. This work was not coordinated with OCTA and was not included as a covered activity in the Plan. SCE will be developing a compensation proposal to offset these impacts. This proposal will be provided to OCTA and the Wildlife Agencies for their consideration. A Minor Amendment to document this change in the Plan will be needed.

No other impacts have been recorded on the Preserves in relation to Covered Activities. It is anticipated that as some of the trails are restored and invasive species are removed from disturbed areas that additional credits will be added (once approved by the Wildlife Agencies) to the 13 acres of allowable impacts.<sup>3</sup>

## 2.4 Maintaining Rough Proportionality

Under the NCCPA, conservation measures in an approved NCCP must be roughly proportional in time and extent to the impact on habitat or Covered Species authorized under the plan. Similarly, the USFWS HCP Policy Handbook provides that mitigation for project impacts should generally occur prior to or concurrent with the impacts.

Implementation of conservation measures roughly proportional in time and extent to impacts on natural communities and Covered Species will be measured as follows: (1) for habitat acquired, the date of recordation of a conservation easement (CE) or other approved site protection mechanism;

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<sup>3</sup>Page 4-9 of the NCCP/HCP states, "...acreage may be added to the 13-acre cap by OCTA if degraded habitat within the Preserves is restored and converted to native habitat and approved by the Wildlife Agencies."

and (2) for restoration projects, the date on which the restoration projects have met their success criteria. For the purpose of maintaining rough proportionality, OCTA will ensure that a minimum 2:1 mitigation ratio for direct impacts will be maintained for each vegetation community, with the exception of grassland, which will be maintained at a minimum 1:1 ratio. Thus, for each acre of chaparral, riparian vegetation, scrub, and woodland that is directly impacted, at least 2 acres will have been conserved or restored before the impacts take place. For each acre of grassland that is directly impacted, at least 1 acre will have been conserved or restored before the impacts take place. If OCTA has not conserved or restored enough grassland habitat acreage to offset grassland impacts, it can offset grassland impacts with “out-of-kind” habitat at a 2:1 ratio. Compliance with the requirement to maintain rough proportionality will be monitored by OCTA and will be reported on an annual basis as part of the Annual Report.

Because OCTA was able to accelerate the implementation of conservation actions (Preserve acquisitions and restoration projects) through the early action plan, it is expected that most or all of the conservation actions under the Plan will be completed (i.e., CEs recorded for OCTA Preserves and restoration projects signed off as meeting their success criteria) within 10 years after permit issuance. This will be prior to when a substantial percentage of the impacts from Covered Activities occur. To ensure that rough proportionality will be maintained during the first few years of the Plan, OCTA will either record a CE for at least one Preserve or be able to demonstrate that one or more restoration projects have received sign-off from the Wildlife Agencies as meeting their success criteria within 2 years of permit issuance. To date, four restoration projects (Big Bend, City Parcel, Bee Flat, and UCI Ecological Reserve) have met their success criteria.



UCI project area “before” restoration (photo courtesy of Natural Communities Coalition).

Table 2-5 provides a ledger of the balance of credits achieved and habitat impacts as of December 31, 2021. Table 2-6 lists the conservation credits that have been achieved to date.



UCI project area “after” restoration (photo courtesy of Natural Communities Coalition). Signed off 2021.

**Table 2-5. Rough Proportionality of Impacts and Conservation Credits Ledger<sup>a</sup>**

Habitat Type	Habitat Impacts Permitted to Date <sup>b</sup>	Rough Proportionality Requirements <sup>c</sup>	Habitat Credits Achieved to Date <sup>d</sup>	In-Kind Habitat Balance <sup>e</sup>	Out-of-Kind Credits Used <sup>f</sup>	Current Balance
Chaparral	--	--	4.0	--	--	+ 4.0
Coniferous Forest	--	--	--	--	--	--
Grassland	6.5	6.5	35.4	+ 28.9	+ 6.5	+ 35.4
Riparian	1.0	2.0	13.1	+ 11.1	--	+ 11.1
Scrub	1.7	3.4	78.5	+ 75.1	- 13.0	+ 62.1
Water	0.12	0.24	0.4	+ 0.16	--	+ 0.16
Wet Meadow/Marsh	--	--	--	--	--	--
Woodland	--	--	17.8	--	--	+ 17.8

<sup>a</sup> Values are in acres.

<sup>b</sup> See Table 2-2.

<sup>c</sup> Based on a 2:1 ratio for all habitats except grasslands, which is 1:1.

<sup>d</sup> See Table 2-6.

<sup>e</sup> Habitat credits minus rough proportionality requirements.

<sup>f</sup> Negative balance of grassland habitat can be offset with a 2:1 use of “out-of-kind” credits from another habitat type.

**Table 2-6. Conservation Credits Achieved to Date<sup>a</sup>**

Conservation Action	Total	Chaparral	Coniferous Forest	Grassland	Riparian	Scrub	Water	Wet Meadows/ Marsh	Woodland
<b>Total Conservation Credits to Date:</b>	<b>139.2</b>	<b>4.0</b>	<b>--</b>	<b>35.4</b>	<b>13.1</b>	<b>78.5</b>	<b>0.4</b>	<b>--</b>	<b>17.8</b>
Big Bend Restoration Project	3.7	--	--	--	0.5	3.2	--	--	--
City Parcel Restoration Project <sup>b</sup>	43.0	--	--	--	12.6	40.0	0.4	--	--
Bee Flat Restoration Project	84.0	4.0	--	35.4	--	26.8	--	--	17.8
UCI Ecological Reserve	8.5					8.5			

<sup>a</sup> Values are in acres.

- <sup>b</sup> A calculation of the amount of “open water” at the City Parcel Restoration Project was determined by the project sponsor (per email from Jordan Wills dated January 14, 2019), which was subtracted from the acreage of restored riparian habitat.

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## 3.1 Introduction

The acquisition of Preserve lands was a primary component of the M2 NCCP/HCP conservation strategy. The selection of the Preserves was designed to meet the biological goals and objectives of the Plan while also contributing to the collective goals of the existing regional network of protected areas within the Plan Area. OCTA has acquired seven properties as part of the M2 NCCP/HCP. The locations of the M2 Preserves are shown in Figure 1 and the acreage totals are listed in Table 3-1.

**Table 3-1. OCTA Preserves**

OCTA Preserves	Location	Total Acres <sup>a</sup>	Acres of Natural Habitat
<b>Bobcat Ridge</b>	Trabuco Canyon	48.0	47.9
<b>Eagle Ridge</b>	City of Brea	301.1	296.1
<b>Live Oak Creek<sup>b</sup></b>	Trabuco Canyon	82.8	51.3
<b>Pacific Horizon</b>	City of Laguna Beach	151.9	148.3
<b>Silverado Chaparral</b>	Silverado Canyon	203.5	200.0
<b>Trabuco Rose</b>	Trabuco Canyon	395.7	380.4
<b>Wren's View</b>	Trabuco Canyon	116.1	112.4
<b>Totals</b>		<b>1,299.1</b>	<b>1,236.4</b>

<sup>a</sup> These acreages are based on best available information used during preparation of RMPs and may be slightly different from acreages reported in the M2 NCCP/HCP.

<sup>b</sup> Live Oak Creek Preserve was purchased, in part, with funding provided by the National Fish and Wildlife Foundation. OCTA receives a percentage of the available credits based on the percentage of the total cost of acquiring and managing the Preserve contributed by OCTA (75.36%).

The M2 NCCP/HCP establishes guidelines for the management and monitoring of the Preserves to ensure the long-term health and viability of species and ecological values within the Preserves. Each Preserve has had Preserve-specific Resource Management Plans (RMPs) developed. Appendix C and D summarizes various Preserve maintenance and stewardship activities, including invasive species management, tree evaluations, and general maintenance activities.

## 3.2 Preserves Status

The following sections provide a status summary for each M2 Preserve.

### 3.2.1 Bobcat Ridge Preserve

Action	Bobcat Ridge Preserve Status
<b>Acquisition</b>	Acquired in May 2011.
<b>Baseline Surveys</b>	Baseline surveys were completed in 2013 by BonTerra Consulting and results documented in the Baseline Survey Technical Report. This report is included as an appendix to the RMP.
<b>Preparation of Resource Management Plan</b>	The draft RMP was completed in August 2017 and was available for public review for a 90-day period through December 2017. Final RMP was completed and posted on OCTA EMP website in September 2017. <a href="http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/">http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/</a>
<b>Recording of Conservation Easement</b>	A conservation easement for the Bobcat Ridge Preserve is being prepared and is anticipated to be recorded in the near future.
<b>Identification of Preserve Manager</b>	Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place in the near future.
<b>General Stewardship and Preserve Management</b>	OCTA staff, with assistance from Preserve Management contractor RECON, and Preserve biological monitor Glenn Lukos Associates (GLA) implemented routine and ongoing property management and maintenance activities. In addition, High Level Security Services (HLSS) is assisting with the private patrol needs for the Preserve. A description and inventory of general stewardship and Preserve management activities conducted is included in Appendices C and D.
<b>Public Access Policy and Enforcement</b>	Based on an evaluation of biological resources, safety concerns, and local land use/parking constraints conducted as part of the preparation of the Bobcat Ridge RMP, it was determined that public access cannot be accommodated on this Preserve at this point in time.
<b>Invasive Species Control Plan and Implementation</b>	An Invasive Species Management Plan (ISMP) for the Bobcat Ridge Preserve was completed and approved by the Wildlife Agencies in 2019. OCTA is implementing the ISMP based on priorities outlined in the plan. Recent monitoring has confirmed both the Invasive Shot Hole Borer as well as the Gold Spotted Oak Borer in the Trabuco Canyon Area. OCTA will continue to monitor and treat trees that are being impacted by these invasive species. After previous negative results from monitoring, Dudek visually evaluated this Preserve again in 2021 and found no signs of GSOB or ISHB. The report containing detailed information of this study is included as an appendix to the Biological Monitoring Report (GLA 2022) (Appendix C).
<b>Fire Management Plan and Fire Response</b>	OCTA has contracted with Wildland Res Mgt to complete a Fire Management Plan (FMP). The FMPs are anticipated to be completed in 2022. They will establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. No fires within the Preserve have occurred during this period.
<b>Biological (Effectiveness) Monitoring</b>	Effectiveness monitoring included focused surveys for covered bird species in 2021. GLA detected four cactus wren territories. No coastal California gnatcatchers were detected. GLA established two wildlife camera stations on the Preserve in 2019. Camera monitoring occurred for covered mammal species and wildlife

Action	Bobcat Ridge Preserve Status
	movement in 2021. Bobcat were detected on four occasions. Additional wildlife detected by the cameras included deer, fox, and coyote. Focused suveys for covered plants will occur in 2022. See the Effectiveness Monitoring Schedule in Appendix B.
<b>Public Outreach / Education</b>	OCTA has conducted public outreach and education as part of the preparation of the Draft and Final RMP.
<b>Adaptive Management</b>	<p>The RMP has identified the following key issues for a focused adaptive management approach to address uncertainties of Preserve management:</p> <ul style="list-style-type: none"> <li> <b>Vegetation Control around Cactus Patches.</b> Research current approaches for vegetation management around cactus patches to determine if this is needed at the Bobcat Ridge (Hafen) Preserve to protect and/or improve cactus wren populations.                     </li> </ul> <p>Approximately 1.47 acres of cactus patches were documented on the Preserve in 2019 (GLA 2020). This data will serve as the base for any future cactus patch vegetation management actions at the Preserve.</p>
<b>Changed Circumstances</b>	No events occurred that meet the Changed Circumstances requirements during this period.
<b>General Comments / Concerns</b>	OCTA will continue to monitor the recovery of habitat at the southern boundary of the Preserve in response to a neighbor’s unauthorized impact. The impact area totalling 0.135 acre was identified in January 2017 and an additional disturbance of 0.04 acre was identified in 2020 (GLA 2021). In 2021, GLA wildlife cameras detected two individuals driving an offroad vehicle within the encroachment area; however, GLA reviewed the area and it did not appear that any disturbance had occurred as a result of this activity (GLA 2022). OCTA will elevate or try to coordinate with other County staff regarding this enforcement issue.

### 3.2.1.1 Management and Monitoring Summary

Effectiveness monitoring included focused surveys for covered bird species in 2021. GLA detected four cactus wren territories. No coastal California gnatcatchers were detected, although the site does contain suitable habitat for the gnatcatcher. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher. Wildlife camera monitoring documented bobcat on four occasions in 2021. GLA’s monitoring did not focus on covered plant species in 2021 due to drought conditions. As a result, no new locations were detected in 2021. Focused surveys for covered plants will occur in 2022 with additional focus placed on surveying intermediate mariposa lily in the disturbance area to determine the potential extent of impact (GLA 2022).

As part of general stewardship monitoring, GLA staff had previously documented unauthorized impacts of coastal sage scrub at the Bobcat Ridge Preserve (2017) resulting from an adjacent neighbor intentionally clearing a path along the southern border of the Preserve to access an adjacent area of their land. The neighbor did not obtain a permit from the





County for this clearing and was ordered to restore the disturbance, but to date the restoration has not been completed. In 2019, GLA conducted an assessment of the damage and concluded that passive habitat reestablishment is expected to be successful for this 0.135 acre impacted area (GLA 2020). Intermediate mariposa lily was documented within this disturbed area, although in lower numbers. In 2020, re-disturbed areas of native vegetation that had been restoring were observed within approximately 0.04 acre (GLA 2021). Monitoring results in 2021 concluded that due to the evidence of natural recruitment, successful habitat development is expected to occur provided that there is no further disturbance. Also in 2021, GLA wildlife cameras detected two individuals driving an offroad vehicle (mule) within the encroachment area; however, GLA reviewed the area and it did not appear that any disturbance had occurred as a result of the mule (GLA 2022). OCTA will elevate or try to coordinate with other County staff regarding this enforcement issue. In addition, there are two signs and one wildlife camera located near this area to deter trespass. The cameras confirmed that mule bobcat, deer, fox, and coyote are utilizing the Preserve.

An Invasive Species Management Plan (ISMP) was approved by the Wildlife Agencies in 2019 for the Bobcat Ridge Preserve. As part of the ISMP preparation, the distribution of invasive plant species on the Preserve were mapped and priority areas for removal and methodologies were identified. OCTA is prioritizing ISMP implementation based on threats to Covered Species. As the invasive species on this Preserve are not as high of a threat to Covered Species or as prevalent as some of our other Preserves, implementation of invasive species control has not yet been scheduled. Biological monitoring will continue and early detection and eradication actions will continue to ensure that any new emergent invasives will not colonize within the Preserve as outlined in the ISMP. In addition, the fire management plan for the Bobcat Ridge Preserve has been drafted and is pending approvals.

There were no maintenance tasks required at the Bobcat Ridge Preserve in 2021 (RECON 2022).

### 3.2.1.2 Planned Actions for 2022

Planned actions and priorities for 2022 include:

- Complete focused visual encounter surveys as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Conduct Preserve-wide focused covered species plant surveys.
- Continue to closely monitor unauthorized activities along the southern boundary.
- Continue monitoring covered mammal species and wildlife movement utilizing the installed wildlife camera location post.
- Implement the approved ISMP based on priorities outlined in the plan and to continue to monitor for stink net, which has been previously detected and removed adjacent to the Preserve boundary.
- Finalize the Bobcat Ridge Preserve FMP.

### 3.2.1.3 Related Documents and References

Audubon Starr Ranch. 2019. *Vegetation Monitoring on Three Orange County Transportation Authority Preserves: Bobcat Ridge, Wren's View, and Live Oak Creek*. Operating Agreement 3-5-3711. July 2019

- BonTerra Consulting. 2013. *Baseline Biological Surveys Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Prepared for OCTA. December.
- Glenn Lukos Associates (GLA). 2019. *Biological Monitoring Report for OCTA M2 Preserves – Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.
- Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.
- Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.
- Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.
- RECON Environmental Services (RECON). 2022. *2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

## 3.2.2 Eagle Ridge Preserve

Action	Eagle Ridge Preserve Status
<b>Acquisition</b>	Acquired in 2011.
<b>Baseline Surveys</b>	Baseline surveys were completed in 2013 by BonTerra Consulting and results documented in the Baseline Survey Technical Report. This report is included as an appendix to the RMP.
<b>Preparation of Resource Management Plan</b>	Draft RMP was completed in September 2017 and was available for public review for a 90-day period through December 2017. Final RMP was completed and posted on OCTA EMP website in September 2018. <a href="http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/">http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/</a>
<b>Recording of Conservation Easement</b>	A CE for the Eagle Ridge Preserve is being prepared and is anticipated to be recorded in the near future.
<b>Identification of Preserve Manager</b>	Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place in the near future.
<b>General Stewardship and Preserve Management</b>	OCTA staff, with assistance from Preserve Management contractor RECON, and Preserve biological monitor Glenn Lukos Associates (GLA) implemented routine and ongoing property management and maintenance activities. A description and inventory of general stewardship and Preserve management activities conducted by GLA and RECON is included in Appendices C and D.
<b>Public Access Policy and Enforcement</b>	Due to the combination of a lack of staging areas, biological sensitivity, and other constraints, OCTA determined public access on the Preserve will be very limited. It may be possible to hold a small structured event with the help of adjacent landowners for staging and/or parking. If an event is set to occur, public access would adhere to roads and trails designated for Preserve management.
<b>Invasive Species Control Plan and Implementation</b>	OCTA contracted with GLA to serve as a Restoration Ecologist and completed an ISMP. The ISMP was reviewed and approved by the Wildlife Agencies in 2019. No invasives pest species have been found on this Preserve.
<b>Fire Management Plan and Fire Response</b>	OCTA has contracted with Wildland Res Mgt to complete an FMP. A draft FMP was completed in 2021 and is expected to be approved in 2022. The FMP will establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. A small (1.5 acre) fire occurred on this Preserve in July 2016. The fire was extinguished quickly, and the burn area has been recovering with no additional management actions. No fires occurred in 2021.
<b>Biological (Effectiveness) Monitoring</b>	Effectiveness monitoring included focused surveys for covered bird species and southwestern pond turtle in 2021. GLA detected one least Bell's vireo on the very western edge of the property, which is also using the contiguous willow habitat beyond the property. In 2021, GLA biologists and U.S. Geological Service (USGS) biologists on separate occasions detected pond turtles inside and outside the Preserve. USGS biologists detected one adult pond turtle within Soquel Canyon Creek within the Preserve and several pond turtles offsite within Carbon Canyon

Action	Eagle Ridge Preserve Status
	<p>Creek. GLA biologists also detected pond turtles offsite within Carbon Canyon Creek (GLA 2022).</p> <p>Camera monitoring for covered mammal species and wildlife movement began in 2018. In 2019, cameras documented bobcat, skunk, mule deer, and coyote. Since the wildlife cameras were not providing new data, camera monitoring has been discontinued unless an issue arises that warrants the usage of the cameras on the property (GLA 2022).</p> <p>Focused surveys for covered plants will occur in 2022.</p> <p>See the Effectiveness Monitoring Schedule in Appendix B.</p>
<b>Public Outreach / Education</b>	<p>OCTA has conducted public outreach and education as part of the preparation of the Draft and Final RMP.</p>
<b>Adaptive Management</b>	<p>The RMP has identified the following key issues for a focused adaptive management approach to address uncertainties of Preserve management:</p> <ul style="list-style-type: none"> <li>• <b>Riparian Habitat Enhancement along Soquel Canyon.</b> Collect photo monitoring of the riparian habitat enhancement with the removal of grazing to determine if passive restoration was successful. If not, determine if active restoration is needed.</li> </ul> <p>OCTA contacted the adjacent rancher and requested the removal of the cattle. Cattle were removed utilizing a bait pen. Cattle are still being found on the Preserve and it is likely attributed to breaks in fence lines or gates being left open. OCTA will continue to coordinate with rancher to remove the cattle. Baiting needs to occur during the dry season to successfully lure the cattle into the bait pens.</p>
<b>Changed Circumstances</b>	<p>No events occurred that meet the Changed Circumstances requirements during this period.</p>
<b>General Comments / Concerns</b>	<p><i>Cattle Trespass.</i> Cattle have been identified trespassing on the Eagle Ridge parcel before its acquisition. New fencing was installed, but cattle trespass continues to be a problem and were observed in 2021 (GLA 2022). OCTA will continue to partner with other agencies and the adjacent rancher to address this problem.</p>

### 3.2.2.1 Management and Monitoring Summary

Effectiveness monitoring included focused surveys for covered bird species and southwestern pond turtle in 2021. GLA detected one least Bell’s vireo on the very western edge of the property, which is also using the contiguous willow habitat beyond the property. The Preserve is generally not expected to support the cactus wren or the coastal California gnatcatcher due to a lack of habitat, particularly the cactus wren due to the lack of cactus scrub. As such, focused surveys were not conducted for these species. However, the Preserve should still be generally reviewed annually for the gnatcatcher during ongoing monitoring.

In 2021, GLA biologists and USGS biologists on separate occasions detected pond turtles inside and outside the Preserve. USGS biologists detected one adult pond turtle within Soquel Canyon Creek within the Preserve and several pond turtles offsite within Carbon Canyon Creek. GLA biologists also detected pond turtles offsite within Carbon Canyon Creek (GLA 2022). GLA’s monitoring did not focus on covered plant species in 2021 due to drought conditions. No covered plant species have been detected at the Preserve (GLA 2022). Focused surveys for covered plants will occur in 2022.

Public access is not currently authorized at the Eagle Ridge Preserve. However, three wildlife cameras have detected multiple occurrences of unauthorized access, including mountain biking, hiking, and horseback riding. In addition, cattle are heavily using the property, and have been detected on multiple site visits by OCTA, CHSP staff, and GLA biologists, as well as by the wildlife cameras. Cattle were observed within the Eagle Ridge Preserve in 2021 (GLA 2022). The wildlife cameras also documented the following wildlife: coyote, skunk, bobcat, and mule deer.

An ISMP was prepared for the Eagle Ridge Preserve and approved by the Wildlife Agencies in 2019. OCTA is prioritizing ISMP implementation based on threats to Covered Species. As the invasive species on this Preserve are not as high of a threat or as prevalent as some of our other Preserves, implementation of invasive species control has not yet been scheduled. In addition, the fire management plan for the Eagle Ridge Preserve has been drafted and is pending approval.

Maintenance tasks performed in 2021 at the Eagle Ridge Preserve included the installation of five new signs, vegetation control along the fire access/ridge road, and installation of a new fence line at the northern section of the preserve, near an adjacent home (6200 Carbon Canyon Road) to deter unauthorized access (RECON 2022).



Newly installed signage at Eagle Ridge Preserve.

### 3.2.2.2 Planned Actions for 2022

Planned actions and priorities for 2022 include:

- Continue to coordinate with adjacent ranchers and land owners to remove the cattle from the Preserve.
- Completed focused visual encounter surveys as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Conduct Preserve-wide focused covered species plant surveys.
- Finalize the Eagle Ridge Preserve FMP.

### 3.2.2.3 Related Documents and References

BonTerra Consulting. 2013. *Baseline Biological Surveys Technical Report for the Hayashi (Eagle Ridge) Property, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California*. March.

Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.

Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

RECON Environmental Services (RECON). 2022. *2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

### 3.2.3 Live Oak Creek Preserve

Action	Live Oak Creek Preserve Status
<b>Acquisition</b>	Acquired in April 2011.
<b>Baseline Surveys</b>	Baseline surveys were completed in 2013 by BonTerra Consulting and results documented in the Baseline Survey Technical Report. This report is included as an appendix to the RMP.
<b>Preparation of Resource Management Plan</b>	Draft RMP was completed in August 2017 and was available for public review for a 90-day period through December 2017. Final RMP was completed and posted on OCTA EMP website in September 2017. <a href="http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/">http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/</a>
<b>Recording of Conservation Easement</b>	The CE for the Live Oak Creek Preserve is being prepared and is anticipated to be recorded in the near future.
<b>Identification of Preserve Manager</b>	Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place in the near future.
<b>General Stewardship and Preserve Management</b>	OCTA staff, with assistance from Preserve Management contractor RECON, and Preserve biological monitor Glenn Lukos Associates (GLA) implemented routine and ongoing property management and maintenance activities. In addition, High Level Security Services (HLSS) is assisting with the private patrol needs for the Preserve. A description and inventory of general stewardship and Preserve management activities conducted by GLA and RECON is included in Appendices C and D.
<b>Public Access Policy and Enforcement</b>	Due to the combination of the lack of staging areas, biological sensitivity, and other constraints, OCTA determined public access on the Live Oak Creek Preserve will be very limited. It may be possible to hold a small structured event with the help of adjacent landowners for staging and/or parking. If an event is set to occur, public access would adhere to roads and trails designated for Preserve management.
<b>Invasive Species Control Plan and Implementation</b>	An Invasive Species Management Plan (ISMP) for the Live Oak Creek Preserve was completed and approved by the Wildlife Agencies in 2019. OCTA is implementing the ISMP based on priorities outlined in the plan. No sign of ISHB was observed during surveys in 2021.
<b>Fire Management Plan and Fire Response</b>	OCTA has contracted with Wildland Res Mgt to complete FMPs. The FMPs are anticipated to be completed in 2022. The FMPs will establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. No fires within the Preserve have occurred during this period.
<b>Biological (Effectiveness) Monitoring</b>	Effectiveness monitoring included focused surveys for covered bird species in 2021. GLA detected four cactus wren territories. No coastal California gnatcatchers were detected. Additionally, two orangethroat whiptail were detected on the ridge road adjacent to the cattle ranch. Camera monitoring for covered mammal species and wildlife movement occurred from 2018 through 2019. The cameras were removed on an interim basis due to the level of effort and costs and the lack of new data being collected. While the cameras were installed, deer, coyote, bobcat, and gray fox were detected. Focused surveys for covered plants will occur in 2022. See the Effectiveness Monitoring Schedule in Appendix B.

Action	Live Oak Creek Preserve Status
<b>Public Outreach / Education</b>	OCTA has conducted public outreach and education as part of the preparation of the Draft and Final RMP.
<b>Adaptive Management</b>	<p>The RMP has identified the following key issues for a focused adaptive management approach to address uncertainties of Preserve management:</p> <ul style="list-style-type: none"> <li>• <b>Covered Plants and Vegetation Management.</b> Closely monitor the response of covered plant species (e.g., intermediate mariposa lily) to vegetation management actions along the side of access roads.</li> <li>• <b>Trails Revegetation.</b> Collect photo monitoring of the revegetation of closed trails to determine if passive restoration was successful. If not, determine if active restoration is needed.</li> <li>• <b>Vegetation Control around Cactus Patches.</b> Research current approaches for vegetation management around cactus patches to determine if this is needed at the Live Oak Creek Preserve to protect and/or improve cactus wren populations.</li> </ul>
<b>Changed Circumstances</b>	No events occurred that meet the Changed Circumstances requirements during this period.
<b>General Comments / Concerns</b>	None.

### 3.2.3.1 Management and Monitoring Summary

Effectiveness monitoring included focused surveys for covered bird species in 2021. GLA detected four cactus wren territories. No coastal California gnatcatchers were detected. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher. Camera monitoring for covered mammal species and wildlife movement occurred from 2018 through 2019. The cameras were removed on an interim basis due to the level of effort and costs associated with maintenance, and the lack of new data being collected. While the cameras were installed, deer, coyote, bobcat, and gray fox were detected. GLA's monitoring did not focus on covered plant species in 2021 due to drought conditions. As a result, no new locations were detected (GLA 2022). Focused surveys for covered plants will occur in 2022.

GLA prepared an ISMP, which was approved by the Wildlife Agencies in 2019. OCTA is prioritizing ISMP implementation based on threats to Covered Species. As the invasive species on this Preserve are not as high of a threat to Covered Species or as prevalent as some of our other Preserves, implementation of invasive species control has not yet been scheduled. GLA biologists detected and removed a clump of stink net located adjacent to the Preserve boundary in 2019. Biological monitoring will continue and early detection and eradication actions will continue to ensure that any new emergent invasives will not colonize within the Preserve as outlined in the ISMP.

The team arborist, Dudek, conducted invasive shot hole borer (ISHB; *Euwallacea* sp.) surveys in 2017, 2019, and 2020. No sign and/or symptom of ISHB was observed. Dudek conducted emergent pest trapping and a visual evaluation in 2021 to re-evaluate for the presence of ISHB and found no sign and/or symptom of ISHB during the surveys. Invasive pests will continue to be monitored.

No new unauthorized trails were documented (GLA 2022). The trails and roads documented in the RMP exist and are being utilized for management on this Preserve. Monitoring will continue to document any unauthorized trail use.



Maintenance tasks performed included vegetation thinning and removal within two fuel modification zones (identified within the RMP), vegetation removal on the fire roads/access roads, and removal of fallen oak tree branches that were blocking the entrance of the Preserve and portions on the shoulder of Live Oak Canyon Road. The branches were left on the Preserve. A summary of the work completed by RECON at Live Oak Creek has been included in Appendix D.



Workers manually removing fallen oak tree debris from the fire road.

### 3.2.3.2 Planned Actions for 2022

Planned actions and priorities for 2022 include:

- Complete focused visual encounter surveys as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Conduct Preserve-wide focused covered species plant surveys.
- Implement the approved ISMP based on priorities outlined in the plan and to continue to monitor for stink net, which has been previously detected and removed from the Preserve.
- Continue to evaluate the status and threat of ISHB and other fungal pathogens.
- Finalize the Live Oak Creek Preserve FMP.

### 3.2.3.3 Related Documents and References

BonTerra Consulting. 2013. *Draft Biological Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. December.

Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.

Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April 2022.

RECON Environmental Services (RECON). 2022. *2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

### 3.2.4 Pacific Horizon Preserve

Action	Pacific Horizon Preserve Status
<b>Acquisition</b>	Acquired in April 2015.
<b>Baseline Surveys</b>	Baseline surveys were completed in 2015 by Bonterra Psomas and results documented in the Baseline Survey Technical Report. This report is included as an appendix to the RMP.
<b>Preparation of Resource Management Plan</b>	Draft RMP was completed in August 2017 and was available for public review for a 90-day period through December 2017. Final RMP was completed and posted on OCTA EMP website in September 2018. <a href="http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/">http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/</a>
<b>Recording of Conservation Easement</b>	A Conservation Easement for the Pacific Horizon Preserve is being prepared and is anticipated to be recorded in the near future.
<b>Identification of Preserve Manager</b>	Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place in the near future.
<b>General Stewardship and Preserve Management</b>	OCTA staff, with assistance from Preserve Management contractor RECON, and Preserve biological monitor Glenn Lukos Associates (GLA) implemented routine and ongoing property management and maintenance activities. A description and inventory of general stewardship and Preserve management activities conducted by GLA and RECON is included in Appendices C and D.
<b>Public Access Policy and Enforcement</b>	The Pacific Horizon RMP establishes a public access policy that identifies appropriate recreational opportunities within the Preserve that are compatible with the protection of biological resources. Through an evaluation of biological resources and site conditions, as well as coordination with the Wildlife Agencies, a set of existing trails within the Preserve have been identified for managed public access and other trail segments planned for decommissioning. The current configuration of OCTA approved trails connects to other existing trails on County of Orange open space lands managed by Orange County Parks (OC Parks) as well as the City of Laguna Beach. OCTA will continue to coordinate with adjacent property owners, California Coastal Commission (CCC), and City of Laguna Beach to document a formalized regional trails strategy that involves public access connections to and across the Pacific Horizon Preserve.
<b>Invasive Species Control Plan and Implementation</b>	An Invasive Species Management Plan (ISMP) for the Pacific Horizon Preserve was completed and approved by the Wildlife Agencies in 2019. OCTA is implementing the ISMP based on priorities outlined in the plan. OCTA obtained all the necessary permits and began invasive plant species treatments in 2020. This work will continue for the next few years as outlined in the ISMP.
<b>Fire Management Plan and Fire Response</b>	OCTA has contracted with Wildland Res Mgt to complete FMPs. The FMPs are anticipated to be completed in 2022. The FMPs will establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. No fires within the Preserve have occurred during this period.
<b>Biological (Effectiveness) Monitoring</b>	Effectiveness monitoring included focused surveys for covered bird species in 2021. No coastal California gnatcatchers or cactus wren were detected. Camera monitoring for covered mammal species and wildlife

Action	Pacific Horizon Preserve Status
	movement is scheduled to be occur in 2022. The installation of cameras will be pursuant to coastal development permit (CDP). Focused surveys for covered plants will occur in 2022. See the Effectiveness Monitoring Schedule in Appendix B.
<b>Public Outreach / Education</b>	OCTA has conducted public outreach and education as part of the preparation of the Draft and Final RMP.
<b>Adaptive Management</b>	The RMP has identified the following key issues for a focused adaptive management approach to address uncertainties of Preserve management: <ul style="list-style-type: none"> <li>• <b>Covered Plants and Vegetation Management.</b> Closely monitor the response of covered plant species (e.g., many-stemmed dudleya) to trail use and future closures. Permits were obtained in 2019 to conduct restoration including decommissioning of a duplicative trail that crosses through many-stemmed dudleya habitat. Implementation of the restoration efforts began in 2020 and will continue into 2022.</li> <li>• <b>Trails Revegetation.</b> A coastal development permit was obtained for the proposed trail closures at this Preserve. Photo monitoring of the revegetation of closed trails will be conducted to determine if passive restoration was successful. If not, determine if active restoration is needed.</li> <li>• <b>Vegetation Control around Cactus Patches.</b> Research current approaches for vegetation management around cactus patches to determine if this is needed at the Pacific Horizon Preserve to protect and/or improve cactus wren populations.</li> </ul> Focused efforts to address these adaptive management issues will continue in 2022.
<b>Changed Circumstances</b>	No events occurred that meet the Changed Circumstances requirements during this period.
<b>General Comments / Concerns</b>	Continue to implement restoration efforts to install cameras, remove invasive plant species, and close sections of trails supporting covered plant species. Continue to monitor restoration of disturbance areas created by SCE and seek compensation for the 0.45 area of disturbance.

### 3.2.4.1 Management and Monitoring Summary

Effectiveness monitoring included focused surveys for covered bird species in 2021. No cactus wren or coastal California gnatcatchers were detected (GLA 2022). One male gnatcatcher was observed by CDFW and OCTA staff in 2015 (CDFW 2017). Suitable, coastal sage scrub is present on the Pacific Horizon Preserve, and conditions have not changed since the 2015 surveys. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher. GLA’s monitoring did not focus on covered plant species in 2021 due to drought conditions. As a result, no new locations were detected in (GLA 2022). Focused surveys for covered plants will occur in 2022.

Impacts (0.45 acre) were discovered in relation to the maintenance of the OCTA powerline. OCTA has been coordinating with SCE staff in relation to the existing poles, maintenance needs conducted and planned maintenance needs in the future. OCTA is working with SCE to record a legal easement for the poles and 10-foot clearance areas as well as an access agreement for the future SCE work on the Preserve. SCE is drafting a compensation proposal for the impacted habitat for OCTA’s consideration.

SCE is also working with the CCC to obtain a coastal development permit (CDP) for the work. A minor amendment will be necessary for the Plan to recognize the SCE powerline as an existing use for which operation and maintenance will be permitted to continue and for which SCE provided restoration will be implemented to offset habitat impacts to maintain long term net habitat value within the Preserve. Additional information is included in the bio monitoring report (Appendix C).



Area cleared of vegetation by SCE around a power pole.

Mountain biking and hiking continue to occur at the Pacific Horizon Preserve, which are authorized activities. GLA continued to document unauthorized trail modifications. OCTA obtained a CDP from the CCC to conduct restoration of unauthorized trail use. Work began in 2020 with the decommissioning of a duplicative trail segment which is a threat to many-stemmed dudleya, and restoration of other disturbed areas in the vicinity of the trail which support intermediate mariposa lily and coastal sage scrub habitats. The fence line was fixed and signs were installed. The treatment of the invasive plant species also occurred. Wildlife cameras will be placed in 2022 around the restoration areas and on the Preserve in specific locations. Monitoring and reporting of these restoration tasks will be performed and provided to the Wildlife Agencies as well as the CCC.

GLA completed the Pacific Horizon Preserve ISMP and OCTA obtained approval from CDFW and USFWS in 2019. Invasive species were mapped, and priorities for removal were established. The first phase of the restoration actions focuses on removing Priority 1 plants consistent with the ISMP and planting disturbed areas. In October 2020, restoration activities began with seed head removal from the pampas grass and spraying the remaining foliage with herbicide in the northern area of the Preserve. OCTA also began the treatment of hottentot fig on by spraying in place. In 2021, artichoke thistle, pampas grass, and hottentot fig in the northern area of the Preserve were treated with a glyphosate-based herbicide. The pampas grass at the bottom of the canyon was treated for the first time, which consisted of spraying the foliage of the plants with a glyphosate-based herbicide. The adjacent County of Orange invasive plants were also treated (permitted by Orange County Parks).

The maintenance tasks performed at the Pacific Horizon Preserve during 2021 included non-native invasive species control, repairs to the fence line, installation of additional Preserve restoration work signs, work to deter use along the decommissioned trail (replacing branches and debris that had been moved from the decommissioned trail onto live vegetation and planting coast prickly pear that had been salvaged from other areas of the Preserve). Additional information pertaining to maintenance activities by RECON is included in Appendix D.

### 3.2.4.2 Planned Actions for 2022

Planned actions and priorities for 2022 include:

- Continue to coordinate with SCE to record a formal easement and develop an access agreement for maintenance needs on the existing powerline.
- Complete focused visual encounter surveys as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.

- Conduct Preserve-wide focused covered plant species surveys.
- Monitor restoration activities including invasive species removal and select duplicative trail restoration.
- Install cameras to monitor wildlife use.
- Continue monitoring of unauthorized trail use, particularly in the northern portion of the Preserve and near known populations of many-stemmed dudleya.
- Finalize the Pacific Horizon Preserve FMP.

### 3.2.4.3 Related Documents and References

Bonterra Psomas. 2015. *Baseline Biological Surveys Technical Report for the Aliso Canyon (Pacific Horizon) Property, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California*. October.

California Department of Fish and Wildlife. 2017. *Coastal California Gnatcatcher and Cactus Wren, Presence/Absence Surveys on Five Orange County Transportation Authority Preserves, Orange County, California*. Prepared for Orange County Transportation Authority. July.

Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.

Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

RECON Environmental Services (RECON). 2022. *2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

### 3.2.5 Silverado Chaparral Preserve

Action	Silverado Chaparral Preserve Status
<b>Acquisition</b>	Acquired in December 2014.
<b>Baseline Surveys</b>	Baseline surveys were completed in 2015 by BonTerra Consulting and results documented in the Baseline Survey Technical Report. This report is included as an appendix to the RMP.
<b>Preparation of Resource Management Plan</b>	Draft RMP was completed in August 2017 and was available for public review for a 90-day period through December 2017. Final RMP was completed and posted on OCTA EMP website in September 2017. <a href="http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/">http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/</a>
<b>Recording of Conservation Easement</b>	Draft CE for the Silverado Chaparral Preserve is being prepared and is anticipated to be recorded in the near future.
<b>Identification of Preserve Manager</b>	Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place in the near future.
<b>General Stewardship and Preserve Management</b>	OCTA staff, with assistance from Preserve Management contractor RECON, and Preserve biological monitor Glenn Lukos Associates (GLA) implemented routine and ongoing property management and maintenance activities. In addition, High Level Security Services (HLSS) is assisting with the private patrol needs for the Preserve. A description and inventory of general stewardship and Preserve management activities conducted by GLA and RECON is included in Appendices C and D.
<b>Public Access Policy and Enforcement</b>	OCTA will continue to implement a managed public access approach for the Silverado Chaparral Preserve in coordination with the adjoining OC Parks lands.
<b>Invasive Species Control Plan and Implementation</b>	An Invasive Species Management Plan (ISMP) for the Silverado Chaparral Preserve was completed and approved by the Wildlife Agencies in 2019. OCTA is implementing the ISMP based on priorities outlined in the plan.
<b>Fire Management Plan and Fire Response</b>	OCTA has contracted with Wildland Res Mgt to complete FMPs. The FMPs are anticipated to be completed in 2022. The FMPs will establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. No fires within the Preserve have occurred during this period.
<b>Biological (Effectiveness) Monitoring</b>	Effectiveness monitoring included focused surveys for covered bird species in 2021. Camera monitoring for Covered Mammals and wildlife movement occurred in 2019. More protected cameras will need to be set (one was stolen in 2019). Camera monitoring will be reinitiated in 2022. Focused surveys for covered plants will occur in 2022. See the Effectiveness Monitoring Schedule in Appendix B.
<b>Public Outreach / Education</b>	OCTA has conducted public outreach and education as part of the preparation of the Draft and Final RMP.
<b>Adaptive Management</b>	The RMP has identified the following key issues for a focused adaptive management approach to address uncertainties of Preserve management: <ul style="list-style-type: none"> <li>• <b>Public Access and Wildlife Activity.</b> Use wildlife movement cameras to monitor and gauge wildlife activity to evaluate changes in the Silverado Chaparral Preserve public access policies. This</li> </ul>

Action	Silverado Chaparral Preserve Status
	<p>monitoring would be collected while the levels of public access are being reviewed and potentially changed.</p> <ul style="list-style-type: none"> <li>• <b>Covered Plants and Vegetation Management.</b> Closely monitor the response of covered plant species (e.g., intermediate mariposa lily) to vegetation management actions along the side of access roads.</li> <li>• <b>Trails Revegetation.</b> Collect photo monitoring of the revegetation of closed trails to determine if passive restoration was successful. If not, determine if active restoration is needed.</li> <li>• <b>Vegetation Control around Cactus Patches.</b> Research current approaches for vegetation management around cactus patches to determine if this is needed at the Silverado Chaparral Preserve to protect and/or improve cactus wren populations.</li> </ul> <p>Focused monitoring efforts to address these adaptive management issues will continue in 2022.</p>
<b>Changed Circumstances</b>	No events occurred that meet the Changed Circumstances requirements during this period.
<b>General Comments / Concerns</b>	Two encroachments associated with SCE utility work were documented including a new pole or newly replaced/not previously documented pole onsite with vegetation cut around the pole and a new pole placed just offsite; however, a new access trail was cut on OCTA property. In addition, it appears that access to two offsite poles is occurring from OCTA property on unauthorized trails. These encroachments total approximately 0.02 acre. Also, the fencing at one offsite pole location was cut to access the pole. OCTA is coordinating with SCE regarding the encroachments.

### 3.2.5.1 Management and Monitoring Summary

Effectiveness monitoring included focused surveys for covered bird species in 2021. No coastal California gnatcatchers were detected. One cactus wren territory was identified in the southwestern most corner of the Preserve. Based on its behavior and observation of feathers in the nest entrance, the cactus wren appeared to be nesting. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher. GLA’s monitoring did not focus on covered plant species in 2021 due to drought conditions. As a result, no new locations were detected in 2021 (GLA 2022). Focused surveys for covered plants will occur in 2022.

Public access is not currently authorized at the Silverado Chaparral Preserve. During 2021 monitoring visits, GLA observed that mountain biking continues to be an issue. The Preserve will continue to be monitored to document unauthorized access and activities, including by OCTA’s private security company and GLA’s monitoring team.

Two cameras were installed in May 2019. One camera was stolen. Wildlife cameras detected



Overview of Silverado Chaparral Preserve.

deer and bobcat. Wildlife cameras also detected unauthorized people and dogs. Through coordination with OCTA, GLA removed the remaining wildlife camera on an interim basis in September 2019 due to the theft risk as well as reducing the effort through the winter months to save funding for spring monitoring. Camera monitoring will be reinitiated in 2022.

GLA prepared an ISMP, which was approved by the Wildlife Agencies in 2019. OCTA is prioritizing ISMP implementation based on threats to Covered Species. As the invasive species on this Preserve are not as high of a threat to Covered Species or as prevalent as some of our other Preserves, implementation of invasive species control has not yet been scheduled. One invasive Spanish broom was mapped by GLA in the southwestern portion of the property and removed by RECON. This area will continue to be inspected during future monitoring visits.

Maintenance tasks performed at the Silverado Chaparral Preserve included removal of one Spanish broom by cutting all biomass to the ground, painting the cut stumps with herbicide, and removing the cut vegetation from the site and disposing of it at an off-site facility; vegetation removal on some of the fire roads; and fence repairs including the installation of additional posts, barbed wire, and Preserve signs to deter unauthorized trail use (RECON 2022).



Photo of fence repairs to deter unauthorized access.

### 3.2.5.2 Planned Actions for 2022

Planned actions and priorities for 2022 include:

- Complete focused visual encounter surveys as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Conduct Preserve-wide focused covered plant species surveys.
- Continue monitoring unauthorized trail use activity (particularly mountain biking). Re-install cameras for tracking wildlife use and to capture images of unauthorized access throughout the Preserve. Increase security for the cameras as necessary.
- Finalize the Silverado Chaparral Preserve FMP.

### 3.2.5.3 Related Documents and References

BonTerra Psomas. 2015. *Baseline Biological Surveys Technical Report for the MacPherson Property, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. September.



Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.

Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

RECON Environmental Services (RECON). 2022. *2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

### 3.2.6 Trabuco Rose Preserve

Action	Trabuco Rose Preserve Status
<b>Acquisition</b>	Acquired in May 2011.
<b>Baseline Surveys</b>	Baseline surveys were completed in 2013 by BonTerra Consulting and results documented in the Baseline Survey Technical Report. This report is included as an appendix to the RMP.
<b>Preparation of Resource Management Plan</b>	Draft RMP was released in November 2015 and was available for public review for a 90-day period through February 2017. Final RMP was completed and posted on OCTA EMP website in September 2017. <a href="http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/">http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/</a>
<b>Recording of Conservation Easement</b>	Draft CEs for the Trabuco Rose Preserve are being prepared and are anticipated to be recorded in the near future. There will be two CEs for this Preserve. One will cover the portion (1.6 acres) of the Preserve that provides mitigation under the U.S. Army Corps of Engineers (ACOE) permit and has been structured to follow the CE template from the ACOE. A second CE utilizing the CDFW template will cover the rest of the Preserve.
<b>Identification of Preserve Manager</b>	Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place in the near future.
<b>General Stewardship and Preserve Management</b>	OCTA staff, with assistance from Preserve Management contractor RECON, and Preserve biological monitor Glenn Lukos Associates (GLA) implemented routine and ongoing property management and maintenance activities. In addition, High Level Security Services (HLSS) is assisting with the private patrol needs for the Preserve. A description and inventory of general stewardship and Preserve management activities conducted by GLA and RECON is included in Appendices C and D.
<b>Public Access Policy and Enforcement</b>	The Trabuco Rose (Ferber Ranch) RMP establishes a public access policy that identifies appropriate recreational opportunities within the Preserve that are compatible with the protection of biological resources. Through an evaluation of biological resources and site conditions, as well as coordination with the Wildlife Agencies, a set of existing trails within the Preserve have been identified for managed public access and other trail segments planned for decommissioning. OCTA has held a number of public access events on the Trabuco Rose Preserve, although limited in 2021 due to the COVID-19 epidemic (see Table 6-2).
<b>Invasive Species Control Plan and Implementation</b>	An Invasive Species Management Plan (ISMP) for the Trabuco Rose Preserve was completed and approved by the Wildlife Agencies in 2019. Implementation of the ISMP is ongoing. Additional follow-up retreatments of select locations were completed in 2021. <ul style="list-style-type: none"> <li> <b>Invasive Pests.</b> Previous monitoring has confirmed both the Invasive Shot Hole Borer as well as the Gold Spotted Oak Borer in the Trabuco Canyon Area. Continue to monitor and treat trees that are being impacted by these invasive species. </li> </ul> Invasive Shothole Borer ( <i>Euwallacea fornicatus</i> ; ISHB) monitoring and evaluation surveys were conducted in previous years to evaluate levels of infestation within the Preserve. Dudek arborists evaluated a total 134 riparian trees within the Trabuco Rose Preserve. Of the 134 trees evaluated, a total of eight trees exhibited signs and symptoms of ISHB, of

Action	Trabuco Rose Preserve Status
	<p>which seven were determined to have low infestation rates and one had moderate infestation rate. Based on the results of the 2021 surveys, ISHB is considered active within the Trabuco Rose Preserve. However, based on the findings of the 2019, 2020, and 2021 ISHB surveys, ISHB continues to be in the early stages of infestation. Furthermore, with the exception of three interior trees found on the Trabuco Rose Preserve, the majority of ISHB signs and symptoms continue to be found on the periphery of the western boundary.</p>
<b>Fire Management Plan and Fire Response</b>	<p>OCTA has contracted with Wildland Res Mgt to complete FMPs. The FMPs are anticipated to be completed in 2022. The FMPs will establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. No fires within the Preserve have occurred during this period.</p>
<b>Biological (Effectiveness) Monitoring</b>	<p>Effectiveness monitoring included focused surveys for covered bird species in 2021. A total of 29 cactus wren territories were documented and an additional six cactus wren individuals were mapped without their territories being defined, for a total of 35 distinct cactus wren locations. One gnatcatcher pair was detected along a ridgeline located near the Preserve’s southernmost boundary.</p> <p>Camera monitoring for Covered Mammals and wildlife movement occurred from 2013 to 2019 and was re-initiated in 2021. Mountain lion (including one with kitten), bobcat, mule deer, coyote, and gray fox were detected in 2021 (GLA 2022).</p> <p>Focused surveys for covered plants will occur in 2022.</p> <p>See the Effectiveness Monitoring Schedule in Appendix B.</p>
<b>Public Outreach / Education</b>	<p>OCTA has conducted public outreach and education as part of the preparation of the Draft and Final RMP. In addition, public access occurs with scheduled hikes and rides on this Preserve.</p>
<b>Adaptive Management</b>	<p>The RMP has identified the following key issues for a focused adaptive management approach to address uncertainties of Preserve management:</p> <ul style="list-style-type: none"> <li>• <b>Covered Plants and Vegetation Management.</b> Monitor effectiveness of methods to protect Covered Plants from vegetation management activities along access roads.</li> </ul> <p>GLA previously evaluated the potential effect of road maintenance on intermediate mariposa lily and did not document impacts to intermediate mariposa lily (or suspect any) as a result of road maintenance. Additionally, intermediate mariposa lily at the Preserve are far enough from the roads that impacts are not expected from typical road maintenance. Monitoring for these species will continue.</p> <ul style="list-style-type: none"> <li>• <b>Trails Revegetation.</b> Monitor passive restoration of trails identified for decommissioning in the RMP.</li> </ul> <p>In 2018, GLA staff inspected and evaluated all the trails identified in the Preserve RMP for “passive restoration.” GLA reviewed 13 trails or trail segments. As of the 2021 monitoring, two trails had fully grown in, most trails were passively restoring with natives or combination of natives and non-native grasses, or had not changed since 2018 (i.e., no weeds present warranting action).</p>
<b>Changed Circumstances</b>	<p>No events occurred that meet the Changed Circumstances requirements during this period.</p>
<b>General Comments / Concerns</b>	<p>Ongoing trespassing is a major concern for this Preserve due to its proximity to local rural development and history as a property with</p>

Action	Trabuco Rose Preserve Status
	adjacent neighbor access. In general, trespassing declined in comparison to previous years, but remains a concern. In 2021, an encroachment onto the Preserve was documented consisting of a cut perimeter fence and usage of a previously unmapped trail by an adjacent neighbor. The fencing was repaired and a new sign was installed by RECON and a camera was installed by GLA. In addition, the neighbor no longer lives there. OCTA is continuing to monitor unauthorized access and working to address the problem through enforcement actions, public engagement and education, and hosting managed access events.

### 3.2.6.1 Management and Monitoring Summary

Effectiveness monitoring included focused surveys for covered bird species in 2021. A total of 29 cactus wren territories were documented during focused surveys at the Preserve. An additional six cactus wren individuals were mapped without their territories being defined, for a total of 35 distinct cactus wren locations. One gnatcatcher pair was detected along a ridgeline located near the Preserve’s southernmost boundary. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher. GLA’s monitoring did not focus on covered plant species in 2021 due to drought conditions. No new locations were detected in 2021 (GLA 2022). Focused surveys for covered plants will occur in 2022.

Table 4-1 of the RMP noted that prior to effectiveness monitoring, wildlife cameras would be set up and monitored for at least six months to assess movement and connectivity for bobcat and mountain lion. GLA operated and monitored wildlife cameras at various stations from 2013-2019. GLA observed a range of wildlife with the cameras, including mountain lion, bobcat, mule deer, coyote, and gray fox. Wildlife camera monitoring was re-initiated in 2021 and cameras detected mountain lion (including one with kitten), bobcat, mule deer, coyote, and gray fox. Trespassers, including hikers and people on mountain bikes, continue to be documented.



Overview of Trabuco Rose scrub and cactus scrub habitat.

OCTA sponsored a number of docent hikes and equestrian rides in 2021 but was limited due to the COVID-19 epidemic (see Section 6.1.2, *Preserve-Specific Public Outreach Events*). OCTA will continue to implement a managed public access approach along authorized trail segments. GLA noted multiple occurrences of unauthorized public use at the Preserve documented by the wildlife cameras, including hiking and mountain bikes. In some instances, dogs were present with the hikers. Trespassing has been documented by the OCTA private security company and warnings were issued. The site will continue to be monitored by OCTA private security as well as OC Sheriff officers to document unauthorized access and activities, including by GLA's monitoring team. The trails marked for decommissioning are doing quite well passively restoring.

Implementation of the ISMP is ongoing. OCTA's maintenance contractor, RECON, conducted initial treatment of the Priority 1 invasive species and some of the Priority 2 invasive species in fall 2018. RECON conducted follow-up treatment in spring 2019 and primarily retreated artichoke thistle/cardoon. Additional follow-up retreatments of artichoke thistle/cardoon were conducted in January/February 2020 and February, March, and June 2021. No retreatment of pampas grass (or salt cedar) was necessary in 2020 or 2021. GLA mapped Bermuda grass, African flag plant, and re-sprouts of artichoke thistle in late 2021 and notified OCTA and RECON. In addition, non-native grasses and mustard growing within and along access roads were line-trimmed or sprayed for fire prevention. Invasive Shothole Borer (*Euwallacea fornicatus*; ISHB) monitoring and evaluation surveys were conducted in



2021 to evaluate levels of infestation within the Preserve. Dudek arborists evaluated a total 134 riparian trees within the Trabuco Rose Preserve. Of the 134 trees evaluated, a total of eight trees exhibited signs and symptoms of ISHB, of which seven were determined to have low infestation rates and one had moderate infestation rate (same results as 2018 through 2020; no newly infested trees were observed). In addition, to evaluate for the presence of ISHB in areas previously found to not be infested with ISHB, Dudek conducted emergent pest trapping over a 1-month period in July 2019 to evaluate for the presence of ISHB. Two panel traps were submitted to the State of California Department of Food and Agriculture (CDFA) Plant Health and Pest Prevention Services for identification/ confirmation of ISHB. Both traps submitted for evaluation were found to not have ISHB. Two traps positively identified scolytid beetle (*Euwallacea spp*), a common ambrosia beetle that attacks distressed trees. No new pests and/or disease were observed on the Trabuco Rose Preserve.

Based on the results of the 2021 surveys and supplemental emergent pest trapping, ISHB is considered active within the Trabuco Rose Preserve. However, based on the findings of the 2019, 2020, and 2021 ISHB surveys, ISHB continues to be in the early stages of infestation. Furthermore, with the exception of three interior trees found on the Trabuco Rose Preserve, the majority of ISHB signs and symptoms continue to be found on the periphery of the western boundary. Alternatively, the observation of ISHB sign within the interior of the Preserve continues to be considered an outlier from the observed population along the edge of the property. However, based on the ISHB's potential for spread, it is within the ISHB's zone of influence/impact for the area.

OCTA completed Phase 1 of the gully area project to stabilize the erosion adjacent to the access road east of the main gate (near the secondary gate). The project consisted of installation of 325 cubic yards of ½ ton rock and 65 cubic yards of 1-ton rock and filter fabric, which were the initial steps necessary to secure the area. GLA continues to monitor this area and is assisting OCTA in securing regulatory permits to complete Phase 2. Phase 2 will extend the rock and create a drop pool design before meeting up with Hickey Creek. The installation of native plants will also occur as part of Phase 2.



Phase 1 gully repair project near entrance of Trabuco Rose.

Maintenance work in 2021 included invasive plant treatments, removal of fallen branches and debris, fence repairs to deter unauthorized access, gate repairs, vegetation removal on fire roads/access roads, and vegetation thinning and removal within two fuel modification zones. Invasive plant species control work on Trabuco Rose Preserve continued in 2021 and followed the methodology in the approved ISMP. RECON field crews cut up and removed large branches that had fallen along Trabuco Oaks Drive and pruned a large oak tree near the main entrance of the Preserve. Fallen branches that were blocking Trabuco Oaks Drive were removed, as well as branches that had fallen into the stream at the very northern end of the Preserve. Overhanging branches along Rose Canyon Road and Hickey Spur Road were trimmed to allow for safe ingress/egress of emergency vehicles. Vegetation control began on select fire roads and fence repair work was completed along Rose County Road and Trabuco Oaks Drive. A summary of the work completed at Trabuco Rose has been included in Appendix D (RECON 2022).

Maintenance work in 2021 included invasive plant treatments, removal of fallen branches and debris, fence repairs to deter unauthorized access, gate repairs, vegetation removal on fire roads/access roads, and vegetation thinning and removal within two fuel modification zones. Invasive plant species control work on Trabuco Rose Preserve continued in 2021 and followed the methodology in the approved ISMP. RECON field crews cut up and removed large branches that had fallen along Trabuco Oaks Drive and pruned a large oak tree near the main entrance of the Preserve. Fallen branches that were blocking Trabuco Oaks Drive were removed, as well as branches that had fallen into the stream at the very northern end of the Preserve. Overhanging branches along Rose Canyon Road and Hickey Spur Road were trimmed to allow for safe ingress/egress of emergency vehicles. Vegetation control began on select fire roads and fence repair work was completed along Rose County Road and Trabuco Oaks Drive. A summary of the work completed at Trabuco Rose has been included in Appendix D (RECON 2022).

### 3.2.6.2 Planned Actions for 2022

Planned actions and priorities for 2022 include:

- Complete focused visual encounter surveys as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Conduct Preserve-wide focused covered plant species surveys.
- Complete the design, obtain applicable permits and begin Phase 2 of the gully erosional repair near the main gate.
- Continue monitoring for unauthorized trail use.
- Conduct docent lead field trips as part of managed public access program.

- Continue to evaluate the status and threat of ISHB. Continue to monitor and collaborate with other scientists regarding the ISHB presence and impacts to this Preserve.
- Continue to implement the ISMP recommendations.
- Finalize the Trabuco Rose Preserve FMP.

### 3.2.6.3 Related Documents and References

BonTerra Consulting. 2013. *Draft Biological Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. December.

Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.

Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

RECON Environmental Services (RECON). 2022. *2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

### 3.2.7 Wren's View Preserve

Action	Wren's View Preserve Status
<b>Acquisition</b>	Acquired in May 2011.
<b>Baseline Surveys</b>	Baseline surveys were completed in 2013 by BonTerra Consulting and results documented in the Baseline Survey Technical Report. This report is included as an appendix to the RMP.
<b>Preparation of Resource Management Plan</b>	Draft RMP was released in November 2016 and was available for public review for a 90-day period through February 2017. Final RMP was completed and posted on OCTA EMP website in September 2017. <a href="http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/">http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Resource-Management-Plans/</a>
<b>Recording of Conservation Easement</b>	Draft CE for the Wren's View Preserve is being prepared and is anticipated to be recorded in the near future.
<b>Identification of Preserve Manager</b>	Currently the Preserve is being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place in the near future.
<b>General Stewardship and Preserve Management</b>	OCTA staff, with assistance from Preserve Management contractor RECON, and Preserve biological monitor Glenn Lukos Associates (GLA) implemented routine and ongoing property management and maintenance activities. In addition, High Level Security Services (HLSS) is assisting with the private patrol needs for the Preserve. A description and inventory of general stewardship and Preserve management activities conducted by GLA and RECON is included in Appendices C and D.
<b>Public Access Policy and Enforcement</b>	The Wren's View (O'Neill Oaks) RMP establishes a public access policy that identifies appropriate recreational opportunities within the Preserve that are compatible with the protection of biological resources. Through an evaluation of biological resources and site conditions, as well as coordination with the Wildlife Agencies, a set of existing trails within the Preserve have been identified for managed public access and other trail segments planned for decommissioning. Only one public access event was held on the Wren's View Preserve in 2021 due to COVID-19 epidemic.
<b>Invasive Species Control Plan and Implementation</b>	An Invasive Species Management Plan (ISMP) for the Wren's View Preserve was completed and approved by the Wildlife Agencies in 2019. OCTA is implementing the ISMP based on priorities outlined in the plan. Due to the ongoing (2017 through 2020) on-site identification of ISHB, ISHB monitoring and evaluation surveys were conducted in 2021 to evaluate levels of ISHB infestation within the Preserve. Two newly infested trees were observed. GSOB was positively identified on Wren's View Preserve in 2019 and one infected dead oak was chipped per protocol in partnership with OCFA. ... In addition, trees with exit holes and trees within 100 meters of those trees were treated preventatively with a barrier spray. No other new pests and/or disease were observed on the Preserve.
<b>Fire Management Plan and Fire Response</b>	OCTA has contracted with Wildland Res Mgt to complete FMPs. The FMPs are anticipated to be completed in 2022. The FMPs will establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. No fires within the Preserve have occurred during this period.
<b>Biological (Effectiveness) Monitoring</b>	Effectiveness monitoring included focused surveys for covered bird species in 2021.



Action	Wren's View Preserve Status
	<p>Camera monitoring for covered mammal species and wildlife movement was conducted between 2018 and 2019. Camera monitoring detected deer, coyote, bobcat, gray fox and mountain lion.</p> <p>Focused surveys for covered plants will occur in 2022.</p> <p>See the Effectiveness Monitoring Schedule in Appendix B.</p>
<b>Public Outreach / Education</b>	<p>OCTA has conducted public outreach and education as part of the preparation of the Draft and Final RMP.</p>
<b>Adaptive Management</b>	<p>The RMP has identified the following key issues for a focused adaptive management approach to address uncertainties of Preserve management:</p> <ul style="list-style-type: none"> <li>• <b>Public Access and Wildlife Activity.</b> Wildlife movement cameras were utilized to monitor and gauge wildlife activity in 2018 and 2019. Wildlife detected at the camera stations include mountain lion, bobcat, deer, coyote, and gray fox. At this point in time it does not seem that the public access levels are high enough to warrant further assessments or a reduction in the public access events at this Preserve.</li> <li>• <b>Covered Plants and Vegetation Management.</b> Closely monitor the response of covered plant species (e.g., intermediate mariposa lily) to vegetation management actions along the side of access roads.</li> <li>• <b>Trails/Grazed Areas Revegetation.</b> Collect photo monitoring of the revegetation of closed trails and degraded habitat areas due to past grazing to determine if passive restoration was successful. If not, determine if active restoration is needed.</li> </ul> <p><b>Vegetation Control around Cactus Patches.</b> Research current approaches for vegetation management around cactus patches to determine if this is needed at the Pacific Horizon Preserve to protect and/or improve cactus wren populations.</p>
<b>Changed Circumstances</b>	<p>No events occurred that meet the Changed Circumstances requirements during this period.</p>
<b>General Comments / Concerns</b>	<p>Continue to monitor and collaborate with other scientists regarding the ISHB/GSOB presence and impacts on this Preserve.</p>

### 3.2.7.1 Management and Monitoring Summary

Effectiveness monitoring completed included focused surveys for covered bird species in 2021. One gnatcatcher pair was observed lining a nest in black sage a few feet offsite of the northern Preserve boundary. Adults were seen flying well within the Preserve boundary. Historically, gnatcatcher have been detected broadly onsite and offsite within this northern area. Suitable, high quality cactus scrub is present on the Wren's View Preserve, and conditions have not changed since baseline surveys. Thirteen cactus wren territories were identified within the Preserve boundary. One additional cactus wren male was mapped for a total of 14 cactus wren locations, but its territory was not determined. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher. GLA's monitoring did not focus on covered plant species in 2022 due to drought conditions. No new locations were detected in 2021 (GLA 2022). Focused surveys for covered plants will occur in 2022.

Due to some intermediate mariposa lilies growing in and immediately adjacent to the road, if maintenance is necessary when intermediate mariposa lily is present, biological monitors flag the

plants so that individuals can be seen more easily for avoidance. Biological monitoring during work activities occurs, especially for areas where intermediate mariposa lily is located within the road or adjacent.

GLA initiated camera monitoring for covered mammal species and wildlife movement in 2018 and continued camera monitoring into 2019. Wildlife detected at the camera stations include deer, coyote, bobcat, gray fox and mountain lion. People were detected multiple times hiking and using mountain bikes.

OCTA has previously sponsored a number of docent hikes on the Wren's View Preserve but was able to schedule only one hike in 2021 due to the COVID-19 epidemic. OCTA will continue to implement a managed public access approach along authorized trail segments. GLA did not observe any new trail cuts; however, bike tracks were noted on the main access road. Trespassing through the property has been a common daytime and nighttime occurrence, in part due to the location of the former home site to the northeast of the Preserve. An increase in trespassing was previously documented by the OCTA private



Overview of Wren's View Preserve.

security company and warnings were issued. The increase may be attributed to COVID-19 stay at home orders or new ownership and less presence on the adjacent parcel to the west of the Preserve. The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company, OC Sheriff officers, and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity.

Internal barbed wire (and a small section of chain link) fencing has been mapped and is recommended for removal. Livestock no longer reside on the property to the west, and coordination with the new property owner should continue in order to determine what other type of fencing may be warranted to better promote wildlife movement. Unauthorized (human) access should also be considered before making modifications to the fence line.

GLA conducted comprehensive invasive species mapping and has prepared an ISMP that has been reviewed and approved by CDFW and the USFWS. OCTA will begin implementing the finalized ISMP based on priorities outlined in the plan.

In 2021, ISHB surveys continued on the Preserve. Based on the results of the 2021 surveys, ISHB is considered active within the Wren's View Preserve and two newly infested trees were observed. However, based on the findings of the 2019 through 2021 ISHB surveys, ISHB continues to be in the early stages of infestation. Furthermore, with the exception of two interior trees found on the Wren's View Preserve, the majority of ISHB signs and symptoms continue to be found on the periphery of the western boundary. The observation of ISHB along the site's western boundary along Trabuco Canyon

is believed to be due to high infestation levels observed throughout O'Neill Regional Park and ISHB's active spread throughout the region. Alternatively, the observation of ISHB within the interior of the Preserve continues to be considered an outlier from the observed population along the edge of the property. However, based on the ISHB's potential for spread, it is within the ISHB's zone of influence/impact for the area. In an effort to maintain and limit the spread of ISHB throughout the remaining areas of the Preserve, it is recommended that the trees observed to have low to moderate signs and symptoms of ISHB be treated by means of a trunk spray with pesticide and fungicide treatments should be conducted by a reputable licensed company (GLA 2022).

Based on previous detections of GSOB within the Preserve, OCTA is continuing to monitor and no sign and/or symptom was detected in 2021. This does not mean that these trees do not have GSOB, it only means that they did not exhibit sign of GSOB at the time of the inventory. The observation of GSOB within the Wren's View Preserve is considered a threat to Trabuco Canyon's oak tree resources. To manage the observed GSOB outbreak within Wren's View, OCTA has partnered with OCFA. OCFA received funding under the CalFire Fire Prevention Grant Program, to treat infested trees located on both County- and privately-owned properties with a contact insecticide to prevent the spread of resident beetles to neighboring trees and re-infestation of current host trees. In addition, trees lacking pest exit holes, but within approximately 100 meters of trees with exit holes, are treated preventatively with a barrier spray. These trees may either be infested from eggs laid during the previous flight season or may be uninfested but vulnerable due to their proximity to infested trees.

Treatment of infested trees would eliminate pests and slow the spread rate, enhancing the survival rate of existing tree populations. A decrease in tree mortality would ultimately reduce the wildfire risks to habitable structures by reducing potential fuel within parks and adjacent to roads, homes, and HOAs. The treatment involves the spraying of insecticide, using up to two large diesel trucks with attached pressurized rigs, on beetle infested trees. All infested trees are treated with a barrier insecticide to prevent the spread of resident beetles to neighboring trees and reinfestation of current host trees. Contact insecticides kill adult beetles when ingested at emergence and kill eggs laid on the bark surface. These sprays would not control larvae feeding in the tree but are effective at killing adult beetles as they directly contact the insecticide on the bark surface. It is moderately to very toxic to humans and nontoxic to wild bird species, but it is toxic to bees and beneficial insects and would not be applied to flowers when bees are active. Carbaryl is non-toxic to plant species. Furthermore, carbaryl is toxic to aquatic and estuarine invertebrates and would not be applied to water or wetted areas. Treatment of infested trees include oak trees, sycamores, and other infested trees (outside of water areas). Treatment will reduce tree mortality and fire risk, will improve the quality of oak woodland and riparian habitat and natural communities, and will benefit species that occur within those habitats. One dead oak tree infested with GSOB was removed and chipped by OCFA following the required chipping protocol. The remaining OCTA oak trees with signs of GSOB and oak trees within the 100-meter buffer area, totaling 248 trees, were treated as described above by OCFA in 2020. Due to the earlier detections of GSOB, the same trees were treated as a preventative measure by OCFA in 2021. Additionally, two trees near the main gate entrance are in poor health and exhibiting signs of decline that would not be improved through chemical treatment. As such, they were recommended for removal due to safety/fire hazard reasons. UC Extension staff further evaluated these two trees and determined they could be pruned as they had a chance for survival. A RECON arborist provided recommendations, and OCFA conducted pruning of these trees the week of July 12<sup>th</sup>.

Maintenance tasks performed at the Wren's View Preserve in 2021 included vegetation removal on fire roads and access roads, trimming of overhanging vegetation that was blocking the roads, and fence line repair at three separate locations along the perimeter of the Preserve on Trabuco Canyon Road (RECON 2022).



Fence line repair crews at Wren's View.

### 3.2.7.2 Planned Actions for 2022

Planned actions and priorities for 2022 include:

- Complete focused visual encounter surveys as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Conduct Preserve-wide focused covered plant species surveys.
- Continue monitoring for unauthorized trail use.
- Conduct docent lead field trips as part of managed public access program as allowable.
- Implement recommendations for GSOB and ISHB infestation and continue to evaluate the status and threat of these pests.
- Finalize the Wren's View Preserve FMP.

### 3.2.7.3 Related Documents and References

BonTerra Consulting. 2013. *Baseline Biological Surveys Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Prepared for OCTA. December.

Glenn Lukos Associates (GLA). 2020. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. March.

Glenn Lukos Associates (GLA). 2021. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

RECON Environmental Services (RECON). 2022. *2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

## 3.3 OCTA Preserve-Wide Actions

The following sections provide a status of actions undertaken and coordinated across multiple OCTA Preserves.

### 3.3.1 Vegetation Cover Quantitative and Qualitative Monitoring

Audubon Starr Ranch, with direction and support from OCTA, completed three seasons of qualitative monitoring plant communities to assess stability of vegetation cover on three OCTA Preserves: Bobcat Ridge (Hafen), Wren's View (O'Neill Oaks), and Live Oak Creek (Saddlecreek South). Baseline sampling occurred in April 2016, followed by annual monitoring in April 2017 and April 2018. A final report (Audubon Starr Ranch 2019) was included in the 2019 Annual Report.

#### 3.3.1.1 Related Documents and References

Audubon Starr Ranch. 2019. *Vegetation Monitoring on Three Orange County Transportation Authority Preserves: Bobcat Ridge, Wren's View, and Live Oak Creek*. Operating Agreement 3-5-3711. July 2019.

# Chapter 4

## OCTA-Funded Restoration Projects

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### 4.1 Introduction

As part of its commitments to deliver more effective mitigation for the M2 freeway projects, OCTA allocated funds towards habitat restoration projects. Potential habitat restoration properties were evaluated based on biological and non-biological criteria, a process that included a prioritization process to select restoration programs that would be funded by OCTA. There were two separate rounds of funding for restoration, totaling over \$10 million. The restoration projects are being implemented by various cities and non-profit entities within Orange County. Project sponsors are required to prepare annual monitoring reports to track progress towards meeting success criteria and updates on implementation status. Table 4-1 lists the OCTA-funded restoration projects, with summaries of each following.

**Table 4-1. OCTA-Funded Restoration Projects – Rounds 1 and 2**

Round	Project	Sponsor	Description	Signed Off
1	Agua Chinon/ Bee Flat Canyon	Irvine Ranch Conservancy	90.1 acres of restoration consisting of chaparral, grassland, coastal sage scrub, elderberry scrub, oak woodland, and riparian	√ (Bee Flat)
	Big Bend	Laguna Canyon Foundation	3.7 acres of restoration consisting of coastal sage scrub and riparian woodland to enhance wildlife connectivity	√
	City Parcel	City of San Juan Capistrano	53 acres of restoration consisting of riparian and coastal sage scrub within Trabuco Creek Wildlife Linkage	√
	Fairview Park	City of Costa Mesa	23 acres of restoration consisting of wetlands, grasslands, coastal sage scrub, and riparian	
	UCI Ecological Preserve	Nature Reserve of Orange County	8.5 acres of restoration consisting of cactus scrub	√
2	Aliso Creek	Laguna Canyon Foundation	55 acres of restoration consisting of riparian and transitional habitat	
	Chino Hills State Park	Habitat Restoration Science/Chino Hills State Park	11.0 acres of cactus scrub restoration <sup>4</sup>	
	Harriett Weider Regional Park	Bolsa Chica Conservancy	8.2 acres of restoration consisting of grassland, coastal sage scrub, and riparian habitat	

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<sup>4</sup> The original restoration design for this project included riparian and woodland habitats. An amendment was approved to focus this restoration effort on cactus scrub restoration.

Round	Project	Sponsor	Description	Signed Off
	Lower Silverado Canyon	Irvine Ranch Conservancy	28.4 acres of restoration consisting of riparian and coastal sage scrub habitat	
	North Coal Canyon	RECON Environmental Inc./Chino Hills State Park	5.5 acres of restoration consisting of coastal sage scrub habitat within a key wildlife connectivity linkage area	
	West Loma	Irvine Ranch Conservancy	62.47 acres of restoration consisting of grassland, coastal sage scrub, and riparian habitat	
2016	USFS Dam Removal	U.S. Forest Service	Removal of 14 dams along San Juan Creek to improve hydrologic functions	

## 4.2 Restoration Project Status

### 4.2.1 Agua Chinon/Bee Flat Canyon

Action	Agua Chinon/Bee Flat Canyon Status
<b>Sponsor</b>	Irvine Ranch Conservancy
<b>OCTA Funding</b>	\$1,497,160
<b>Location</b>	Irvine
<b>Acreage</b>	90.1 acres
<b>General Habitat Types</b>	Chaparral, coastal sage scrub, coast live oak/sycamore, oak woodland, native grassland, riparian
<b>Restoration Design Plans</b>	Approved in 2010. <sup>5</sup>
<b>Restoration Installation</b>	Implementation began in 2011 and is ongoing.
<b>Restoration Monitoring of Success Criteria</b>	Bee Flat project area (84 acres) was signed off in 2020. Due to 2020 wildfires, it is anticipated that three more years of management and monitoring will be required for the Agua Chinon (6.1 acres) restoration project.
<b>Land Protection Mechanism</b>	Lands are deed restricted for open space and conservation purposes as the result of the transfer of land from the Irvine Company to the County of Orange. Lands still under the Irvine Company are subject to an Irrevocable Offer of Dedication to the City of Irvine (Preservation Area R).
<b>Long-Term Management of Restoration Site</b>	The project area is owned in fee by the County of Orange, with portions of Agua Chinon owned by the Irvine Company. The Orange County Parks Department and the Irvine Company are responsible for their long-term stewardship subject to the terms and conditions of the Central-Coastal NCCP/HCP.
<b>General Comments / Concerns</b>	None.

<sup>5</sup> The USFWS and CDFW approved the restoration plan framework for this project in 2010. A more detailed plan was drafted and approved by USFWS and CDFW in 2011. To also obtain mitigation credit from the ACOE, the restoration plan for the Agua Chinon subwatershed was developed further into a Habitat Mitigation Monitoring Plan to comply with the Environmental Protection Agency 2008 Final Mitigation Rule.

## 4.2.1.1 Project Summary

The Agua Chinon/Bee Flat Canyon restoration project is being completed by The Irvine Ranch Conservancy (IRC) and includes restoration of 90.1 acres of natural habitat in the San Diego Creek watershed, within the sub-watersheds of Agua Chinon and Bee Flat Canyon. The sites include disturbed coastal sage scrub, grassland, and chaparral, as well as woodland and riparian habitat. The OCTA-funded restoration project will add to the other ongoing restoration projects in the same watershed that are being funded by other entities. The project site is within the Central-Coastal NCCP/HCP Central Reserve system, but the restoration proposed for this project is above and beyond the requirements of the Central-Coastal NCCP/HCP.

The long-term goal of the restoration is to facilitate habitat restoration and enhancement for the purpose of increasing landscape-scale ecosystem resilience and resistance to disturbance, primarily from catastrophic wildfire and invasive species. Sub-watershed-wide weed targets also will be controlled. The restoration success criteria include the reduction of nonnative cover of grasslands to native cover.

### Bee Flat Update

In evaluation of the project, the Wildlife Agencies reviewed the 2019 Annual Status Report and follow-up Addendum, and Summary of Management at OCTA Bee Flat Grasslands in 2020. Based on the monitoring data provided in the Annual Report and Addendum, the project met the success criteria for native and non-native cover, increases in functional group and structural complexity, and increases in co-dominant species. In addition, the IRC performed late season mowing in 2020 at select grassland polygons to further reduce non-native cover and promote native species germination and needlegrass growth the following winter. The Wildlife Agencies agreed that the Bee Flat Canyon restoration project has met the goals of the restoration plan and that the project is now complete.

Unfortunately, the entire OCTA funded project area burned in the 2020 Silverado and Bond wildfires. IRC will be monitoring the recovery of this area to evaluate its' resiliency. No further contributions are required from OCTA for this project area, as success criteria was satisfied.

### Agua Chinon Update

The 2020 (Year 5) monitoring report documented that the Agua Chinon portion of the project met all success criteria, but the site subsequently burned in the October 2020 Silverado Fire prior to receiving sign-off. In 2021, IRC began implementing a plan coordinated with OCTA, the Wildlife Agencies, and the United States Army Corps of Engineers for recovery of native vegetation. There were no modifications to the mitigation plan, but the project timeline was extended as needed to meet success criteria, which is expected to be three years. The following approach was included in the recovery plan:

- Supplemental seeding and planting as needed to meet success criteria
- Rapid assessment monitoring to assess interim vegetation condition
- Final quantitative monitoring prior to sign-off
- California Rapid Assessment Method (CRAM) monitoring will continue, but the episodic module will replace the wetland module
- Arthropod monitoring will be discontinued



Despite drought conditions, rapid assessment monitoring showed that native vegetation recovered relatively quickly in 2021, which suggests significant resilience in the system. The project appears to be meeting success criteria for native cover, non-native cover, and co-dominant species. However, the current vegetation is heavily forb dominated, and attainment of success criteria for biotic structure will require greater recovery of the shrub component. Canopy heights have been slower to return to pre-fire levels than cover and may require higher rainfall to fully recover.

Following the fire, restoration polygons totaling approximately 1.2 acres in the upper reach of the wash received significant deposition of soil from the de-stabilized hillslopes upstream. Vegetation recovery was uneven in these areas, so they were priorities for supplemental seeding. Two shrub and four forb species were selected for seeding based on their likelihood to thrive in the sandy, fast-draining soils of Agua Chinon. Also included were container plantings of one grass and two perennial forb species. IRC seeded and planted these species in December 2021 to increase both cover and overall canopy height in the next few years.

Decreased shrub cover meant there was less competitive exclusion of non-native weeds, which were controlled using manual and chemical techniques. Targeted invasive control work was conducted throughout the polygons and adjoining areas. The main target species were Italian thistle (*Carduus pycnocephalus*), Sahara mustard (*Brassica tournefortii*) and a recent invader, stinknet (*Oncosiphon piluliferum*). These species occurred as small, scattered patches near (but generally not in) the restoration polygons.

## 4.2.1.2 Related Documents and References

Irvine Ranch Conservancy. 2011a. *Restoration Plan Framework for Bee Flat Canyon Under the Renewed Measure M Freeway Mitigation and Resource Protection Program*. Irvine, CA. Report dated July 8, 2011.

Irvine Ranch Conservancy. 2017. *Habitat Mitigation and Monitoring Plan: Agua Chinon Subwatershed*. Agreement No. C-1-2384 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2019. *Annual Status Report, January-December 2019: Renewed Measure M Freeway Mitigation and Resource Protection Program, Agua Chinon Riparian Corridor*. Agreement No. C-1-2384 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2019. *Annual Status Report, January-December 2019: Renewed Measure M Freeway Mitigation and Resource Protection Program, Bee Flat Canyon*. Agreement No. C-1-2384 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2020. *Annual Status Report, January-December 2020: Renewed Measure M Freeway Mitigation and Resource Protection Program, Agua Chinon Riparian Corridor*. Agreement No. C-1-2384 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2021. *Annual Status Report, January-December 2021: Renewed Measure M Freeway Mitigation and Resource Protection Program, Agua Chinon Riparian Corridor*. Agreement No. C-1-2384 between OCTA and IRC. Irvine, CA.

## 4.2.2 Big Bend

Action	Big Bend Status
<b>Sponsor</b>	Laguna Canyon Foundation
<b>OCTA Funding</b>	\$87,500
<b>Location</b>	Laguna Beach
<b>Acreage</b>	3.7 acres
<b>General Habitat Types</b>	Coastal sage scrub, riparian woodland
<b>Restoration Design Plans</b>	Approved in 2011.
<b>Restoration Installation</b>	Implemented in 2011.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring was initiated in 2011 and 5 years of monitoring complete. The project was signed off in 2017.
<b>Land Protection Mechanism</b>	A deed restriction was recorded in 2021 for the property to ensure long-term land use consistent with the project's restoration and mitigation intent.
<b>Long-Term Management of Restoration Site</b>	The City of Laguna Beach owns the property and is obligated to manage it to perpetuate the benefits of the restoration project. It is anticipated that the project site will be incorporated into an Orange County Parks management agreement.
<b>General Comments / Concerns</b>	None

### 4.2.2.1 Project Summary

The Big Bend restoration project is located in the City of Laguna Beach. Since its purchase by the City a decade ago, the site has been used as an informal trailhead to access the 20,000-acre South Coast Wilderness System. The project site was degraded by invasive species and human activity. Over the past 10 years, the City of Laguna Beach has worked with the Laguna Canyon Foundation to preserve more than 250 acres adjacent to the proposed restoration area, which is now under City ownership and managed by OC Parks. This restoration site, however, is not part of the Central-Coastal NCCP/HCP Coastal Reserve.

The project restored 3.2 acres of disturbed coastal sage scrub and approximately 0.5 acre of riparian habitat to benefit local species and increase the wildlife corridor's local and regional effectiveness. Restoration included the removal of invasive nonnative species and debris, planting of native species, and maintenance/improvement of flood conveyance patterns across the site to enhance water quality for this important coastal watershed (the San Juan watershed). The project achieved the success criteria in January 2017. The deed restriction for the site was recorded in March 2021. All required commitments for the project have been satisfied.

### 4.2.2.2 Related Documents and References

Laguna Canyon Foundation. 2011. *Restoration and Enhancement Plan: Big Bend Property*. Laguna Beach, CA. Report dated May 10, 2011.

Laguna Canyon Foundation. 2015. *2014 Annual Status Report: Big Bend Habitat Restoration, 3.7 Acres*. Laguna Beach, CA. Report dated January 31, 2015.

### 4.2.3 City Parcel

Action	City Parcel Status
<b>Sponsor</b>	City of San Juan Capistrano
<b>OCTA Funding</b>	\$1,500,000
<b>Location</b>	City of San Juan Capistrano (within Trabuco Creek Wildlife Linkage)
<b>Acreage</b>	53 acres
<b>General Habitat Types</b>	Riparian corridor, coastal sage scrub, oak woodland, native grassland
<b>Restoration Design Plans</b>	Approved in 2011.
<b>Restoration Installation</b>	Implemented in 2011.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2011 and 5 years of monitoring complete. The project was signed off as of October 2018.
<b>Land Protection Mechanism</b>	The City of San Juan Capistrano recorded a Declaration of Covenants and Restrictions in the fall of 2013 to ensure long-term land use consistent with the project's restoration and habitat management intent.
<b>Long-Term Management of Restoration Site</b>	The City of San Juan Capistrano owns and manages the entire property of this restoration site as part of the Northwest Open Space.
<b>General Comments / Concerns</b>	None.

#### 4.2.3.1 Project Summary

The City Parcel (2C Ranch Trabuco Canyon) is located within the San Juan Creek (Trabuco Creek) watershed in the City of San Juan Capistrano. This project has been completed and restored 13 acres of riparian and 40 acres of coastal sage scrub habitats.

Restoration included the removal and control of invasive, nonnative plants across the entire restoration area, followed by the planting of native riparian and upland species. This has established a more diverse habitat structure that is conducive to supporting an array of native plants and wildlife. California Natural Diversity Database (CNDDDB) occurrence records for coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher intersect with the restoration site. The project site is not within the Orange County Southern Subregion HCP, but is within the Plan Area of the Central-Coastal NCCP/HCP and the City's designated Northwest Open Space. This open space area provides an important connection between these two landscape-level planning areas. This project restored a gap linking gnatcatcher habitat and improved a corridor between the Coastal and Central NCCP/HCP areas.

The project achieved the set success criteria in October 2018. This project employed over 30 disadvantaged San Juan Capistrano youth, removed over 25,000 pounds of illegally dumped concrete and trash, and removed an additional 15,000 pounds of debris. It is estimated that over 200,000 invasive weeds were removed and over 60,000 native plants and trees were planted. The project sponsor successfully recorded a restricted covenant of the restored area in 2013. All required commitments for the project have been satisfied.

#### 4.2.3.2 Related Documents and References

City of San Juan Capistrano. 2011. *Restoration and Enhancement Plan: 2C Ranch/Trabuco Creek Restoration*. San Juan Capistrano, CA. Report dated April 15, 2011.

Sevrens, Gail K. 2018. Response to Request for Sign-off on the 2C Ranch/Trabuco Creek Restoration Project included in the Orange County Transportation Authority NCCP/HCP. Received by Lesley Hill, October 9, 2018. (Sign Off Letter)

## 4.2.4 Fairview Park

Action	Fairview Park Status
<b>Sponsor</b>	City of Costa Mesa
<b>OCTA Funding</b>	\$2,000,000
<b>Location</b>	Costa Mesa
<b>Acreage</b>	23 acres
<b>General Habitat Types</b>	Wetlands, native grassland, coastal sage scrub, willow scrub, oak woodland
<b>Restoration Design Plans</b>	Approved in 2010.
<b>Restoration Installation</b>	Implemented in 2011.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2012 and 8 years of monitoring complete.
<b>Land Protection Mechanism</b>	A land protection document still needs to be recorded for the project area.
<b>Long-Term Management of Restoration Site</b>	The City of Costa Mesa will maintain the restored wetlands and riparian habitat project site in-perpetuity. Improvements and restoration are guided by the Fairview Park Master Plan approved by the Costa Mesa City Council in 1998.
<b>General Comments / Concerns</b>	City of Costa Mesa needs to provide information requested by OCTA and the Wildlife Agencies in relation to restoration acreage and history. See below.

### 4.2.4.1 Project Summary

The City of Costa Mesa restored 23 acres of native grassland, coastal sage scrub, wet meadow/marsh, and riparian habitats within the northwest portion of this public park. The purpose was to create native habitat for riparian birds and animals by increasing native plant diversity within 10 feet of the constructed wetlands and stream channels. The project includes the creation of wetland ponds and a water delivery irrigation system to establish and support the native habitat. This restoration site is within the Santa Ana River watershed. The project site is within the Plan Area of the Central-Coastal NCCP/HCP but is not part of the Reserve. There was a previous mitigation project at this location (for the Santa Ana River Mainstem Project Lower Santa Ana River Reach 2 Channel Excavation), but the restoration project approved for funding by OCTA is above and beyond the requirements of the previous project.

Occurrences of coastal California gnatcatcher, least Bell's vireo, and California least tern have been observed at the restoration site. In 2021, a southwestern pond turtle was found in a pond onsite. In addition, successful revegetation efforts for southern tarplant have been implemented at the restoration site.

The oak woodland, riparian areas, and most of the coastal sage scrub areas are continuously reaching self-sustainable levels with low percent cover of non-native plant species (1-3%). Some coastal sage

scrub and alluvial sage scrub areas will still require additional restoration and non-native vegetation removal to reach the proper success criteria.

Cattails and bulrush are well maintained so there is no need for large machines to enter the ponds at this time. Illegal trespassing and subsequent native habitat degradation is still an issue, but the City's increased efforts to discourage human use of the fenced areas has reduced usage and damage.

Currently, there are 4.53 acres of coastal sage scrub (which includes alluvial coastal sage scrub), 6.00 acres of riparian (which includes wetlands), 15 oak trees planted over 3.00 acres, and 0 acre of grassland. Based on the acreage calculations, there is still a discrepancy in the final acreage for coastal sage scrub habitat, oak habitat, and grasslands. The original Fairview Park Wetlands and Riparian Habitat Project Restoration Plan stated specific acreage for each habitat that was established: 6.00 acres of wetland pond planting, 5.00 acres of native grasslands, 3.00 acres of oak woodland with 24 oaks, and 9.00 acres of coastal sage scrub for a total of 23.00 acres of restored habitat (City of Costa Mesa 2010). The OCTA restoration area currently supports 13.53 acres of restored habitat and will require additional restoration efforts for the coastal sage scrub areas and for the grasslands. It is recommended that additional restoration areas within Fairview Park be identified for the outstanding habitat needs. Once these areas are identified, the City can propose to OCTA and Wildlife Agencies the additional restoration sites for approval to ensure that the acreage criteria is fulfilled.

Coordination has been on-going with the city of Costa Mesa to resolve these issues. This includes the areas of the restoration project site that were not planted as described above. The City is working on the following tasks and will provide updates in 2022 to OCTA and the Wildlife Agencies:

- Cross checking current vegetation & trails map against original OCTA project restoration map.
  - Include updated figure with acreages of habitat types currently present on site for comparison to original restoration plan.
- On-site quantification of vegetation disturbed by current maintenance work to the ponds.

#### **4.2.4.2 Related Documents and References**

City of Costa Mesa. 2010. *City of Costa Mesa Fairview Park Wetlands and Riparian Habitat Project Restoration Plan*. Costa Mesa, CA. Report dated November 3, 2010.

Endemic Environmental Services. 2019. *Fairview Park Riparian Mitigation Wetlands Project: Annual Report 2019*. Costa Mesa, CA.

Endemic Environmental Services. 2020. *Fairview Park Riparian Mitigation Wetlands Project: Annual Report 2020*. Costa Mesa, CA.

Endemic Environmental Services. 2021. *Fairview Park Riparian Mitigation Wetlands Project: Annual Report 2021*. Costa Mesa, CA.

## 4.2.5 UCI Ecological Reserve

Action	UCI Ecological Reserve Status
<b>Sponsor</b>	Nature Reserve of Orange County (Natural Communities Coalition)
<b>OCTA Funding</b>	\$325,000
<b>Location</b>	Irvine
<b>Acreage</b>	8.5 acres
<b>General Habitat Types</b>	Cactus scrub
<b>Restoration Design Plans</b>	Approved in 2010.
<b>Restoration Installation</b>	Implemented in 2011.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2012 and 8 years of monitoring complete. The project was signed off in 2021.
<b>Land Protection Mechanism</b>	The Preserve is designated for conservation and habitat management by University of California (UC) Irvine's long-range development plan and pursuant to the Central-Coastal NCCP/HCP.
<b>Long-Term Management of Restoration Site</b>	The Preserve is managed by the UC Irvine Office of Natural Resources, for the School of Biological Science.
<b>General Comments / Concerns</b>	None

### 4.2.5.1 Project Summary

The Natural Communities Coalition (NCC) has been responsible for the planning and implementation (completed in November 2011) of the restoration and enhancement of 8.5 acres of cactus scrub in a mosaic of native grassland at the University of California (UC) Irvine Ecological Preserve, located in the San Joaquin Hills. The goal of the project was to increase breeding habitat for coastal California gnatcatcher and cactus wren. Even at the early stages of establishment, both cactus wrens and coastal California gnatcatchers were observed using the restoration area. Coastal California gnatcatchers were observed moving through the restoration site in pairs and family groups, foraging in native shrubs that were at the site prior to restoration and in native forbs that have developed since the restoration began. With respect to cactus wrens, the southern half of the restoration site was used by a family group. Cactus wrens were observed foraging in the restoration site, and a juvenile cactus wren was observed calling from planted prickly pear cactus clumps (Natural Communities Coalition 2017). The project site is within the Central-Coastal NCCP/HCP Coastal Reserve, but the proposed restoration is above and beyond the requirements of the Central-Coastal NCCP/HCP.

Although the cactus scrub restoration project was targeted for completion in 2017, because the project did not meet the targeted performance criterion for non-native cover, and an approximate 1-acre portion of the site had low native plant cover, the Wildlife Agencies requested NCC continue to work with OCTA and the restoration contractor to implement remedial measures and site maintenance to successfully attain all of the Restoration Plan performance criteria. Remedial measures that have been implemented since then have included spot weeding, remedial planting within the 1-acre portion of the site, and allowing for the continued establishment and increase of native plant cover as a means of reducing non-native plant cover.

Specific goals and objectives of the restoration project included reducing average invasive plant cover to less than 10 percent, planting 300 large salvaged prickly pear and 1,200 cactus pads throughout

the 8.5 acres, and planting native shrub, perennial grass and forb seeds throughout the cactus plantings to achieve 75 percent native cover comprised of 40 percent cactus and shrubs and 35 percent native grass and herbaceous species. Monitoring was conducted in June 2021 which documented that the performance standards had been met, with average non-native cover across the site of 4 percent, native cover of 85 percent, and cactus cover of 14 percent. The restored habitat has also been observed to support foraging of the coastal California gnatcatcher and the coastal cactus wren throughout project implementation, including nesting activity by both species in 2021. As a result, the Wildlife Agencies have concurred that the goals of the 8.5- acre cactus scrub restoration effort have been achieved.

#### 4.2.5.2 Related Documents and References

Griswald, M., Preston, K., and Bowler, P. 2010. *Measure M Cactus Scrub Restoration Plan for the University of California Irvine Ecological Preserve*. Irvine, CA. Report dated December 2, 2010.

Land IQ. 2017. 2017 Performance Monitoring Report Year 5 Measure M Cactus Scrub Restoration for the University of California Irvine Ecological Preserve. Prepared for the Natural Communities Coalition. June 2017.

Natural Communities Coalition. 2019. *Measure M Cactus Scrub Restoration for the University of California Irvine 2019 Performance Monitoring Results Memorandum*. Irvine, CA. Memo dated October 31, 2019.

Natural Communities Coalition. 2021. *Measure M Cactus Scrub Restoration for the University of California Irvine 2020 Performance Monitoring Results - Email*. Irvine, CA. Email from Danny Fry, dated February 4, 2021.

U.S. Fish and Wildlife Service. 2021. *Measure M Cactus Scrub Restoration Project at UCI Ecological Preserve - Email*. Carlsbad, CA. Email from Will Miller, dated December 2, 2021. [Sign-off Email]

#### 4.2.6 Aliso Creek

Action	Aliso Creek Status
<b>Sponsor</b>	Laguna Canyon Foundation
<b>OCTA Funding</b>	\$1,105,000
<b>Location</b>	Laguna Niguel
<b>Acreage</b>	55 acres
<b>General Habitat Types</b>	Riparian and transitional habitats
<b>Restoration Design Plans</b>	Approved in 2014 <sup>6</sup> .
<b>Restoration Installation</b>	Implemented in 2015.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2015 and 7 years of monitoring complete.

<sup>6</sup> The USFWS and CDFW approved the restoration plan for this project in 2014. To also obtain mitigation credit from the ACOE, the restoration plan was developed further into a Habitat Mitigation Monitoring Plan (HMMP) to comply with the Environmental Protection Agency 2008 Final Mitigation Rule. Implementation began while the HMMP was being developed with the ACOE.

Action	Aliso Creek Status
<b>Land Protection Mechanism</b>	The County of Orange is currently drafting a restrictive covenant that will cover the entire 55-acre restoration project area.
<b>Long-Term Management of Restoration Site</b>	Orange County Parks owns and manages this land as part of Aliso and Wood Canyons Wilderness Park, in conjunction with the Aliso and Wood Canyon RMP.
<b>General Comments / Concerns</b>	None.

### 4.2.6.1 Project Summary

Laguna Canyon Foundation (LCF) restored 55 acres of riparian habitat along Aliso Creek, in the City of Laguna Niguel. The project included removing nonnative invasive plants and planting willow and mulefat scrub and transitional riparian-upland habitats. It has added to other restoration projects in the same watershed funded by other entities. The site is in the San Juan watershed and within the boundaries of the Aliso and Wood Canyons Wilderness Park, but outside of the Central-Coastal NCCP/HCP Reserve boundaries.

The restoration of riparian habitat along Aliso Creek benefits Covered Species such as the least Bell's vireo, southwestern willow flycatcher, southwestern pond turtle, and bobcat. Known occurrences of least Bell's vireo, southwestern willow flycatcher, and southwestern pond turtle have been recorded at this restoration site. The restoration plan includes specific actions to benefit and improve southwestern pond turtle habitat. Southwestern pond turtle, least Bell's vireo, and coastal California gnatcatcher were documented within the restoration area in 2021, as was bobcat for the first time. During year 7 (2021) of the project, Laguna Canyon Foundation staff and contractors coordinated and implemented various restoration activities including targeted invasive control work and site wide weed abatement through both mechanical and chemical means. Additionally, qualitative vegetation monitoring, annual photo-monitoring, CRAM monitoring, and continued wildlife surveys were carried out to help gauge project progress and inform management decisions. Cooler environmental temperatures aided in vegetation reestablishment, though lower than average precipitation levels throughout the growing season resulted in a relative lack of volunteer native seed germination and recruitment.

As a result of the global COVID-19 pandemic and resulting 'stay-at-home' order that occurred during a critical phase of weed abatement efforts during 2020, non-native vegetation in some areas of the project flourished and, in some cases, set seed. Continuing the implementation of a new, GIS based vegetation mapping protocol, LCF field teams worked to prioritize treatment areas and effectively control the resulting flush of non-native vegetation from the replenished seed bank this year.

Additionally, on August 14, 2021 a small wildfire ignited in a section of intact mulefat scrub habitat within Aliso and Wood Canyons Wilderness Park adjacent to the OCTA Aliso Creek Mitigation Site. While the total fire impact is estimated to be 1.23 acres, direct impact of both the fire and Orange County Fire Authority dozer containment lines to the OCTA Aliso Creek Mitigation Site are estimated to be 8,511 square feet of primarily established mulefat and willow scrub habitat. Monthly monitoring has been initiated within the area to assess and mitigate any lasting fire impacts including novel non-native weed introduction/proliferation, increased erosion, and lack of native recruitment. In early 2022 or 2023, mulefat and willow pole cuttings will be planted to help restore the native canopy. After installation, pole cutting survival rate and native seed recruitment will be assessed to determine if additional revegetation efforts are warranted.



The native cover in the riparian restoration transects ranged from 80-100% with an average of 94%, up significantly from 2020's 84% average. Monitoring results reflected a rebounding riparian canopy as formerly sparse riparian species branch out both vertically and laterally due to improved growing conditions and reduced competition from non-native vegetation.

The Class 1 non-native cover in the riparian restoration transects ranged from 0-4% with an average of 0.04%. Only one *Arundo donax* resprout was picked up in all transects, resulting in the average being higher than the success criteria of 0%. However, no issues are anticipated to sustain 0% in the next few years. Class 2 non-native cover in riparian transects was 0% - well below the success criteria of 5%.

The native cover in the transitional restoration transects ranged from 18-100% with an average of 50%, down from 2020's 64% average. Under-performing transitional zones are likely a result of lack of recruitment due to drought like conditions experienced during the 2021 growing season. These areas will be monitored in 2022 for native recruitment and the need for remedial seeding and planting. The Class 1 non-native cover in transitional transects was a consistent 0%, reflecting an effective year of site-wide weed abatement and meeting the success criteria of 0%. Class 2 non-native cover in riparian transects ranged from 0-4%, with an average of 1% - well below the success criteria of 5%.

The plant composition analysis shows a high species richness, the presence of multiple co dominant species within both habitats and relative native cover distributed evenly throughout multiple layers at each transect. Data indicate that the habitat at Aliso Creek is rebounding successfully and responding extremely well to restoration efforts. The project is expected to be on track to meet success criteria.

#### 4.2.6.2 Related Documents and References

Laguna Canyon Foundation. 2020. *Aliso Creek Habitat Mitigation and Monitoring Plan Annual Report for Year 5 (2019) of Project Implementation Aliso and Wood Canyons Wilderness Park*. Aliso Viejo, CA. Report dated February 1, 2020.

Laguna Canyon Foundation. 2021. *Aliso Creek Habitat Mitigation and Monitoring Plan Annual Report for Year 6 (2020) of Project Implementation Aliso and Wood Canyons Wilderness Park*. Aliso Viejo, CA. Report dated January 15, 2021.

Laguna Canyon Foundation. 2022. *Aliso Creek Habitat Mitigation and Monitoring Plan Annual Report for Year 7 (2021) of Project Implementation Aliso and Wood Canyons Wilderness Park*. Aliso Viejo, CA. Report dated January 13, 2022.

#### 4.2.7 Chino Hills State Park

Action	Chino Hills State Park Status
<b>Sponsor</b>	Habitat Restoration Sciences/Dudek (Chino Hills State Park approval)
<b>OCTA Funding</b>	\$193,000
<b>Location</b>	Yorba Linda
<b>Acreage</b>	11 acres
<b>General Habitat Types</b>	Cactus scrub
<b>Restoration Design Plans</b>	Approved in 2017 and revised in 2019.

Action	Chino Hills State Park Status
<b>Restoration Installation</b>	Implemented in 2020.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2020 and 2 years of monitoring complete.
<b>Land Protection Mechanism</b>	The property is owned in fee title and is permanently conserved by the California Department of Parks and Recreation.
<b>Long-Term Management of Restoration Site</b>	The park is managed according to the Chino Hills State Park General Plan (California Department of Parks and Recreation 1999).
<b>General Comments / Concerns</b>	None.

### 4.2.7.1 Project Summary

CHSP is composed of 14,102 acres in the hills of Santa Ana Canyon, with portions of the park found in Orange, Riverside, and San Bernardino Counties. Ranging from 430 to 1,781 feet above mean sea level, the park straddles the north end of the Santa Ana Mountains and the southeast portion of the Puente-Chino Hills, which together form the northern end of the Peninsular Ranges in southern California. The restoration site is outside the Central-Coastal NCCP/HCP Plan Area.

The original CHSP restoration project proposed to enhance 21 acres of riparian, woodland, and cactus scrub habitats. It was later determined that a more intensive cactus scrub restoration project within CHSP would provide better ecological benefits. This project change was coordinated with and approved by the Wildlife Agencies and is discussed in greater detail in Section 8.2.4, *Chino Hills State Park and North Coal Canyon Restoration Project Modification*. The resulting project is an intensive restoration of 11 acres of cactus scrub within CHSP on the slope overlooking Yorba Linda south of the junction of Southridge Trail and Diemer Trail. The 11-acre cactus scrub restoration project will help return this area to its previous condition and benefit the OCTA M2 Covered Species coastal California gnatcatcher and cactus wren.

Installation was deemed complete in February 2020, therefore commencing the five-year maintenance and monitoring program. Overall, the site has been slow to establish with multiple years over lower than average rainfall and a difficult non-native seed bank. Year 2 maintenance efforts focused primarily on non-native weed treatments and non-native thatch removal. It is recommended that Year 3 maintenance activities continue to focus on targeted weed control, as well as increasing native cover through the addition of supplemental container plants and remedial seeding.

### 4.2.7.2 Related Documents and References

California State Parks. 2017. *Cactus Scrub Restoration, Northeast Preserve, Chino Hills State Park*. Perris, CA. Report dated January 10, 2017.

Dudek. 2020. *Notice of Installation Completion for Cactus Scrub Restoration, Northeast Preserve, Chino Hills State Park Memorandum*. Encinitas, CA. Report dated February 28, 2020.

Dudek. 2021. *Year 1 Long-Term Maintenance and Monitoring Period Annual Report for Cactus Scrub Restoration, Northeast Preserve, Chino Hills State Park*. Chino Hills, CA. Report dated March 2, 2021.

Dudek. 2022. *Year 2 Long-Term Maintenance and Monitoring Period Annual Report for Cactus Scrub Restoration, Northeast Preserve, Chino Hills State Park*. Chino Hills, CA. Report dated April 20, 2022.

## 4.2.8 Harriet Weider Regional Park

Action	Harriet Weider Regional Park Status
<b>Sponsor</b>	Bolsa Chica Conservancy
<b>OCTA Funding</b>	\$475,000
<b>Location</b>	Huntington Beach
<b>Acreage</b>	9.65 acres
<b>General Habitat Types</b>	Native grassland, coastal sage scrub, riparian
<b>Restoration Design Plans</b>	Approved in 2017 (some trail mapping approved in 2018)
<b>Restoration Installation</b>	Implemented in 2016.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2016 and 5 years of monitoring complete.
<b>Land Protection Mechanism</b>	The County of Orange executed a restrictive covenant in February 2020 to protect this site in perpetuity.
<b>Long-Term Management of Restoration Site</b>	The Bolsa Chica Conservancy, in partnership with Orange County Parks, will be the long-term management entity.
<b>General Comments / Concerns</b>	Monitor and discuss the decline of the cactus plantings.

### 4.2.8.1 Project Summary

The Bolsa Chica Conservancy restoration project comprises 9.65 acres of grassland, coastal sage scrub, and riparian habitat in the Santa Ana watershed. The project area may attract least Bell's vireo, coastal cactus wren, coastal California gnatcatcher and burrowing owl. Harriett Weider Regional Park is to be established as a mixed-use passive park, with sections restored to native habitat.

The Harriett Wieder Regional Park Restoration Project (sponsored by the Bolsa Chica Conservancy) was approved in the second round of restoration project funding in 2012. The original footprint occurred on County lands as well as private lands. To simplify the project, the Bolsa Chica Conservancy shifted the project area to County lands only. This shift also enabled the project to increase from 8.2 to 9.65 acres. The habitat types to be restored remain the same for the project (native grassland, coastal sage scrub, and riparian). This project modification was approved by the Wildlife Agencies and EOC. The restoration plan for this project was refined. The conservancy has successfully re-introduced southern tarplant to a site near the new interpretive center north of the park and included tarplant seed in the restoration plant palette.

The Bolsa Chica Conservancy was able to begin implementation (i.e., seed collection, plant propagation, installation of temporary irrigation, and seeding and plantings in some areas) of this project in 2016 while working out the details of the final success criteria and trail alignments with the Wildlife Agencies and OC Parks. To date, 3,713 individuals of southern tarplant have been documented within the restoration area. Thus far, growth has met two thirds of the performance criteria even though individuals have drastically reduced since 2018, most likely due to an expansion of CSS cover, ongoing drought conditions, and less soil disturbance in the project site. Cactus patches

within the project site continue to decline, likely due to soils retaining moisture and a potential fungal pathogen. A total of 42 container plants of cactus will be planted to boost the population. The project expects continued efforts to treat sprouting weeds throughout the season, and hopefully reach project goals.

## 4.2.8.2 Related Documents and References

Bolsa Chica Conservancy. 2018. *Habitat Restoration Plan for Harriett Wieder Regional Park*. Bolsa Chica Conservancy with assistance from LSA Associates Inc., Huntington Beach, CA. December 2018.

Bolsa Chica Conservancy. 2019. *Harriett Wieder Regional Park Habitat Restoration Project Year 2 Annual Report 2019*. Huntington Beach, CA. 2019

Bolsa Chica Conservancy. 2019. *Harriett Wieder Regional Park Habitat Restoration Project Southern Tarplant Survey 2019*. Huntington Beach, CA. 2019

Bolsa Chica Conservancy. 2020. *Harriett Wieder Regional Park Habitat Restoration Project Year 3 Annual Report 2020*. Huntington Beach, CA. 2020

Bolsa Chica Conservancy. 2021. *Harriett Wieder Regional Park Habitat Restoration Project Year 5<sup>7</sup> Annual Report 2021*. Huntington Beach, CA. 2021

## 4.2.9 Lower Silverado Canyon

Action	Lower Silverado Canyon Status
<b>Sponsor</b>	Irvine Ranch Conservancy
<b>OCTA Funding</b>	\$1,414,435
<b>Location</b>	County of Orange
<b>Acreage</b>	28.4 acres
<b>General Habitat Types</b>	Riparian
<b>Restoration Design Plans</b>	Approved in 2014.
<b>Restoration Installation</b>	Implemented in 2014.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2014 and 8 years of monitoring complete.
<b>Land Protection Mechanism</b>	The project site is subject to, and protected by, the permanent SilMod Conservation Easement Deed recorded in 2002 in favor of The Nature Conservancy. In addition, the lands are deed restricted for open space and conservation purposes under the wilderness park designation as the result of the transfer of land from the Irvine Company to the County of Orange.
<b>Long-Term Management of Restoration Site</b>	The project site is owned in fee by the County of Orange, and OC Parks is responsible for its long-term stewardship. IRC works under contract to the County of Orange under the supervision of OC Parks to manage this area and has existing formal permission to conduct restoration projects here. Broad management of the site, consistent with the terms of the Conservation Easement Deed, is guided by the Resource Plan for the 2009

<sup>7</sup> This document is erroneously titled Year 5 and should be Year 4.

<b>Action</b>	<b>Lower Silverado Canyon Status</b>
	SilMod Conservation Easement Property. The Integrated Adaptive Management Framework for the North Irvine Ranch Wildlands (Noss 2011) is the umbrella management framework that applies to all management units in the North Irvine Ranch regardless of ownership or mechanism of land protection.
<b>General Comments / Concerns</b>	None.

### 4.2.9.1 Project Summary

The IRC has implemented both active and passive restoration of 20.6 acres of riparian habitat and 7.8 acres of coastal sage scrub along Silverado Creek, a tributary to Santiago Creek (total of 28.4 acres). The project location is within the Santa Ana watershed. The degraded habitat that has been restored lies within a landscape mosaic containing patches of intact habitat. Restoring degraded patches within the mosaic has improved continuity to further benefit habitat quality of both restored and intact components. The project site is within the plan area for the Central-Coastal NCCP/HCP, but it is not currently part of the Reserve. However, the land will remain as conserved open space due to the recordation of conservation easements dedicated to The Nature Conservancy.

The Lower Silverado Canyon restoration project is now in its eighth year of active management but in its fifth year of planting. Because quantitative performance monitoring is only required for the baseline year and in Years 1, 3, and 5, no performance monitoring was conducted. This year’s activities included weed control, with control efforts focused on non-native annual grasses. As of 2019, the Year 3 minimum target had been surpassed, on average, by all habitat types and the interim minimum increase of two species had been met. Additionally, three polygon areas met the final success criteria. Qualitative evaluations in 2020 indicated that vegetation had established successfully in all restoration polygons despite substantial flooding in 2019.

As of 2021, at the project level, all vegetation-based success criteria have been met. At the habitat level, alluvial scrub, coastal sage scrub/mulefat scrub, and mulefat scrub areas met all vegetation-based success criteria. Mulefat scrub/willow riparian areas met success criteria for vegetation cover and structure but did not meet success criteria for functional groups, species richness, and codominant species, all of which required increases relative to pre-restoration (baseline) levels. The mulefat scrub/willow riparian areas had relatively high values for these metrics at baseline, and further increases were difficult to attain. However, the actual numbers of functional groups, species richness, and codominant species in mulefat scrub/willow riparian areas were comparable with those of intact reference habitats and those of other successfully restored habitats. When these other standards of comparison are considered, the mulefat scrub/willow riparian habitats appear fully successful with respect to these vegetation-based metrics of function.

The arthropod-based success criteria were not met at the project level and were generally not met at the habitat level. Pollinator species richness increased but was not sufficient to meet standards. Evenness of functional groups did not increase but was similar to that of the reference sites. Arthropod communities may be affected by larger-scale regional or global factors, or there may be a lag in the response of the arthropod community to habitat improvements. Although arthropod community development in restoration areas is an important research topic, the use of arthropod-based success criteria is experimental in nature and should not impede sign-off of an otherwise successful project.

Based on the 2021 monitoring results, IRC is requesting agency sign-off in 2022.

## 4.2.9.2 Related Documents and References

Irvine Ranch Conservancy. 2018b. *Habitat Mitigation and Monitoring Plan: Lower Silverado Canyon Under the Renewed Measure M Freeway Mitigation and Resource Protection Program*. Irvine, CA. February 2018.

Irvine Ranch Conservancy. 2019. *Annual Status Report, January-December 2019: Renewed Measure M Freeway Mitigation and Resource Protection Program, Lower Silverado Canyon*. Agreement No. C-3-1774 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2020. *Annual Status Report, January-December 2020: Renewed Measure M Freeway Mitigation and Resource Protection Program, Lower Silverado Canyon*. Agreement No. C-3-1774 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2021. *Annual Status Report, January-December 2021: Renewed Measure M Freeway Mitigation and Resource Protection Program, Lower Silverado Canyon*. Agreement No. C-3-1774 between OCTA and IRC. Irvine, CA.

## 4.2.10 North Coal Canyon

Action	North Coal Canyon Status
<b>Sponsor</b>	RECON Environmental Inc. (Chino Hills State Park approval)
<b>OCTA Funding</b>	\$247,500
<b>Location</b>	Yorba Linda
<b>Acreage</b>	5.5 acres
<b>General Habitat Types</b>	Riversidean alluvial fan, coastal sage scrub
<b>Restoration Design Plans</b>	Approved in 2015 and revised in 2019.
<b>Restoration Installation</b>	Implemented in 2019.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2020 and three years of monitoring complete.
<b>Land Protection Mechanism</b>	The property is owned in fee title and is permanently conserved by the California Department of Parks and Recreation.
<b>Long-Term Management of Restoration Site</b>	The park is managed according to the Chino Hills State Park General Plan (California Department of Parks and Recreation 1999).
<b>General Comments / Concerns</b>	None.

### 4.2.10.1 Project Summary

The North Coal Canyon property is owned by California State Parks and is within CHSP. This property is a vital link between the surrounding Puente-Chino Hills to the north and the Cleveland National Forest and the Santa Ana Mountains on the south. The proposed restoration project will enhance and restore 5.5 acres of coastal sage scrub/Riversidian alluvial fan sage scrub on the north side of SR-91. The project is expected to improve wildlife movement by making habitat north of SR-91 more attractive to wildlife and will complete the restoration of the entire Coal Canyon parcel by connecting

three other restoration projects being funded by other entities. This bio-corridor is the only remaining link that allows dispersal of wildlife between CHSP and the more diverse Santa Ana Mountains. Coal Canyon provides habitat for the movement of OCTA M2 Covered Species such as mountain lion and bobcat and provides high quality habitat for coastal California gnatcatcher as well as foraging habitat for the least Bell's vireo.

The North Coal Canyon Restoration Project has a proposed five-year maintenance period. Site preparation work began in September 2019, with Year 2 of maintenance completed in August 2021. For the maintenance program, the primary activities being performed include supplemental irrigation, maintenance of the temporary irrigation system, weed control, trash removal, and supplemental planting and seeding, as needed.

The coastal sage scrub habitat restoration being implemented at the North Coal Canyon restoration site continues to be successful to date (RECON 2022). Based on the annual quantitative assessment, the site has met or exceeded three of the five performance standards, including non-native species cover, invasive species cover, and overall native species richness. Although the average native species cover was 42 percent, the overall native cover increased by 12 percent compared to last year. It is anticipated that native cover will continue to increase over the next several years.

#### 4.2.10.2 Related Documents and References

California State Parks. 2015. *Coastal Sage Scrub Restoration, North Coal Canyon, Chino Hills State Park*. Perris, CA. Revised March 2019.

Irvine Ranch Conservancy. 2016. *Project Summary of IRC/OCTA Measure M2 Coal Canyon Undercrossing Wildlife Connectivity Improvements*. Irvine, CA. Report dated October 27, 2016.

RECON Environmental, Inc. 2020. *OCTA North Coal Canyon Restoration Project, Summary of Work Completed (March 2019 – February 2020)*. San Diego, CA.

RECON Environmental, Inc. 2021. *Summary Letter for Coastal Sage Scrub Restoration at North Coal Canyon, Chino Hills State Park (RECON Number 9342)*. San Diego, CA.

RECON Environmental, Inc. 2021. *Year 2 Report for Coastal Sage Scrub Restoration at North Coal Canyon, Chino Hills State Park (RECON Number 9342)*. San Diego, CA.

#### 4.2.11 West Loma

Action	West Loma Status
<b>Sponsor</b>	Irvine Ranch Conservancy
<b>OCTA Funding</b>	\$1,322,800
<b>Location</b>	County of Orange
<b>Acreage</b>	62.47 acres
<b>General Habitat Types</b>	Scrub, riparian
<b>Restoration Design Plans</b>	Approved in 2013.
<b>Restoration Installation</b>	Implemented in 2013.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2013 and 9 years of monitoring complete.

Action	West Loma Status
<b>Land Protection Mechanism</b>	A portion of the land is under conservation easement held by The Nature Conservancy, and the other portion is deed restricted exclusively for open space by the County of Orange and is dedicated as part of the reserve lands in the Central-Coastal NCCP/HCP.
<b>Long-Term Management of Restoration Site</b>	OC Parks is responsible for long-term stewardship subject to the terms and conditions of the Orange County Central-Coastal NCCP/HCP and the East Orange Conservation Easement, as well as the management plans developed under these agreements.
<b>General Comments / Concerns</b>	In late 2020, two fires impacted the West Loma subwatershed. A total of 27.3 acres were impacted and that require remedial actions for an additional two years.

### 4.2.11.1 Project Summary

IRC has restored 62.47 acres of grassland, coastal sage scrub, and riparian habitat and realigned existing wildlife fencing at the West Loma site. The restoration site is in the Santa Ana watershed. The degraded habitat that has been restored lies within a landscape mosaic containing patches of intact habitat. Restoring degraded patches within the mosaic has improved contiguity to further benefit habitat quality of both restored and intact components. The original restoration project design included realignment of fencing along the 241 Toll Road to improve wildlife movement, but it was determined this was not feasible (see Section 8.2.1). In place of realigning fencing, this project also includes the placement of plantings and wildlife cameras at the SR-91 Coal Canyon undercrossing and culvert. The plantings were installed to help entice more wildlife to utilize the existing potential crossing structures (freeway underpass and culvert). Cameras were installed to document wildlife movement through these structures. This project also capitalizes on a large-scale restoration project that is currently taking place within the same watershed. The project site intersects with CNDDDB occurrence records for many-stemmed dudleya, orangethroat whiptail, and coastal California gnatcatcher. A portion of the project site is within the Central-Coastal NCCP/HCP Reserve, but the restoration is above and beyond the requirements of the Central-Coastal NCCP/HCP.

As of 2021, vegetation performance monitoring indicates that restoration efforts at West Loma have been largely successful and show clear increases in native cover, habitat function, habitat structure, and shrub/tree density as well as decreases in non-native cover. Arthropod performance monitoring results are more varied as some habitat types are not yet showing improvement. Arthropod communities may be affected by larger-scale regional or global factors, or there may be a lag in the response of the arthropod community to habitat improvements. In contrast, monitoring results indicate clear decreases in target invasive plant species across the larger subwatershed and that all success criteria have been met. Pre-disturbance nesting surveys were conducted in and around restoration polygons in April 2021 and a total of eight nesting locations were observed within the West Loma subwatershed. Additionally, six least Bells' vireo territories and one cactus wren territory were observed. Appropriate buffers were established for each nesting location with guidance from the HMMP and the qualified avian biologist.

Maintenance efforts in 2021 focused on limiting competition from invasive plants in established restoration areas and facilitating recovery of fire and drought-impacted areas. IRC used an integrated weed control approach involving hand weeding, mowing, and selective herbicide treatment. Within burned areas, the extent of regeneration was monitored, and the intensity of weed control was increased to reduce competition with native forbs recruiting from the seed bank. These efforts were



successful in facilitating recovery of most of the burned polygons, except those in the more xeric native grassland areas where regeneration of the plant community was negatively influenced by drought conditions. In response, a two-acre portion of a native grassland polygon was seeded in December 2021 with a diverse seed mix of native grasses, shrubs, and forbs. Lastly, some mortality of installed plantings within sections of three drainage polygons was observed and identified for supplemental planting in early 2022. It is anticipated that one more year of monitoring, weeding, re-seeding, installation of new plantings and general maintenance will be needed to meet the required success criteria.

Additionally, the wildlife monitoring camera program at the SR-91 Coal Canyon undercrossing for the OCTA mitigation project was initiated in January 2017. Eight trail cameras and one vehicle counter were in operation from January 2021 to December 2021. The cameras caught a total of 804 bobcats, 283 coyotes, 24 mule deer, 107 gray fox, two opossum, and five raccoons. A total of 297 wildlife crossings were confirmed, which was a slight decrease compared to 2020. Human activity decreased from 2020 through 2021, although daily human activity in the undercrossing continues to be prevalent. There was a slight decrease in vehicle activity in 2021.

#### 4.2.11.2 Related Documents and References

Irvine Ranch Conservancy. 2018b. *Habitat Mitigation and Monitoring Plan: West Loma Subwatershed Under the Renewed Measure M Freeway Mitigation and Resource Protection Program*. Irvine, CA. March 2018.

Irvine Ranch Conservancy. 2019. *Annual Status Report, January-December 2019: Renewed Measure M Freeway Mitigation and Resource Protection Program, West Loma Subwatershed*. Agreement No. C-3-1775 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2020. *Annual Status Report, January-December 2020: Renewed Measure M Freeway Mitigation and Resource Protection Program, West Loma Subwatershed*. Agreement No. C-3-1775 between OCTA and IRC. Irvine, CA.

Irvine Ranch Conservancy. 2021. *Annual Status Report, January-December 2021: Renewed Measure M Freeway Mitigation and Resource Protection Program, West Loma Subwatershed*. Agreement No. C-3-1775 between OCTA and IRC. Irvine, CA.

#### 4.2.12 USFS Dam Removal

Action	USFS Dam Removal Status
<b>Sponsor</b>	United States Forest Service (Trabuco District)
<b>OCTA Funding</b>	\$185,000
<b>Location</b>	San Juan Creek
<b>Acreage</b>	Removal of 14 dams (acreage not measured)
<b>General Habitat Types</b>	Creek bed and riparian to benefit arroyo chub
<b>Restoration Design Plans</b>	Approved in 2016.
<b>Restoration Installation</b>	The first phase of dam removals (10) funded by OCTA was implemented in November 2018. All 14 dams have been removed.
<b>Restoration Monitoring of Success Criteria</b>	Monitoring initiated in 2018. USFS biologist are monitoring stream recovery for 3 years after dam removal.

Action	USFS Dam Removal Status
<b>Land Protection Mechanism</b>	Project within the USFS protected lands. No other mechanisms are needed.
<b>Long-Term Management of Restoration Site</b>	To be completed by the USFS.
<b>General Comments / Concerns</b>	None.

### 4.2.12.1 Project Summary

The purpose of the Trabuco District Dam Removal Project is to enhance aquatic organism passage and stream habitat in Silverado, Holy Jim, Trabuco, and Upper San Juan Creeks. Removing human-made dams in these creeks is essential to supporting native aquatic species and providing suitable habitat for potential re-establishment of extirpated species including southern California steelhead trout. This will implement, in part, recovery plan goals for southern steelhead. Removal of fish passage barriers is one of the highest priority action items for the San Juan and Trabuco Creek watershed. A total of 81 dams were targeted for removal.

These dams presented partial or complete barriers to native fish and other aquatic organisms, especially during periods of low flow. Dams alter physical stream processes such as bed load and sediment transport, natural surface flows, and channel adjustment. This has negative effects on aquatic species, aquatic habitat, and downstream habitat. The ability to move up and down stream is essential for aquatic species in order to complete their life cycles and maintain viable populations. Facilitating aquatic organism passage and improving stream habitat will increase accessible stream habitat for existing and potential populations of native aquatic species.

All of the dams that were committed to be removed have been removed. The project is in its 2<sup>nd</sup> year of monitoring, with 2022 being the final monitoring year. With the dams removed, fish and other aquatic organisms will be able to move more freely through the areas that were previously blocked by the dams. Due to work done, considerable re-shaping and re-establishment of natural stream channels has already been achieved. As of 2018, Arroyo Chub have moved upstream from dam 1 to dam 12 areas; they were previously confined downstream of dam 1 at San Juan Creek.

### 4.2.12.2 Related Documents and References

Orange County Transportation Authority (OCTA). *Collection Agreement Between U.S. Forest Service and OCTA: OCTA Agreement No. C-7-1629, Attachment A.*

Cleveland National Forest, Trabuco Ranger District. *Trabuco Dam Removal Project – 2019 Progress Report Introduction and Project Description.* Agreement number 18-CO-11050200-009.

Cleveland National Forest, Trabuco Ranger District. *Trabuco Dam Removal Project – 2020 Progress Report Introduction and Project Description.* Agreement number 18-CO-11050200-009.

Cleveland National Forest, Trabuco Ranger District. *Trabuco Ranger District Dam Removal and Aquatic Organism Passage Monitoring – 2021 Annual Report , November 2021.*

# Chapter 5

## Additional Conditions for Coverage

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### 5.1 Introduction

As part of the Conservation Analysis (Chapter 6) in the M2 NCCP/HCP, there were two Covered Species, arroyo chub and many-stemmed dudleya, noted for additional conditions for coverage above and beyond the acquisition of the seven OCTA Preserves and funding of restoration projects.

#### 5.1.1 Arroyo Chub

The conservation actions included in the M2 NCCP/HCP provided a positive but marginal benefit for conservation of arroyo chub. To provide for a level of conservation required for coverage of arroyo chub under the NCCP, OCTA in partnership with the United States Forest Service, is implementing a restoration project focused on improving habitat conditions for arroyo chub.

OCTA has initiated the USFS Dam Removal restoration project to provide conservation for arroyo chub required under the M2 NCCP/HCP (see Section 4.2.12, *USFS Dam Removal*). The following actions have been taken to achieve these conditions for arroyo chub:

- In 2017, the Environmental Oversight Committee (EOC) and Wildlife Agencies approved moving forward with the USFS Dam Removal project, and OCTA has contracted with USFS to remove 14 dams.
- The restoration project design has been approved.
- Restoration activities were initiated in November 2018 completed in 2020. A total of 81 dams were removed as part of the overall Trabuco District Dam Removal Project, with OCTA funding contributions resulting in 14 dams removed.
- Monitoring will continue for one more year.

#### 5.1.2 Many-stemmed Dudleya

To ensure that the M2 NCCP/HCP provides conservation and management for many-stemmed dudleya, OCTA will protect, enhance, and/or establish a major population (i.e., 500 individuals) of many-stemmed dudleya. This threshold can be accomplished through the protection, enhancement, and/or establishment of many-stemmed dudleya populations at multiple locations or at a single location. During baseline surveys of the Preserves, four occurrences with 60 individuals were identified on the Pacific Horizon (Aliso Canyon) Preserve. Ongoing Preserve management may improve habitat suitability (e.g., reduction of invasive species) that results in the expansion of the existing population on Pacific Horizon Preserve. If a minimum of 500 individuals are eventually identified on the Pacific Horizon Preserve within the 10 years from M2 NCCP/HCP adoption (by 2027), then this objective will be considered complete. If this objective cannot be met within the first 10 years as described, OCTA will select and oversee implementation of a restoration project designed to establish or expand a population of many-stemmed dudleya.

The following actions have been taken to achieve these conditions for many-stemmed dudleya:

- At the Pacific Horizon Preserve, OCTA directed GLA to conduct biological monitoring in 2019 to coincide with the blooming periods of the covered plant species, specifically many-stemmed dudleya. GLA detected approximately 80 additional dudleya individuals (GLA 2019). Bringing the total amount of individuals on this Preserve to 180 (GLA 2020).
- The Pacific Horizon Preserve ISMP was completed and approved by the Wildlife Agencies. The ISMP specifically identifies actions to protect and enhance disturbed habitat in the proximity of the many-stemmed dudleya population at the Pacific Horizon Preserve. This project was approved by the CCC and city of Laguna Beach and County of Orange in 2019. Invasive species were removed, bike jumps were broken up and fencing and signage were installed to help deter the unauthorized activity on the decommissioned trail on this part of the Preserve in 2020. Ongoing adaptive management activities to deter unauthorized activity in this area continued in 2021 and included salvaging cactus pads (*Opuntia littoralis*) from cactus collection areas and planting the salvaged cactus cuttings along the decommissioned trail and in areas where iceplant had died back and created open spaces for native plant establishment, installation of several habitat restoration signs along existing fence line to educate the public regarding the sensitivity of the area, and repairing damage that had been done to the fence line along the northern boundary of the Preserve. RECON also removed branches and debris that had been thrown on top of live vegetation and placed the vegetation and debris back onto the decommissioned trail to prevent use along the trail. GLA will be placing a wildlife camera on an installed post for wildlife tracking purposes, but also to capture any unauthorized activities.

## 6.1 Public Outreach Overview

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 EMP to provide funding for programmatic mitigation to offset impacts from the freeway projects in the 13 freeway segments covered by Measure M2. OCTA has been committed to transparency in how the M2 funds have been and are being used to implement the EMP. OCTA has conducted a variety of public outreach activities aimed at informing and engaging the public on the overall EMP as well as Preserve-specific issues and events.

- Hold Public Meetings – OCTA held public meetings during the preparation of the RMPs and will hold an annual public meeting to present this Annual Report. In addition, the regularly scheduled Environmental Oversight Committee meetings are open to the public and Preserve-specific issues are addressed at these meetings.
- Maintain Website – OCTA currently maintains the OC-Go (M2) Environment Mitigation Program (EMP) website that includes Preserve-specific information, copies of the RMPs for download, and information on Preserve hiking and riding tours: [http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-\(2011-2041\)/Freeway-Mitigation/Environmental-Mitigation-Program-Overview/](http://www.octa.net/Projects-and-Programs/OC-Go/OC-Go-(2011-2041)/Freeway-Mitigation/Environmental-Mitigation-Program-Overview/).
- Develop Outreach and Volunteer Programs – OCTA has been working to develop a volunteer program that addresses education and management needs. OCTA is encouraging trail user groups to participate in “self-monitoring and policing” programs.

### 6.1.1 EMP Public Outreach Events and Meetings

Table 6-1 includes a list of events, workshops, and public meetings that OCTA has had to address the actions of the EMP and solicit public input. Many events planned for 2021 were impacted due to restrictions relating to the COVID-19 epidemic.

**Table 6-1. EMP Public Outreach Events 2021**

<b>Date</b>	<b>Location</b>	<b>Stated Purpose</b>
9/23/2021	International Conference of Ecology and Transportation	OCTA was part of a panel that shared a summary of the OCTA EMP. The panel highlighted a case study completed by the Federal Highway Administration as an example of innovative advanced mitigation.
2/9/2021 and 8/10/2021	OCTA	EMP Update to the Taxpayer Oversight Committee

## 6.1.2 Preserve-Specific Public Outreach Events

Each Preserve RMP identifies and outlines the need for public outreach and education as 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. Table 6-2 includes a list of events, riding, and hiking tours held to address Preserve-specific issues.

**Table 6-2. Preserve-Specific Public Outreach Events 2021**

<b>Date</b>	<b>Location</b>	<b>Stated Purpose</b>
9/18/2021	Pacific Horizon Preserve	Wilderness Preserve Hiking Tour to educate the public about property value and access
9/26/2021	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour to educate the public about the property restoration and access
11/6/2021	Wren’s View Preserve	Wilderness Preserve Hiking Tour to educate the public about property value and access
11/20/2021	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour to educate the public about the property restoration and access
12/19/2021	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour to educate the public about the property restoration and access

## 6.1.3 Regional Coordination and Collaboration

The NCCP/HCP Administrator is responsible for coordinating with other regional management and monitoring programs to stay abreast of regional monitoring issues. Table 6-3 summarizes collaboration efforts, meetings, and activities undertaken by the OCTA staff (Lesley Hill and Dan Phu) during the timeframe of this Annual Report.

**Table 6-3. Collaboration with Regional Management and Monitoring Programs 2021**

<b>Date</b>	<b>Group</b>	<b>Stated Purpose</b>
1/28, 3/25 and 11/18	County of Orange Area Safety Task Force (COAST)	A working group of (more than 35 organizations) decision makers and executives for fire departments, public utilities, transportation agencies, natural resource management agencies, landowners, non-profit groups, and other community members to jointly identify problems and propose solutions for wildfire prevention, and to work together to implement them.
1/28, 3/25 and 11/18	Orange County Invasive Tree Pests Group	A group of scientists/ professionals that share information pertaining to invasive tree pests including the Gold Spotted Oak Borer (GSOB) and the Polyphagous Shot Hole Borer (PSHB).
5/11 and 11/9	Interagency Regional Working Group	This group includes landowners and private/public agencies throughout Southern California. The group began with a focus on wildlife connection concerns (mainly for mountain lion) and has evolved into a focus on natural resource issues that cross County boundaries through Southern California. Recent topics have included mountain lion connectivity updates, So Cal Missing Linkages updates, Cactus wren research and NCCP/HCP updates.
3/29	Southern California Association of Governments (SCAG) – Working Group (So Cal Greenprint Advisory)	OCTA participated in the working group meeting established and steered by SCAG.
3/23, 5/19, 7/15, 9/8	Caltrans Advanced Mitigation Working Group	To share status and lessons learned from other regional transportation agencies in topics related to advanced mitigation and permitting

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### 7.1 Summary of Endowment Process

OCTA has the responsibility to ensure the Preserves are protected and meet the NCCP/HCP commitments. Because management of the Preserves is not a primary function within OCTA's business operations, this obligation will be, and is in the process of being, formally transferred to appropriate and qualified third-party organizations. Until OCTA selects long-term managers for each of the Preserves, it is performing this role in an interim period, which is defined as 5 to 7 years after the Preserves have been acquired. The interim period consists of the finalization of the NCCP/HCP, placement of protective measures on the Preserves, and establishment of the endowment. During this time, OCTA is responsible for performing routine land management and maintaining the biological value of the Preserves.

OCTA is currently transitioning from the interim period to the next phase, the intermediate period, which was initiated after the NCCP/HCP was finalized in June 2017. During the intermediate period, OCTA begins to shift the Preserve management duties to the entities chosen to manage the Preserves subject to the NCCP/HCP standards. The intermediate period also entails the recording of conservation easements and the establishment of the endowment. This phase is expected to last approximately 10 to 15 years according to recent financial recommendations made by the EOC Ad Hoc committee. M2 funds will be used to sustain the management activities during the intermediate period.

Pursuant to the objectives of the NCCP/HCP, OCTA's goal is to ultimately transfer the long-term property title and management of the Preserves to other qualified entities (public or private non-profit). Based on preliminary estimates of management and monitoring costs, OCTA established a \$34.5 million endowment target in the OCTA NCCP/HCP. In order to account for interest rates and account management fees, a target of a \$46.2 million was set to fund the long-term management of the Preserves, which was authorized by the OCTA Board of Directors in October 2014. Staff collaborated with the EOC, the Finance and Administration Committee, the Board, and other mitigation land owners to develop a set of comprehensive land management strategies. This approach enabled OCTA to determine financial recommendations for the establishment of the endowment that are efficient and have the potential to maximize economies of scale, and the selection process for the endowment fund manager (EFM). The guiding principles, long-term funding strategy, and potential expenditure options list were approved by the Board in May 2015.

Throughout the endowment funding period, the EMP funds will have specified allocations. Approximately \$3 million will be deposited in the endowment on an annual basis for up to 10 to 12 years, during which OCTA must also pay for the interim land management from the existing Measure M revenue source. The existing Measure M revenues will also be used for other expenditures, such as habitat restoration projects. The annual deposits are estimated to earn approximately \$11.7 million in investment returns, net of fund management fees over the duration of the establishment period.

The long-term management cost is a significant factor that will impact the target endowment amount. Additionally, it is possible the long-term land manager may also manage the endowment that is tied

to the Preserve, or the Preserve manager and the endowment manager may be separate entities. Therefore, the funding of the endowment consists of two phases:

1. The endowment funding phase, expected to be a 10- to 12-year period
2. After the endowment has been established, determination of whether the endowment is managed by a single or multiple entities

The EFM has several responsibilities:

- Manage the funds OCTA deposits in trust for the benefit of the Preserves.
- Accrue investment earnings over the establishment period.
- Work with OCTA to establish permanent endowment(s) to fund the management of the Preserves in perpetuity.
- Annually prepare and update a funding plan that describes annual deposits made by OCTA, historical and forecasted investment earnings, fees charged, target endowment value, and completion schedule.
- Provide quarterly and annual reports on the status of the endowment.
- Deliver updates periodically to OCTA and its designated committees.

In 2016, OCTA completed a selection process and contracted with the California Community Foundation (CCF), based in Los Angeles, California, to manage the endowment to fund the EMP.

## 7.2 Current Status of Endowment Funding

Pursuant to the responsibilities of the EFM, CCF releases a quarterly comprehensive report that includes the composition of the Endowment Pool and the performance and is reviewed for consistency with endowment objectives. It is then presented to the Board. Staff will continue to oversee and provide endowment updates to the Finance and Administration Committee and EOC on a regular basis. As of September 30, 2021, the balance was \$22,075,031. The balance is above the fiscal year 2022 target of \$20,076,431.

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 5 to 7 years. This analysis will itemize and define the long-term obligations at each Preserve using Preserve specific information developed for the Preserve RMPs. It is expected that additional years of interim habitat management will provide a database and sounder basis for estimating the cost of long-term management. The final endowment funding level will be based upon actual negotiated long-term management contracts for each individual Preserve. OCTA will coordinate with the Wildlife Agencies and obtain the Wildlife Agencies' review and approval of the PAR analysis and determination of the permanent endowment funding requirements.

## **8.1 NCCP/HCP Administrator**

OCTA is responsible for implementing the M2 NCCP/HCP and staffing an NCCP/HCP Administrator position. The NCCP/HCP Administrator's role is to oversee and coordinate Plan implementation. The NCCP/HCP Administrator communicates regularly with Preserve Managers regarding the status of Preserve stewardship; the progress on conservation action implementation, monitoring, and management; and new or ongoing issues to be addressed. The NCCP/HCP Administrator is the primary point of contact for the Wildlife Agencies and for preparing the Annual Report demonstrating NCCP/HCP compliance.

OCTA has designated the following individual as the NCCP/HCP Administrator:

Lesley Hill  
(714) 560-5759  
lhill@octa.net

## **8.2 Minor Modifications to Plan, Permits, and Implementing Agreement**

The Plan allows for minor modifications to the Plan, permits, and Implementing Agreement if the modifications are non-substantive and do not meet the threshold of a Minor and Major Amendment. The following actions are noted as minor modifications to the Plan that have occurred and were included in the First OCTA Annual Report (2018). Details for each of these modifications were provided and approved by the Wildlife Agencies. Minor modifications to the Plan to date have included the following:

- West Loma Wildlife Crossing Component
- United States Forest Service Dam Removal Project
- Eagle Ridge (Hayashi) Preserve Boundary Modification
- Chino Hills State Park and North Coal Canyon Restoration Project Modification

No new minor modifications were needed in 2021.

## **8.3 Minor or Major Amendments to the Plan**

After documenting impacts caused by SCE maintenance at the Pacific Horizon Preserve, the Wildlife Agencies have recommended that the Plan be modified via a Minor Amendment to recognize the SCE powerline as an existing use for which operation and maintenance will be permitted to continue. Additional minor SCE maintenance impacts have occurred at Silverado Chaparral. OCTA (via SCE) will

provide compensation to offset 0.47 acre of habitat impacts to maintain long term net habitat value within the Preserve. OCTA will work with staff from the Wildlife Agencies to obtain approval on the compensation as well as documenting this this Minor Amendment in the Plan. There are no Major Amendments required at this time.

## **8.4 Changed Circumstances**

No events meeting the criteria of a Changed Circumstance occurred during the timeframe of this Annual Report.

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<sup>8</sup> This document is erroneously titled Year 5 and should be Year 4.

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**Appendix A**  
**Covered Freeway Improvement Projects**  
**Habitat Tracking Ledger**

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**Table A-1. Covered Freeway Projects Habitat Impact Tracking Ledger<sup>a</sup>**

Project ID	Segment	Checklist Date	Total	Chaparral	Coniferous Forest	Grassland	Riparian	Scrub	Water	Wet Meadows/ Marsh	Woodland
<b>Totals to Date:</b>			<b>9.242</b>	--	--	<b>6.460</b>	<b>0.957</b>	<b>1.705</b>	<b>0.12</b>	--	--
Project C EA 0K0200	C1	5/30/18	0.722	--	--	--	0.717	0.015	--	--	--
Project B EA 0K6700	B	7/26/18	0.00	--	--	--	--	--	--	--	--
Project L EA 0K710K	L1	1/29/18	6.810	--	--	6.46	0.25	--	0.10	--	--
Project M EA 0K8700	M	6/7/18	0.00	--	--	--	--	--	--	--	--
Project D 0M9800	D	12/10/19	0.00	--	--	--	--	--	--	--	--
Project F 0J3400	F1	11/11/19	0.00	--	--	--	--	--	--	--	--
Project G 0M9700	G1a	3/12/19	0.02	--	--	--	--	--	0.02	--	--
Project I 0K9800	I	3/28/19	1.69	--	--	--	--	1.69	--	--	--

<sup>a</sup> Values are in acres. Includes both permanent and temporary impacts.

**Table A-2. Summary of Applicable Avoidance and Minimization Measures and Status of Restoration Activities for Temporary Impacts from Covered Freeway Projects**

<b>Project ID</b>	<b>Applicable Avoidance and Minimization Measures</b>	<b>Restoration for Temporary Impact Areas Status</b>
Project C EA 0K0200	Sections 5.6.1, 5.6.2.1, 5.6.2.2, 5.6.2.3, 5.6.3, 5.6.4 and 5.6.5	As described in the NES, temporary impacts (staging, access, storage) will be contained outside of riparian/suitable habitat to the maximum extent practicable. All temporary impact areas adjacent to native habitats [i.e. coastal sage scrub, riparian (Oso Creek and Aliso Creek)] will be replanted with native plant species and approved by the Wildlife agencies. A plant establishment period of at least 3 years will be established. This will include the removal of litter and trash, weeding, water application, irrigation repair, replacement of plant material that dies, and other activities required to ensure the long-term survival of plant material to satisfy M2 HCP/NCCP obligations and permit conditions. Permittee shall restore all temporary impacts on site at a 1:1 ratio immediately following construction completion or, with written approval from CDFW, at the beginning of the next growing season.
Project B EA 0K6700	Sections 5.6.1, 5.6.2.1, 5.6.3, 5.6.4 and 5.6.5	As described in the NES, areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate surrounding vegetation characteristics and/or return to previous conditions. Restoration plans will be prepared during final design and included in the Plans, Specifications, and Estimates (PS&E) package. The revegetation plan will be prepared consistent with the California Department of Transportation (Caltrans) landscape architecture guidelines and requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies (the California Department of Fish and Wildlife [CDFW] and the United States Fish and Wildlife Service [USFWS]). A temporary restoration plan will be developed as part of the design and construction phase of the project.
Project L EA 0K710K	Sections 5.6.1, 5.6.2.1, 5.6.2.3 and 5.6.3.	As described in the NES, construction will be implemented to minimize temporary impacts (intended to benefit Roosting Bats NES Section 5.6.3). In addition, as stated in the NES areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate surrounding vegetation characteristics and/or return to previous conditions. For freeway construction projects, revegetation plans will be part of the project design following Caltrans' landscape architecture guidelines and requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies. A temporary restoration plan will be developed as part of the design and construction phase of the project.
Project M EA 0K8700	Sections 5.6.1, 5.6.2.1, 5.6.3 and 5.6.4.	No natural habitat is found within the project area. Thus, no restoration of temporary impacts is needed.

<b>Project ID</b>	<b>Applicable Avoidance and Minimization Measures</b>	<b>Restoration for Temporary Impact Areas Status</b>
Project I EA 0K9800	Sections 5.6.1, 5.6.2.1, 5.6.3 and 5.6.4.	As included in the NES areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate surrounding vegetation characteristics and/or return to previous conditions. For freeway construction projects, revegetation plans will be part of the project design following Caltrans' landscape architecture guidelines and requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies. A temporary restoration plan will be developed as part of the design and construction phase of the project.
Project G EA 0M9700	Sections 5.6.1, 5.6.2.1, 5.6.3 and 5.6.4.	No natural habitat is found within the project area. Thus, no restoration of temporary impacts is needed.
Project F 0J3400	Not Applicable	No natural habitat is found within the project area. Thus, no restoration of temporary impacts is needed.

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# Appendix B

## Annual Schedule for Effectiveness Monitoring

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**Table B-1. Annual Schedule for Effectiveness Monitoring on OCTA Preserves**

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
<b>Adopt RMP</b>							BL ST W	PE																						
<b>Effectiveness Monitoring:</b>																														
Rare Plants	3 to 5 years	<i>BE LT W</i>			<i>PS</i>							BE LP ST W		BE LP ST W				BE LP ST W				BE LP ST W				BE LP ST W				BE LP ST W
Reptiles	4 years	<i>BE LT W</i>			<i>PS</i>							B E <sup>9</sup> LP ST W			BE LP ST W				BE LP ST W			BE LP ST W				BE LP ST W				BE LP ST W
Birds	4 years	<i>BE LT W</i>			<i>PS</i>		BL PT W				BL PS T W				BE LP ST W				BE LP ST W			BE LP ST W				BE LP ST W				BE LP ST W
Mammals <sup>a</sup>	4 years	<i>BE LT W</i>			<i>P</i>		<i>S</i>	P	E	BL ST W		P	E	BL ST W		P	E	BL ST W		P	E	BL ST W		P	E	BL ST W		P	E	BL ST W

<sup>9</sup> Effectiveness monitoring for western pond turtle was conducted in 2021.

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
Natural Communities Quantitative <sup>b</sup>	4 years					BL W	BL W	BL W	BL W	BL W				BE LP ST W				BE LP ST W				BE LP ST W				BE LP ST W				BE LP ST W
Natural Communities Comprehensive	10 years	BE LT W			PS								BE LP ST W									BE LP ST W								

*Red Italics = Baseline Survey*

<sup>a</sup> Mammal monitoring is completed with wildlife cameras and is an on-going monitoring activity. Every 4 years an analysis of the data is completed to interpret mammal monitoring data.

<sup>b</sup> Methodologies to complete quantitative monitoring of natural communities are currently being reviewed with the other regional conservation entities and the Wildlife Agencies. A pilot program has been initiated at other OCTA Preserves. An agreed upon monitoring will be applied to the Preserves going forward once methodologies are finalized.

Key:

Letter ID	OCTA Preserve	Location
<b>B</b>	Bobcat Ridge (formerly Hafen)	Trabuco Canyon
<b>E</b>	Eagle Ridge (formerly Hayashi)	City of Brea
<b>L</b>	Live Oak Creek (formerly Saddle Creek South)	Trabuco Canyon
<b>P</b>	Pacific Horizon (formerly Aliso Canyon)	City of Laguna Beach
<b>S</b>	Silverado Chaparral (formerly MacPherson)	Silverado Canyon
<b>T</b>	Trabuco Rose (formerly Ferber Ranch)	Trabuco Canyon
<b>W</b>	Wren’s View (formerly O’Neill Oaks)	Trabuco Canyon

**Appendix C**  
**Biological Monitoring Report for OCTA M2 Preserves:**  
**Trabuco Rose, Pacific Horizon, Bobcat Ridge,**  
**Silverado Chaparral, Wren’s View,**  
**Live Oak Creek, and Eagle Ridge**  
**April 2022**

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FINAL

BIOLOGICAL MONITORING REPORT

FOR

OCTA M2 PRESERVES:  
TRABUCO ROSE, PACIFIC HORIZON, BOBCAT RIDGE, SILVERADO CHAPARRAL,  
WREN'S VIEW, LIVE OAK CREEK, AND EAGLE RIDGE



April 2022

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2. Monitoring Photos
3. OCTA Covered Species Maps
4. Photo Station Maps
5. Trails and Maintenance Maps
6. Wren’s View Preserve Oak Tree Map

## APPENDICES

Appendix A	Trabuco Rose Preserve USACE/SWRCB Annual Monitoring Form (GLA)
Appendix B	2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves (RECON)
Appendix C	Results of Protocol Coastal California Gnatcatcher and Coastal Cactus Wren Surveys for Six OCTA Preserves, Orange County, California, August 5, 2021 (GLA)
Appendix D	Trabuco Rose Preserve Trail Monitoring Map and Photos - Year 2021 (GLA)
Appendix E	Invasive Shot Hole Borer Monitoring, Emergent Pest Trapping and Goldspotted Oak Borer Surveys – OCTA Preserves, Orange County, California, September 2, 2021 (DUDEK)
Appendix F	First Annual Monitoring Report for Disturbed Lands within Pacific Horizon Preserve Restoration, Laguna Beach, Orange County, California, February 1, 2022 (GLA)
Appendix G	Pacific Horizon Herbicide Treatment Plan Memorandum, March 19, 2021 (AECOM)
Appendix H	Fourth Qualitative Monitoring Associated with the Road Encroachment Area at OCTA’s Bobcat Ridge Preserve, Located in Trabuco Canyon, Orange County, California, July 7, 2021 (GLA)



# OCTA M2 PRESERVES: TRABUCO ROSE, PACIFIC HORIZON, BOBCAT RIDGE, SILVERADO CHAPARRAL, WREN'S VIEW, LIVE OAK CREEK, AND EAGLE RIDGE BIOLOGICAL MONITORING REPORT

## I. BACKGROUND

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 (Covered Species) and their habitats in a comprehensive manner. A key component of the Plan conservation strategy has included the identification and acquisition of habitat Preserves to offset habitat impacts.

OCTA has acquired seven properties as part of the M2 EMP; this report includes the following seven Preserves<sup>1</sup>: Trabuco Rose (previously known as Ferber Ranch; purchased in 2011), Pacific Horizon (previously known as Aliso Canyon; purchased in 2015), Silverado Chaparral (previously known as MacPherson; purchased in 2013), Bobcat Ridge (previously known as Hafen; purchased in 2011), Wren's View (previously known as O'Neill Oaks; purchased in 2011), Live Oak Creek (previously known as Saddle Creek South; purchased in 2011), and Eagle Ridge (previously known as Hayashi; purchased in 2011). Currently the Preserves are being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place within the next three to five years. The Preserve Manager is responsible for the implementation of management and monitoring tasks as outlined in each Preserve's Resource Management Plan (RMP) (OCTA 2017 – Trabuco Rose, Silverado Chaparral, Bobcat Ridge, Wren's View, and Live Oak Creek; OCTA 2018 – Pacific Horizon and Eagle Ridge). The purpose of this report is to document interim biological monitoring activities conducted by Glenn Lukos Associates (GLA) from January 1, 2021 through December 31, 2021 and provide management recommendations at the Preserves.

In addition, a total of 1.75 acres of waters of the U.S., of which 0.14 acre consists of wetlands, within Trabuco Rose Preserve is compensatory mitigation for the U.S. Army Corps of Engineers (USACE) and California State Water Resources Control Board (SWRCB) in the form of preservation. While monitoring and reporting for the entire Preserve is related to the USACE/SWRCB mitigation sites since these are surrounding buffer areas, a USACE/SWRCB Annual Monitoring Form is attached as Appendix A to provide the USACE/SWRCB with the information they require regarding tasks within the Trabuco Rose RMP that are specific to their mitigation areas.

A report detailing maintenance activities carried out by OCTA's maintenance contractor, RECON, is attached as Appendix B.

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<sup>1</sup> The OCTA Preserves were officially renamed through a public voting process in February 2018.

## II. SITE INFORMATION

### A. Responsible Parties for Biological Monitoring

Preserve Manager: Orange County Transportation Authority  
600 South Main Street, 9th Floor  
Orange, California 92868  
Contact: Lesley L. Hill  
Telephone: (714) 560-5759

Report Preparer: Glenn Lukos Associates  
1940 E Deere Avenue, Suite 250  
Santa Ana, California 92705  
Contact: Lexi Kessans/David Moskovitz  
Telephone: (949) 837-0404

### B. Landscape Setting

#### Trabuco Rose Preserve

The 399-acre Trabuco Rose Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon [Exhibit 1 – Location Map] and is accessed from Trabuco Oaks Road and Rose Canyon Road. Trabuco Oaks Road becomes Hickey Canyon Road near the OCTA property line. The Preserve is located immediately adjacent to the CDFW-managed Trabuco Canyon Reserve to the west and near other open space lands, including the Cleveland National Forest to the north, Trabuco Creek and O'Neill Regional Park to the south, and the Joplin Youth Center to the east, which is maintained predominately as open space.

The Preserve is located on the southwestern flank of the Santa Ana Mountains in the headwaters of Trabuco Creek and features rolling terrain with elevations ranging from 1,120–1,650 feet above mean sea level. 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. Hickey Creek drains the western side of the Preserve.

#### Pacific Horizon Preserve

The 150-acre Pacific Horizon Preserve is located east of Pacific Coast Highway in the City of Laguna Beach in Orange County. The northwestern edge of the property is adjacent to residential development along Barracuda Way and Loretta Drive, while the southeastern edge of the property is adjacent to The Ranch at Laguna Beach (The Ranch). The northern and eastern boundaries abut open space in Aliso and Wood Canyons Wilderness Park.

Topography on the property is hilly, with the main ridgeline running through the middle of the property and canyons draining steep slopes to either side. Elevations range from approximately 40 feet above mean sea level (msl) at the southeastern edge of the property to 840 feet above msl at the northwestern edge. Two unnamed blue-line streams occur in the northwestern portion of the property, with smaller drainage features present in the canyon bottoms.

### **Bobcat Ridge Preserve**

The 48-acre Bobcat Ridge Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon, immediately adjacent to the east side of Live Oak Canyon Road, north of its intersection with Shelter Canyon Road and is accessed from Live Oak Canyon Road, Shelter Canyon Road, and Hunky Dory Lane. Surrounding land uses include California Department of Fish and Wildlife's (CDFW's) Trabuco Canyon Reserve, Cleveland National Forest, O'Neill Regional Park, and areas of low density, rural residential development.

The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 1,190 to 1,450 feet above mean sea level (msl). Two ephemeral drainages that flow in a westerly direction are located in the western half of this property. A larger ephemeral drainage is located along the eastern boundary of the property and appears on the USGS quadrangle as a blueline stream; several small ephemeral drainages flow into this drainage from within the property limits.

### **Silverado Chaparral Preserve**

The 204-acre Silverado Chaparral Preserve is located in unincorporated Orange County, east of the cities of Orange and Irvine. Baker Canyon Road is to the north, Ladd Canyon Road is to the east, Silverado Canyon Road is to the south, and Black Star Canyon Road is to the west. The Preserve is accessed from Black Star Helo Pad Road and Hall Canyon Road in the northwest portion of the site. Both of these roads are dirt roads off of Baker Canyon Road. The property is within the Cleveland National Forest administrative boundary and Cleveland National Forest land holdings are to the north and east of the Preserve. The western edge of the Preserve is immediately adjacent to County of Orange open space managed by the Irvine Ranch Conservancy. Low density rural residential development occurs along Silverado Canyon Road south of the property, and a recreational vehicle (RV) park occurs to the north along Baker Canyon Road.

Topography on the Preserve is hilly, with the main ridgelines oriented in a northeast to southwest direction. Elevations range from approximately 1,135 to 1,678 feet above mean sea level (msl). No blueline streams occur on the Preserve, but multiple drainage features are present in the canyon bottoms, which flow into Santiago Creek.

### **Wren's View Preserve**

The 119-acre Wren's View Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon, and is accessed from Trabuco Oaks Drive, Live Oak Canyon Road, and Trabuco Canyon Road. Live Oak Canyon Road becomes Trabuco Canyon Road south of the Preserve's southern boundary. Surrounding land uses include the O'Neill Regional Park, miscellaneous agriculture, and areas of low density, rural and medium density residential development.

The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 950 to 1,250 feet above mean sea level (msl). Three ephemeral drainages that flow in a westerly direction are located in the western half of the Preserve and several small, southeast--flowing ephemeral drainages occur along the southeastern boundary of the Preserve.

## Live Oak Creek Preserve

The 84-acre Live Oak Creek Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon, and is accessed from Live Oak Canyon Road approximately 0.3 mile from its intersection with El Toro Road/Santiago Canyon Road. Surrounding and nearby land uses include the Saddle Creek North Preserve, Cleveland National Forest, Live Oak Plaza Conservation Area, miscellaneous agricultural and commercial, St. Michael's Preparatory School, and areas of low density, rural residential development.

The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 1,160 to 1,600 feet above mean sea level (msl). Two principal ephemeral drainages that flow in a westerly direction occur on the property: one adjacent to Live Oak Canyon Road and the other in the center of the property.

## Eagle Ridge Preserve

The 301-acre Eagle Ridge Preserve is located within a large block of undeveloped land in northeastern Orange County. Specifically, the Preserve is located in the Chino Hills southeast of Carbon Canyon Road (State Route [SR] 142) and is accessed from Carbon Canyon Road off a private dirt road, Carbon Ridge Road. Chino Hills State Park borders the southeastern boundary of the property. Surrounding land uses are mostly open space with residential development along SR-142 to the southwest of the Preserve.

The Preserve lies along Carbon Canyon between the remainder of the Chino Hills to the southeast and the Puente Hills to the northwest. A ridgeline runs across the center of the property in a northeast-southwesterly direction with steep slopes down to Soquel Canyon and Carbon Canyon. Elevations on site range from approximately 650 to 1,260 feet above mean sea level (msl). A blueline stream in Soquel Canyon crosses the eastern corner of the property.

### C. Covered Species and Sensitive Habitats

#### Trabuco Rose Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Trabuco Rose Preserve included coastal California gnatcatcher (*Polioptila californica californica*), coastal cactus wren (*Campylorhynchus brunneicapillus*), orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), bobcat (*Lynx rufus*), and intermediate mariposa lily (*Calochortus weedii* var. *intermedius*, IML). Ongoing biological monitoring has also documented nesting populations of coastal cactus wren and extensive use by mountain lion (*Puma concolor*). Focused surveys conducted by GLA in 2021 documented coastal cactus wren and gnatcatcher. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include many-stemmed dudleya (*Dudleya multicaulis*) and coast horned lizard (*Phrynosoma blainvillii*). The Preserve is almost entirely within U.S. Fish and Wildlife Service (USFWS) designated critical habitat for the coastal California gnatcatcher.

The Preserve was identified as a priority conservation area because of the diversity of habitat types found on the property and its value for wildlife movement due to its adjacency to other large blocks of protected lands, contributing to regional conservation, with the goal to enhance habitats that support Covered Species, including coastal sage scrub, cactus scrub, chaparral, grassland, riparian, wetlands, and woodland habitats.

Notably, Trabuco Rose Preserve supports large areas of high-quality native grasslands, a unique habitat that has been diminished in this region due to farming/grazing practices and development.

### **Pacific Horizon Preserve**

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2015 (Bonterra Psomas 2015). Covered Species observed on Pacific Horizon Preserve included California gnatcatcher, many-stemmed dudleya, and intermediate mariposa lily. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include coast horned lizard, orange-throated whiptail, and bobcat. The Preserve is not located in an area proposed or designated as critical habitat. There is critical habitat for coastal California gnatcatcher to the south and southeast of the Preserve.

The Pacific Horizon Preserve satisfies many of the property acquisition criteria that was utilized to evaluate potential alignment with the OCTA EMP program including being identified as a Priority Conservation Area (PCA); supporting Covered Species and associated natural communities; contributing to regional biological connectivity; and containing a diversity of high-quality habitat types, including chaparral, grassland, and coastal sage scrub.

### **Bobcat Ridge Preserve**

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Bobcat Ridge Preserve included coastal cactus wren and intermediate mariposa lily. In 2019, GLA documented orange-throated whiptail during biological monitoring. Focused surveys conducted by GLA in 2021 also documented coastal cactus wren. Bobcat was detected on wildlife cameras in 2021. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include coastal California gnatcatcher, mountain lion, and coast horned lizard. The Preserve is almost entirely within USFWS designated critical habitat for the coastal California gnatcatcher.

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

### **Silverado Chaparral Preserve**

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2014 (Bonterra Psomas 2015). Covered Species observed on Silverado Chaparral Preserve included orange-throated whiptail, coast horned lizard, and intermediate mariposa lily. OCTA and Orange County Parks staff confirmed mountain lion tracks on the Preserve in 2016. GLA documented presence of bobcat during biological monitoring in 2019 and coastal cactus wren during focused surveys in 2021. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include coastal California gnatcatcher and many-stemmed dudleya. While not a Covered Species, the Preserve is within USFWS designated critical habitat for the arroyo toad (*Anaxyrus californicus* [*Bufo microscaphus californicus*]).

The Silverado Chaparral Preserve satisfies many of the property acquisition criteria that was utilized to evaluate potential alignment with the OCTA EMP program including being identified as a PCA; supporting Covered Species and associated natural communities; contributing to regional biological connectivity; and containing a diversity of high-quality habitat types, including coastal sage scrub, chaparral, coast live oak woodland, riparian forest, and grassland.

### **Wren's View Preserve**

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Wren's View Preserve included California gnatcatcher, orange-throated whiptail, mountain lion, and intermediate mariposa lily. Ongoing biological monitoring has also documented presence of bobcat, while also confirming use by mountain lion. GLA detected numerous coastal cactus wren territories during focused surveys in 2021. GLA also detected one gnatcatcher pair nesting approximately 18 feet from the boundary, but using the Preserve as territory. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include coast horned lizard. While not a Covered Species, the Preserve is within USFWS designated critical habitat for the arroyo toad.

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

### **Live Oak Creek Preserve**

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Live Oak Creek Preserve included coastal cactus wren and intermediate mariposa lily. In addition, adjacent neighbors documented presence of bobcat and mountain lion in 2018, which GLA confirmed in 2019. GLA documented cactus wren during focused surveys and orange-throated whiptail during biological monitoring in 2021. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include coastal California gnatcatcher and coast horned lizard. The Preserve is within USFWS designated critical habitat for the coastal California gnatcatcher.

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

### **Eagle Ridge Preserve**

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Bonterra did not detect any Covered Species during baseline surveys; however, several species were noted by Bonterra as having a potential to occur, including western pond turtle (*Emys marmorata*). At the time of Bonterra's baseline surveys, pond turtles were known from Carbon Canyon Creek south of the Preserve but were not detected by Bonterra in Soquel Canyon within the Preserve. In 2021, GLA biologists and U.S. Geological Survey (USGS) biologists on separate occasions detected pond turtles inside and outside the

Preserve. On August 19, 2021, USGS biologists detected one adult pond turtle within Soquel Canyon Creek within the Preserve and several pond turtles offsite within Carbon Canyon Creek. GLA biologists also detected pond turtles offsite within Carbon Canyon Creek on June 29 and October 22, 2021. GLA noted bobcat at the Preserve in 2019 through wildlife camera detections. During focused surveys in 2021, GLA detected one least Bell vireo (*Vireo bellii pusillus*) on the very western edge of the property, which is also using the contiguous willow habitat beyond the property. Additional Covered Species with the potential to occur include intermediate mariposa lily, southern tarplant (*Centromadia parryi* ssp. *australis*), many-stemmed dudleya, coast horned lizard, orange-throated whiptail, and coastal California gnatcatcher, though many of these species have a limited potential for occurrence. The local community has also documented use by mountain lion. The Preserve is not located in an area proposed or designated as critical habitat. There is critical habitat for coastal California gnatcatcher to the southwest of the Preserve.

The Preserve was identified as a priority conservation area because of the diversity of habitat types found on the property and its value for contributing to regional biological connectivity, with the goal to enhance habitats that support Covered Species, including oak woodland, chaparral, grassland, and riparian.

### III. MONITORING ACTIVITIES

Monitoring activities focus on the overall condition of the Preserves and threats and stressors to the Preserves' wildlife and habitat. This includes mapping and recording invasive plant and wildlife species, unauthorized trail cutting, encroachments by adjacent property owners, areas of erosion and/or sedimentation, and monitoring trail conditions. Monitors also review the Preserve for maintenance needs including examining fence lines and gates, checking for missing or damaged signage, reporting fallen trees, and documenting trash and illegal dumping, as necessary. Detections of OCTA M2 Covered Species and/or sensitive species are documented and reported to the CNDDDB. Exhibit 2 provides monitoring photographs, Exhibit 3 provides special status species mapping including OCTA Covered Species, Exhibit 4 provides locations of monitoring photographs and wildlife camera stations, as applicable, and Exhibit 5 provides trail mapping and maintenance/encroachment information.

#### A. Summary of Biological Monitoring Surveys

This report documents survey visits conducted by GLA biologists from January 1 through December 31, 2021, which were overseen by David Moskovitz, Lead GLA Biological Monitor. For any species detected incidentally, its location was recorded through Global Positioning System (GPS), as well as noting whether it was a new occurrence/location, or a likely confirmation of a previously noted occurrence.

Table 1 provides a summary list of survey dates, personnel, tasks completed, covered/sensitive species observed, action items, and recommendations to OCTA. The staff key for Table 1 is provided below:

GLA Staff Key

BL = Brinna Lee  
 CA = Cynthia Arnold  
 DS = David Smith  
 JA = Jeff Ahrens  
 JF = Jason Fitzgibbon

GLA Staff Key

JS = Jillian Stephens  
 SA = Sheri Asgari  
 SC = Stephanie Cashin  
 TM = Trina Ming  
 VP = Velvet Park

OCTA Staff Key

LH = Lesley Hill

Table 1. Summary of Survey Visits to the M2 Preserves

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
<b>Trabuco Rose Preserve</b>						
3/17/21	Review Trespass Area	JA, SC	Attended OCTA field meeting to review trespass area.	Cactus wren	Property boundary fence was cut near trespass area. Took collector point of fire hydrant at Lesley Hill's request.	Repair fence line. Recommend installation of wildlife camera near area of trespass.
3/22/21	CAGN/CAWR <sup>2</sup> 1A, Re-install Wildlife Cameras	JA, SC	CAGN/CAWR survey 1, northwest polygon; installed cameras near trespass area and within previous wildlife locations.	Cactus wren	Numerous CAWR territories detected.	None
3/23/21	CAGN/CAWR 1B	JA, SC	CAGN/CAWR survey 1, northeast polygon	Cactus wren	Numerous CAWR territories detected.	None
3/26/21	CAGN/CAWR 1C	JA, SC	CAGN/CAWR survey 1, south Rose Canyon side	Cactus wren, gnatcatcher (offsite)	Numerous CAWR territories detected. CAGN male detected offsite below Joplin Preserve, likely nesting.	None
4/5/21	CAGN/CAWR 2A	JA, SC	CAGN/CAWR survey 2, northwest polygon	Cactus wren	Numerous CAWR territories detected.	None
4/6/21	CAGN/CAWR 2B	JA, SC	CAGN/CAWR survey 2, northeast polygon	Cactus wren	Numerous CAWR territories detected.	None
4/7/21	CAGN/CAWR 2C	JA, SC	CAGN/CAWR survey 2, south Rose Canyon side	Cactus wren, gnatcatcher	CAGN pair detected at southern boundary; numerous CAWR territories detected.	None
5/3/21	Trails Monitoring	SA, SC, CA	Conducted trails monitoring	Cactus wren	None	None
6/8/21	Corps Preservation Monitoring	SC, VP	Conducted Corps annual monitoring	Cactus wren	Oak trees near Drainage 2 are stressed.	Have arborist review stressed oaks.
11/1/21	Biological Monitoring, Docent Training	SC, SA, JF, BL	Biological monitoring, docent training, mapped Southern California Edison (SCE) poles, gully repair monitoring and	None	Bermuda grass on road, African flag plant mapped, artichoke thistle re-sprouting	Remove Bermuda grass and African flag plant; re-treat artichoke thistle.

<sup>2</sup> CAGN/CAWR = coastal California gnatcatcher/coastal cactus wren



Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
			photos, annual monitoring photo locations			
11/12/21	Biological Monitoring, Camera Maintenance	SC, JA	Biological monitoring, camera maintenance, review trespass area, mapped SCE poles, annual monitoring photos	Orange-throated whiptail	Wildlife camera photos were downloaded. Mountain lion, bobcat, deer, coyote, and fox were detected. Mountain lion with kitten was detected on Camera J - see Exhibit 2 and Photo 13. Trespassing was documented on Camera J three times. A mountain biker was documented on 3/22/22 and 6/20/22. Two people and two dogs were documented on 7/4/22. The encroachment area in the southwestern boundary was reviewed and this area does not appear to have been used recently. The fencing and signage are intact. No invasive species associated with gully area observed or other issues associated with repair.	None
12/10/21	Gully Restoration w/ Agencies and Engineers	CW, LH	Discussed options for restoring and hydrological improvements to gully.	None	Perform jurisdictional delineation update and vegetation/tree inventory within project area. Engineering of the channel and existing rock slope protection may cause minor permanent impacts.	None
<b>Pacific Horizon Preserve</b>						
1/19/21	Review Decommissioned Trail & Artichoke Thistle Area with Maintenance Contractor	SA, LH	Discussed upcoming maintenance needs.	None	Decommissioned Trail: Plant cactus pads and add debris along fence. Artichoke Thistle Area: Rake and remove old heads from the ground; spray seedlings and regrowth in winter months.	Decommissioned Trail: Spray any regrowth of iceplant, fountain grass, and pampas grass. Artichoke Thistle Area: Monitor throughout the growing season for natural recruitment by native shrubs. Consider adding native seed and cactus pads to the area along trail to close in the entry

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
						points into the treatment area/field.
3/18/21	CAGN/CAWR 1	JA, SC	CAGN/CAWR Survey 1	None	Evidence of erosion on OCTA property from bikes on very steep east facing trail down to Aliso Creek.	Deter mountain bike usage on unauthorized trails.
4/14/21	CAGN/CAWR 2	JA	CAGN/CAWR Survey 2	None	Same erosion as previously noted.	Conduct third CAGN/CAWR to possibly pick up CAGN as they have been documented on site previously.
6/23/21	CAGN/CAWR 3	JA	CAGN/CAWR Survey 3	None	Same erosion as previously noted.	n/a
10/12/21	Biological Monitoring/Map Encroachment	JA, VP	Checked for encroachment, reviewed SCE cut trails	None	The "newly cut trail" previously mapped by GLA in the eastern portion of the site that spurs south from the Sewer Drop Trail has been extended so that it connects to other existing trails [Exhibit 5 – Trails, Utility, and Maintenance Map]. It also appears that the Sewer Drop Trail itself has gotten deeper with more erosion, been subject to more vegetation cutting, and has new small offshoots that lead back up or down to the "newly cut trail". A lot of yellow flagging was present throughout the "newly cut trail" down to the SCE connection by the telephone pole. GLA noted a section of missing fence line in the eastern portion of the Preserve near an SCE pole.	As noted above, deter mountain bike usage on unauthorized trails. Repair missing fence line.
<b>Bobcat Ridge Preserve</b>						
1/27/21	Biological Monitoring	SC, TM	Reviewed encroachment area; checked wildlife cameras.	Cactus wren	Sign near Camera B at the lower end of the encroachment area is still off post. Reviewed camera photos - camera positions need to be adjusted because moving vegetation is causing too many triggers.	Continue to monitor encroachment. Maintain signage. Adjust camera positions.

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
3/16/21	CAGN/CAWR 1	JA, SC	CAGN/CAWR Survey 1	Cactus wren	Four cactus wren territories using at least a portion of the Preserve.	None
4/9/21	CAGN/CAWR 2	JA, SC	CAGN/CAWR Survey 2	Cactus wren	Cactus wren information same as above.	None
5/3/21	Biological Monitoring	SA, SC, CA	Encroachment monitoring	None	Encroachment looks similar to previous year, no rain this year so little recruitment or flowers, upper part of encroachment is very dense.	Continue to monitor encroachment. Consider installation of staking and repair signage to clearly demarcate the property boundary and prevent future disturbance events. Conduct weed abatement. Consider native seeding and/or cactus pad installation.
10/29/21	Biological Monitoring	SC, VP	Biological monitoring; habitat photos	Cactus wren	Sign near Camera B at the lower end of the encroachment area is still off post.	Maintain signage.
11/12/21	Biological Monitoring	SC, JA	Biological monitoring; reviewed encroachment area; camera maintenance and removal; mapped SCE poles; ant colony mapping.	Cactus wren, bobcat (on wildlife camera)	Sign near Camera B at the lower end of the encroachment area is still off post. No change with encroachment. Removed Camera A. Reviewed site for SCE poles (none seen). Humans were observed on wildlife camera driving a mule and walking on the previous encroachment. A dog was also observed on camera in this area.	Maintain signage.
<b>Silverado Chaparral Preserve</b>						
3/19/21	CAGN/CAWR 1	JA, SC	CAGN/CAWR Survey 1	Cactus wren	One cactus wren territory and evidence of active nesting in southwestern corner of property. One Spanish broom mapped in same area by OCTA sign.	Remove Spanish broom.
4/13/21	CAGN/CAWR 2	JA, SC	CAGN/CAWR Survey 2	None	None	None
11/3/21	Biological Monitoring	SC, JA	Biological monitoring, mapped SCE poles, trespass monitoring, fence repair photos	None	Encroachments associated with SCE utility work were documented: 1) A new pole or newly replaced/not previously documented pole was	Coordinate with SCE regarding encroachments; repair missing signage and cut fencing. Repair erosion.

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
					<p>mapped onsite with vegetation cut around the pole</p> <p>2) New pole placed just offsite; however, new access trail cut on OCTA property.</p> <p>In addition, it appears that access to two offsite poles is occurring from OCTA property on unauthorized trails. Also, the fencing at one offsite pole location was cut to access the pole.</p> <p>Within interior trails, pruning of ceanothus and yerba santa was documented as was pruning of vegetation on both sides of interior trespass fencing. Along the southeastern boundary, the fencing was cut and signage was missing in two locations (Sign Areas B and C). Fencing and sign was intact at Sign Area A. Heavy erosion was documented onsite along an access road in the northern portion of the Preserve.</p>	
<b>Wren's View Preserve</b>						
1/27/21	Biological Monitoring	SC, TM	Monitored for encroachment issues, checked fencing and mapped SCE poles	None	Erosion was noted on the main road leading to lower gate (same area as before); there is still enough clearance for a car. The chain link fence in the southern part of the site is still pushed down in several areas. Barbed wire has been pushed to make openings in three places along the ridge road, with two areas showing a visible trail going downslope. The interior barbed wire fence line that was damaged by a downed oak is the same as 2019. Just	Repair road erosion. Repair downed exterior fencing. Remove interior fencing.

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
					to the north of that area, approximately 20 feet of barbed wire is missing.	
3/17/21	CAGN/CAWR 1	JA, SC	CAGN/CAWR 1	Cactus wren	Preliminary results show over 10 CAWR territories. Documented two non-OCTA cameras by upper gate (one facing toward and one facing away from gate). Mountain bike usage documented on the access road from lower to upper gate.	None
4/8/21	CAGN/CAWR 2	JA, SC	CAGN/CAWR 2	Cactus wren, gnatcatcher	Documented 14 CAWR territories on site, one CAGN pair nesting in black sage approximately 18 feet from OCTA boundary but using OCTA property as territory. Evidence of bike tracks along main access road.	None
11/1/21	Biological monitoring, Docent training	SC, SA, JF, BL	Biological monitoring, docent training	Walked ridge road discussing docent topics	None	None
<b>Live Oak Creek Preserve</b>						
3/9/21	CAGN/CAWR 1 Survey	JA, SC	CAGN/CAWR Survey 1	Cactus wren	One CAWR territory detected.	None
3/16/21	CAGN/CAWR 2 Survey	JA, SC	CAGN/CAWR Survey 2	Cactus wren	Four CAWR territories detected.	None
10/29/21	Biological Monitoring	SC, VP	Biological monitoring, mapped SCE poles	Cactus wren, orangethroat whiptail	Fallen tree on perimeter fence; ridge access road needs maintenance; mapped SCE poles along road (none occur onsite).	Fence near entrance may need repair due to fallen tree; maintain ridge access road.
<b>Eagle Ridge Preserve</b>						
6/27/2021	LBV <sup>3</sup> 1 Survey	SC	LBV Survey 1	Least Bell's vireo	LBV detected on the very western edge of the property, which is also using the contiguous willow habitat beyond the property.	None

<sup>3</sup> LBV = Least Bell's vireo

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
6/29/2021	LBV 2 Survey	SC	LBV Survey 2	Southwestern pond turtle (offsite – Carbon Canyon Creek)	No LBV detected onsite in canyon; observed 1 pool that is suitable habitat for pond turtle, which USGS has confirmed presence.	None
10/22/2021	Biological Monitoring	SC, JA	Biological monitoring, check east gate lock	Southwestern pond turtle (offsite – Carbon Canyon Creek)	Cows on ridge onsite; gate, signs and fence on east side in canyon are in good shape; took habitat photos and photo of the pool with turtle onsite, also took photos of turtles on state park land.	None

## B. Monitoring Results

### Trabuco Rose Preserve

#### a. Trabuco Rose - Plants and Wildlife

##### i. Trabuco Rose - Covered Wildlife Species

GLA conducted focused surveys for gnatcatcher and cactus wren on March 22, 23, and 26, and April 5, 6, and 7, 2021. One gnatcatcher pair was detected on April 7, 2021 along a ridgeline located near the Preserve's southernmost boundary. The gnatcatcher pair was detected by tape playback in a relatively small patch of California sagebrush (*Artemisa californica*) and black sage (*Salvia mellifera*) intermixed with toyon (*Heteromeles arbutifolia*) during the second gnatcatcher survey. Based on the observed behavior, the pair likely had young chicks in a nearby nest. In addition, a second gnatcatcher pair was detected offsite during two surveys approximately 250 feet northeast of the Preserve's eastern boundary, below the County of Orange Joplin Youth Center. Twenty-nine cactus wren territories were identified within or partially within the Preserve boundary. An additional six cactus wren individuals were mapped without their territories being defined, for a total of 35 distinct cactus wren locations. Evidence of territoriality (e.g., counter singing), nest building, and active nesting (e.g., adult carrying food or fecal sac removal) was observed throughout the entire Preserve. In addition, an orangethroat whiptail was detected on an access road near the center of the Preserve. Detections of Covered Wildlife Species are depicted on Exhibit 3 – OCTA Covered Species Map. A report detailing focused survey results for gnatcatcher and cactus wren is attached as Appendix C.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023 based on the feedback received during the 2022 pilot program.

#### 1. Recommendations

Continue effectiveness monitoring in 2022 and continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. Implement pilot program for visual encounter surveys for coast horned lizard and orangethroat whiptail.

As with the previous year's report, it should be noted that an invasive lizard (Sonoran whiptail, *Aspedoscelis sonorae*) has been detected within Orange

County that looks very similar to the orangethroat whiptail. Although the Sonoran whiptail has not yet been observed near any of the OCTA Preserves, the occurrence of the Sonoran whiptail regionally raises concerns that the species could inhabit one or more of the OCTA Preserves. In addition, due to the similarity in physical characteristics between the two species, misidentification is possible. GLA biologists are familiar with the physical features to distinguish the orangethroat whiptail from the Sonoran whiptail and will attempt to confirm the identification using binoculars when whiptails are observed during visual surveys and general monitoring. However, absolute confirmation of species may not be possible without handling the individuals, which would require pitfall trapping to capture individuals. If during the 2022 monitoring GLA biologists determine that identification through visual survey alone is unreliable, then GLA might recommend pitfall trapping for future monitoring years if whiptail species confirmation becomes a priority.

**ii. Trabuco Rose - Covered Plant Species**

GLA’s monitoring did not focus on covered plant species in 2021 due to drought conditions. As a result, there were no new detections of covered plant species. Previous locations of the mariposa lily are depicted on Exhibit 3 – OCTA Covered Species Map. Table 2 below tracks new intermediate mariposa lily detections. As noted above, no new locations were documented in 2021. The table will continue to be updated annually in future annual monitoring reports.

**Table 2. Trabuco Rose – Intermediate Mariposa Lily Ledger**

	Locations	Population
Baseline Surveys	20	69
Previous Monitoring	42	208
2016-2018 GLA Monitoring	43	148
2019 GLA Monitoring	0	0
2020 GLA Monitoring	0	0
2021 GLA Monitoring	0	0
<b>Total in GIS through 2021</b>	<b>105</b>	<b>425</b>

**1. Recommendations**

Implement effectiveness monitoring in 2022 in order to detect potential trends in intermediate mariposa lily population growth or decline and to potentially detect many-stemmed dudleya.

Although no impacts are expected as discussed in the 2019 Annual Monitoring Report, monitoring should continue to include areas of documented mariposa lily and suitable habitat along access roads where maintenance occurs, to confirm that the maintenance activities are not adversely affecting mariposa lily populations.



**iii. Trabuco Rose - Non-Covered Sensitive Wildlife Species**

GLA did not detect non-covered sensitive wildlife species while performing biological monitoring.

**1. Recommendations**

GLA has no recommendations pertaining to the non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**iv. Trabuco Rose - Non-Covered Sensitive Plant Species**

GLA did not map any new locations (or confirm known locations) of non-covered sensitive plant species while performing biological monitoring in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to the non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as applicable based on the species detected.

**v. Trabuco Rose - Wildlife Cameras**

Wildlife cameras were installed on the Preserve in September 2013. GLA biologists continued to operate and monitor wildlife cameras at various stations throughout the Preserve until October 2019. Through coordination with OCTA, GLA removed the wildlife cameras on an interim basis due to the level of effort and costs associated with maintenance, checking the cameras, and managing the data combined with the lack of new data being collected. GLA re-installed three cameras in March 2021 to continue tracking wildlife and trespass. Mountain lion, bobcat, mule deer, coyote, and gray fox were detected. Mountain lion with kitten was detected on Camera J - see Exhibit 2 and Photo 13. Trespassing was documented on Camera J three times. A mountain biker was documented on March 22 and June 20, 2021. Two people and two dogs were documented on July 4, 2021.

**1. Recommendations**

Inspect the perimeter fencing annually, per the RMP. Since the wildlife cameras continue to provide useful data for wildlife use, especially for mountain lions, as well as human use, leave the existing cameras on the property as long as there is a budget to cover such monitoring.

**vi. Trabuco Rose - Invasive Plant Species**

Implementation of the Invasive Species Management Plan (ISMP) is ongoing. OCTA's maintenance contractor, RECON, conducted initial treatment of the Priority 1 invasive species and some of the Priority 2 invasive species in fall 2018. RECON conducted follow-up treatment in spring 2019 and primarily retreated artichoke thistle/cardoon (*Cynara cardunculus*). Additional follow-up retreatments of

artichoke thistle/cardoon were conducted in January/February 2020 and February, March, and June 2021. No retreatment of pampas grass (*Cortaderia selloana*) or salt cedar (*Tamarix* spp.) was necessary in 2020 or 2021. GLA mapped Bermuda grass, African flag plant, and re-sprouts of artichoke thistle on November 1, 2021 and notified OCTA and RECON. In addition, non-native grasses and mustard growing within and along access roads were line-trimmed or sprayed for fire prevention. RECON's report is attached as Appendix B.

1. **Recommendations**

Continue to implement the ISMP, including monitoring areas that have been treated. Remove the Bermuda grass and African flag plant.

- vii. **Trabuco Rose - Invasive Animal Species**

GLA did not observe any animal species within the Preserve that would be classified as invasive.

1. **Recommendations**

The property has the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable. As noted above, an invasive lizard (Sonoran whiptail) with similar characteristics to the orangethroat whiptail has been detected in Orange County. GLA biologists are familiar with the physical features to distinguish the orangethroat whiptail from the Sonoran whiptail and will attempt to confirm the identification using binoculars when whiptails are observed during visual surveys and general monitoring.

- b. **Trabuco Rose Human Environment**

- i. **Trabuco Rose – Land Use**

On March 3, 2021, OCTA informed GLA regarding an encroachment onto the Preserve from an adjacent property. The perimeter fencing had been cut and a previously unmapped trail was observed leading from the property onto the Preserve. On March 17, 2021, OCTA, GLA, and RECON met onsite to review the encroachment and discuss options to deter trespass in this area. RECON installed additional signage and repaired the fence. GLA installed a wildlife camera for tracking unauthorized use in this area. Additionally, as noted above, trespassing was documented on Camera J three times. A mountain biker was documented on March 22 and June 20, 2021. Two people and two dogs were documented on July 4, 2021.

1. **Recommendations**

Monitor the trespass area. The Preserve will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company, the Orange County Sheriff Department's mounted unit, and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check the perimeter fencing for signs of

encroachment, as well as any evidence of habitat disturbance within the Preserve due to human activity.

The RMP describes that compliance with the RMP restrictions on public access is partly dependent on the self-monitoring behavior of the public, including those individuals that are authorized to access properties located north of the Preserve through the main gate. The public education and outreach program identified in the RMP is in part intended to communicate the importance of self-monitoring in reinforcing the value and purpose of the Preserve. GLA recommends that the public use restrictions be reinforced as frequently as necessary during the various public outreach events. Additional methods should be continued as identified in the RMP, including the encouragement of two-way communication with adjacent residents to collect and disseminate Preserve information.

The RMP notes that through regular patrols by the Preserve Manager and staff, enforcement of public access guidelines falls into two categories of offenses: minor and major infractions. Enforcement of minor infractions such as hiking on closed trails and bringing dogs into the Preserve would consist of discussing the infraction with the offending party and a warning process. Major infractions may require coordination between the Preserve Manager and law enforcement.

**ii. Trabuco Rose – Adjacent Land Use**

As noted above, an encroachment onto the Preserve from an adjacent property was observed. The perimeter fencing had been cut and a previously unmapped trail was observed leading from the property onto the Preserve. GLA did not observe any other (new) unauthorized activities in the Preserve as a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment. RECON completed fuel modification work around the neighboring houses within the appropriate limits in January, April, May, and June 2021.

**1. Recommendations**

Install camera near trespass area. GLA will continue to monitor adjacent properties for signs of unauthorized access/encroachment. As noted above, public education should be continued through public outreach events as described in the RMP.

**iii. Trabuco Rose - Site/Trail Use**

The Preserve contains numerous existing roads and trails that historically supported multiple uses. The main system of dirt roads continues to be maintained for vehicle access, including for emergency access, general OCTA management use, and in some instances for public access where an easement is granted. Some smaller trails are being maintained for public access or Preserve management, while the remainder of the trails are designated for passive restoration. RECON performed interior fire road maintenance and repaired fence lines, as needed.

A total of 13 trails or trail segments were initially identified in the Preserve RMP for “passive restoration”, all of which were assessed in 2018 and 2019. Monitoring did not occur in 2020 due to COVID-19. As of the 2021 monitoring, two trails had fully grown in, most trails were passively restoring with natives or combination of natives and non-native grasses, or had not changed since 2018 (i.e., no weeds present warranting action). Site preparation/weed abatement was recommended for one trail that is associated with a future oak tree restoration site.

As noted above, OCTA informed GLA of an encroachment from an adjacent property, consisting of cut fencing and usage of a previously unmapped trail.

**1. Recommendations**

GLA will continue to monitor the site to document unauthorized site/trail use and will assist with public outreach events, as applicable. GLA recommends the continued annual monitoring of “passive restoration” trails to qualitatively note the condition of the trails, to document the gradual extent of recovery over time, and to recommend active restoration, as applicable.

**c. Trabuco Rose - General Maintenance**

**i. Trabuco Rose - Fencing/Gates**

RECON repaired the cut fencing near the trespass area and fixed two gates.

**1. Recommendations**

Repair fence line and gates as needed. GLA will continue to monitor for fencing, signage, and gate repair needs.

**ii. Trabuco Rose - Trash/Dumping**

RECON field crew removed weeds/biomass that had been illegally dumped in the Preserve along Rose Canyon Road. All biomass was disposed of off-site.

**1. Recommendations**

Continue to monitor for illegal dumping.

**iii. Trabuco Rose - Erosion/Sedimentation**

OCTA completed Phase 1 of the gully area project to stabilize the erosion adjacent to the access road east of the main gate (near the secondary gate). The project consisted of installation of 325 cubic yards of ½ ton rock and 65 cubic yards of 1-ton rock and filter fabric, which were the initial steps necessary to secure area. GLA continues to monitor this area and is assisting OCTA in securing regulatory permits to complete Phase 2. GLA observed typical erosion in access roads throughout the Preserve, as well as some vegetation growing in the access roads.

## 1. Recommendations

Repair/control erosion and remove vegetation from access roads as needed. GLA will continue to monitor the site for erosion effects and will report any changes to OCTA.

### iv. Trabuco Rose - Trees

Tree maintenance performed by RECON throughout 2021 included removing fallen branches that were blocking fire/access roads, trimming overhanging tree branches to allow for safe ingress/egress of emergency vehicles, and removal of a fallen tree blocking an equestrian path. In accordance with the RMP, all tree material is left on the Preserves and placed outside of access roads/trails and waterways.

Due to the ongoing (2017 through 2020) on-site identification of invasive shot hole borer (*Euwallacea fornicatus*; ISHB) by Dudek, ISHB monitoring and evaluation surveys were conducted in 2021 to evaluate levels of ISHB infestation within the Preserve. Dudek arborists evaluated a total 134 riparian trees within the Trabuco Rose Preserve. Of the 134 trees evaluated, a total of eight trees continued to exhibit signs and symptoms of ISHB, of which seven were determined to have low infestation rates and one had moderate infestation rate (same results as 2018 through 2020; no newly infested trees were observed and the infestation rates stayed the same). No new pests and/or disease were observed on the Trabuco Rose Preserve.

Based on the results of the 2021 surveys, ISHB is considered active within the Trabuco Rose Preserve. However, based on the findings of the previous surveys, ISHB continues to be in the early stages of infestation. Furthermore, with the exception of three interior trees found on the Trabuco Rose Preserve, the majority of ISHB signs and symptoms continue to be found on the periphery of the western boundary. The observation of ISHB along the site's western boundary along Trabuco Canyon is believed to be due to high infestation levels observed throughout O'Neill Regional Park and ISHB's active spread throughout the region. Alternatively, the observation of ISHB sign within the interior of the Preserve continues to be considered an outlier from the observed population along the edge of the property. However, based on the ISHB's potential for spread, it is within the ISHB's zone of influence/impact for the area.

The report containing detailed information of this study dated September 2, 2021 is attached as Appendix E.

GLA documented a few stressed oaks associated with Drainage 2 during biological monitoring on November 1, 2021. Dudek arborists conducted a site visit on January 19, 2022 to evaluate the oaks and determined they are stressed due to drought conditions. No sign of GSOB was observed, only ambrosia beetles, which are a secondary pest that attack stressed oaks. Removal of the trees was not recommended.

## 1. Recommendations

Continue to perform as-needed maintenance to trim and/or clear fallen branches/trees from fire/access roads.

The observation of ISHB signs and symptoms within the interior of Trabuco Rose Preserve is significant due to the risk presented to the adjacent California sycamore tree population. However, all eight of the trees exhibited low to moderate signs of ISHB. Furthermore, observed levels of ISHB within the Preserve were consistent with the previous surveys, and no new occurrences of ISHB were observed. As such, the following treatment options are recommended:

- ISHB Treatment – As with many insect infestations, it is at the early stages that the outbreak/infestation can be controlled. In an effort to maintain and limit the spread of ISHB throughout the remaining areas of the Preserve, it is recommended that the eight trees observed to have low to moderate signs and symptoms of ISHB be treated by means of a trunk spray with Bifenthrin, Bacillus subtilis, and Penra-Bark or similar. The above recommended pesticide and fungicide treatments should be conducted by a reputable licensed company that specializes in such and has a Pest Control Advisor and Applicator on staff.
- Monitoring – It is recommended that OCTA maintain an active ISHB monitoring and treatment program that focuses on the mapped riparian tree species in Appendix E. Specifically, it is recommended that this program focus on high-priority areas located throughout the Preserve. Areas that should be considered for monitoring include but are not limited to high-use recreation areas, native oak woodlands, and riparian areas that do not contain ISHB, and those areas identified in Appendix E. The frequency of ISHB monitoring within the selected areas should be conducted on a biweekly (i.e., every other week) basis during peak flight season (November through March). Active and frequent monitoring would allow OCTA land managers to quickly identify ISHB and to remove infested material before ISHB spreads into uninfested areas. Routine monitoring of the site will play an important role in managing ISHB within the Preserve.

### Pacific Horizon Preserve

#### a. Pacific Horizon - Plants and Wildlife

##### i. Pacific Horizon - Covered Wildlife Species

GLA conducted focused surveys for gnatcatcher and cactus wren on March 18, April 14, and June 23, 2021. No gnatcatchers or cactus wren were detected. Previous

detections of Covered Wildlife Species are depicted on Exhibit 3 – OCTA Covered Species Map. A report detailing focused survey results for gnatcatcher and cactus wren is attached as Appendix C.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren’s View Preserves in 2023 based on the feedback received during the 2022 pilot program.

**1. Recommendations**

Continue effectiveness monitoring in 2022 and continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above. Implement visual encounter surveys for coast horned lizard and orangethroat whiptail in 2023 based on pilot program results and additional Wildlife Agency coordination, as applicable.

**ii. Pacific Horizon - Covered Plant Species**

GLA’s monitoring did not focus on covered plant species in 2021 due to drought conditions. Previous locations of the many-stemmed dudleya and mariposa lily are depicted on Exhibit 3 – OCTA Covered Species Map.

**1. Recommendations**

Implement effectiveness monitoring in 2022 in order to detect potential trends in many-stemmed dudleya and intermediate mariposa lily growth or decline.

**iii. Pacific Horizon - Non-Covered Sensitive Wildlife Species**

GLA did not detect non-covered sensitive wildlife species while performing biological monitoring.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**iv. Pacific Horizon - Non-Covered Sensitive Plant Species**

GLA did not map any new locations of non-covered sensitive plant species while performing biological monitoring in 2021. GLA also did not confirm non-covered sensitive plants in previously known locations, although the biologists did not

specifically survey previously mapped locations as this was not the focus of biomonitoring efforts in 2021. Previous locations of mapped non-covered sensitive plant species, i.e., western crownbeard (*Verbesina dissita*), are depicted on Exhibit 3.

**1. Recommendations**

GLA has no recommendations pertaining to the non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**v. Pacific Horizon - Wildlife Cameras**

There are currently no wildlife cameras at Pacific Horizon Preserve. Two wildlife cameras will be installed for tracking wildlife use and abundance throughout the Preserve and for noting unauthorized access as a secondary benefit.

**1. Recommendations**

Install wildlife cameras as noted above pursuant to the Coastal Development Permit (CDP).

**vi. Pacific Horizon - Invasive Plant Species**

Implementation of the Disturbed Lands Restoration Plan (DLRP) and ISMP is ongoing. OCTA's maintenance contractor, RECON, conducted several maintenance visits in 2021 to treat artichoke thistle, hottentot fig (*Carpobrotus edulis*), and pampas grass. Hottentot fig was also treated on County of Orange property bordering the Preserve, as approved by the County. GLA conducted annual monitoring associated with implementation of the DLRP. The report detailing monitoring results is attached as Appendix F.

**1. Recommendations**

Continue to implement the ISMP and DLRP based on priorities outlined in the plans. This includes specifically targeting artichoke thistle and pampas grass in January – March 2021, as needed.

**vii. Pacific Horizon - Invasive Animal Species**

GLA did not observe any animal species within the Preserve that would be classified as invasive.

**1. Recommendations**

The property has the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable. As noted above, GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.



## b. Pacific Horizon - Human Environment

### i. Pacific Horizon - Land Use

Mountain biking and hiking are ongoing at the Pacific Horizon Preserve, which are authorized activities; however, usage is occurring on unauthorized trails and trail modifications have occurred. Implementation of the DLRP is ongoing to deter usage on the decommissioned trail. In 2021, OCTA's maintenance contractor salvaged cactus pads (*Opuntia littoralis*) from cactus collection areas and planted the salvaged cactus cuttings along the decommissioned trail and in areas where iceplant had died back and created open spaces for native plant establishment. RECON also installed several habitat restoration signs along existing fence line to educate the public regarding the sensitivity of the area and repaired damage that had been done to the fence line along the northern boundary of the Preserve. RECON also removed branches and debris that had been thrown on top of live vegetation and placed the vegetation and debris back onto the decommissioned trail to prevent use along the trail. GLA will be placing a wildlife camera on an installed post for wildlife tracking purposes, but also to capture any unauthorized activities.

The SCE encroachment documented in 2020 in the northern portion of the Preserve continues to be maintained by SCE's consultant, AECOM [Exhibit 5 – Trails, Maintenance, and Utility Map]. Additionally, new impacts from SCE activities were documented in 2021 consisting of newly cut trails and access clearing around utility poles. In total, approximately 0.45 acre of access impacts have been mapped. OCTA staff is working with SCE and the Wildlife Agencies to resolve these unauthorized impacts. In the interim, the areas are being maintained to be kept free of weeds. Weed removal was conducted on March 22, 24-26 and June 14 and 15, 2021. Additionally, fence clean-up was conducted at pole locations with approximately 20 T-posts and five large burlap bags of wire being removed from within the Preserve and along the Preserve/County Parks boundary.

After the June maintenance visits, AECOM noted that the impacted areas around the poles and trails along the upper half of the Preserve are fairly clean of weeds and may not require further maintenance. The lower half of the Preserve may require another maintenance visit. A memorandum documenting the weed areas and removal methodology is attached as Appendix G, along with photos taken during weed removal.

GLA biologists also found that the "newly cut trail" mapped by GLA in 2020 in the eastern portion of the site that spurs south from the Sewer Drop Trail has been extended so that it connects to other existing trails [Exhibit 5 - Trails, Utility, and Maintenance Map]. It also appears that the Sewer Drop Trail has gotten deeper with more erosion, has been subject to additional vegetation cutting, and has new small offshoots that lead back up or down to the "newly cut trail". A lot of yellow flagging was present throughout the "newly cut trail" down to the SCE connection by the telephone pole.

GLA did not observe any evidence of encroachment into Pacific Horizon Preserve due to activities such as fuel modification, landscaping, etc.

**1. Recommendations**

Continue to implement the DLRP and monitor the Preserve to document unauthorized access and activities. Continue to monitor the SCE encroachment to ensure restoration success. Continue to place woody native cuttings within trail areas to be closed and restored to break down and visually obscure trails. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity.

The RMP for the Preserve describes methods to support additional compliance with the RMP restrictions and enforcement actions as detailed above.

**ii. Pacific Horizon - Adjacent Land Use**

Lands adjacent to the Preserve consist of residential development to the west, a resort and golf course to the south, with the remaining lands consisting of open space. GLA did not observe any unauthorized activities in the Preserve a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment.

**1. Recommendations**

GLA will continue to monitor adjacent properties for signs of encroachment/irrigation runoff. As noted above, public education should be continued through public outreach as described in the RMP.

**iii. Pacific Horizon - Site/Trail Use**

The Aliso and Wood Canyons' Moulton Meadows Linkage Trail (north of the Preserve) extends south through the Pacific Horizon Preserve, and then crosses onto City-owned lands to the south. The trail can also be accessed from trails that originate at the eastern edge of Moulton Meadows Park. These trails are currently used by hikers and mountain bikers and some are included on Orange County Parks' trail maps. Some are also depicted in the trail network of the Laguna Beach General Plan Open Space/Conservation Element as "trails on private property." Exhibit 5 [Trails, Maintenance, and Utility Map] depicts the location and type of each trail use. Maintenance activities are ongoing to deter usage of the decommissioned trail, including repairing cut fence line, adding restoration signs to the existing fence, installing cactus pads and placing removed vegetation cuttings and debris back onto the decommissioned trail.

As noted above, GLA monitors found that the new foot trail spurring off the eastern decommissioned trail had been extended and vegetation had been newly cut.

As noted above, hiking and mountain biking is ongoing on the trails, which are authorized activities on the open trails.

GLA assisted with a public outreach event held by OCTA on September 18, 2021.

**1. Recommendations**

Continue to repair trail modifications/damage and fencing damage caused by mountain bikers. Implement the trail restoration component of the DLRP and monitor the Preserve to document unauthorized access and activities. Emergence of annual weeds may occur following seasonal rains. Place woody native cuttings within the trail areas to be closed and restored to break down and visually obscure trail. GLA will continue to monitor the site to document unauthorized trail use and will assist with public outreach events, as applicable.

**c. Pacific Horizon - General Maintenance**

**i. Pacific Horizon - Fencing/Gates/Signage**

RECON repaired a missing section of fence line along the northern boundary of the Preserve. GLA noted a section of missing fence line in the eastern portion of the Preserve near an SCE pole. No other fencing issues were noted. Additional signs were installed along the existing fence line to deter access into the decommissioned trail area. There are no gates on the Preserve.

**1. Recommendations**

Repair the missing fence line in the eastern portion of the Preserve. Continue to monitor for issues.

**ii. Pacific Horizon - Trash/Dumping**

No issues with trash or dumping were observed.

**1. Recommendations**

None.

**iii. Pacific Horizon - Erosion/Sedimentation**

GLA noted varying degrees of trail erosion on public access trails throughout the Preserve, including the more steeply sloping trails in the northern portion of the Preserve. Additionally, the Sewer Drop Trail in the eastern portion of the Preserve is becoming deeper/more eroded [Exhibit 5 - Trails, Utility, and Maintenance Map].

**1. Recommendations**

Repair/control erosion as needed. GLA will continue to monitor the site for erosion effects and will report any changes to OCTA.

**iv. Pacific Horizon - Trees**

The only trees onsite are non-native species, Canary Island pine and eucalyptus.

**1. Recommendations**

Remove as prioritized in the ISMP and/or as directed by the GLA team's arborist and in coordination with OCTA.

**Bobcat Ridge Preserve**

**a. Bobcat Ridge - Plants and Wildlife**

**i. Bobcat Ridge - Covered Wildlife Species**

GLA conducted focused surveys for gnatcatcher and cactus wren on March 9 and 16, 2021. No gnatcatchers were detected. Four cactus wren territories were identified within the Preserve boundary. Cactus wren was also detected during site visits on January 27, October 29, and November 12, 2021. Detections of Covered Wildlife Species are depicted on Exhibit 3 – OCTA Covered Species Map. A report detailing focused survey results for gnatcatcher and cactus wren is attached as Appendix C.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023 based on the feedback received during the 2022 pilot program.

**1. Recommendations**

Continue effectiveness monitoring in 2022 and continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above. Implement visual encounter surveys for coast horned lizard and orangethroat whiptail in 2023 based on pilot program results and additional Wildlife Agency coordination, as applicable.

**ii. Bobcat Ridge - Covered Plant Species**

GLA's monitoring did not focus on covered plant species in 2021 due to drought conditions. Previous locations of the mariposa lily are depicted on Exhibit 3 – OCTA Covered Species Map.

**1. Recommendations**

Implement effectiveness monitoring in 2022 in order to detect potential trends in intermediate mariposa lily population growth or decline.

**iii. Bobcat Ridge - Non-Covered Sensitive Wildlife Species**

GLA did not detect non-covered sensitive wildlife species at Bobcat Ridge Preserve while performing biological monitoring in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to the non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**iv. Bobcat Ridge - Non-Covered Sensitive Plant Species**

GLA did not document any new non-covered sensitive plant species in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to the non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**v. Bobcat Ridge - Wildlife Cameras**

GLA established two wildlife camera stations (A and B) on the Preserve in July 2019. Both cameras are located in the southern portion of the site near the unauthorized road clearing/grading, which is further described under "Adjacent Land Use" below. This location is ideal for wildlife access as well as potentially monitoring unauthorized activities. In 2021, wildlife cameras detected bobcat on four occasions, as well as deer, fox, and coyote. The cameras also detected trespassing on several occasions including two people driving a mule through the encroachment area, people on foot, and a dog. GLA removed Camera A on November 12, 2021 as that location has become overgrown with vegetation and was triggering too often with little information gained.

**1. Recommendations**

GLA recommends the continued use of wildlife cameras at the Preserve for tracking wildlife use, as well as for the secondary benefit of noting unauthorized activities.

**vi. Bobcat Ridge - Invasive Plant Species**

GLA prepared an ISMP, which was approved by the Wildlife Agencies in 2019. In addition, GLA biologists previously detected and removed a clump of an invasive plant (stink net, *Oncosiphon piluliferum*) located adjacent to the Preserve boundary.

**1. Recommendations**

Implement ISMP based on priorities outlined in the plan and continue to monitor for stink net.

**vii. Bobcat Ridge - Invasive Animal Species**

GLA did not observe any animal species within the Preserve that would be classified as invasive.

**1. Recommendations**

The property has the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.

**b. Bobcat Ridge - Human Environment**

**i. Bobcat Ridge - Land Use**

Public access is not authorized at the Bobcat Ridge Preserve. GLA did not observe any new trail cuts; however, as noted above, GLA documented trespassers driving a mule, people on foot, and a dog within the encroachment area, which is further described below under "Adjacent Land Use".

**1. Recommendations**

The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity. Wildlife cameras placed strategically at the Preserve may also provide the secondary benefit of documenting unauthorized activities.

The RMP for the Preserve describes additional methods to support compliance with the RMP restrictions and enforcement actions as detailed above.

**ii. Bobcat Ridge - Adjacent Land Use**

GLA continues to monitor the disturbance at the southern boundary of the Preserve. As previously documented, the adjacent resident had cleared and graded a dirt road to provide access to an additional part of his property, which OCTA became aware of in January 2017. The approximately 0.135-acre (617 linear feet) area is mapped as California sagebrush-California buckwheat scrub and scrub oak chaparral. Three individual intermediate mariposa lily points and one intermediate mariposa lily point mapped as a population of three were located in the disturbance footprint. OCTA coordinated with the resident concerning the property boundary location and to communicate the sensitivity of the Preserve's resources in 2017. Additionally, CDFW and OCTA reported the incident to the County of Orange, as CDFW lands were also impacted. Although the County contacted the property owner on May 23, 2017 to request that the impacted areas be restored, GLA has not observed any active restoration on multiple visits since that date. OCTA and CDFW have contacted the County multiple times to obtain an update of the required restoration

efforts by the adjacent property owner; however, OCTA and CDFW have not received any additional information from the County. Additionally, on November 21, 2017, GLA biological monitors noted that the area of road disturbance appeared to have been recently weed whipped running approximately the length of the property at the bottom of the canyon. It appeared that this may have happened by mistake during fuel modification activities associated with the slope.

On December 18, 2018, GLA conducted a focused qualitative monitoring visit and established photo location points along the road encroachment area. The road encroachment area exhibited a high percentage of bare ground at approximately 85-percent cover; however, recruitment of native young shrubs and seedlings at the central portion of the road suggested there is ample seed input from the surrounding habitat for successful habitat re-establishment. Since 2017-2018 was a below average rainfall year, habitat re-establishment was expected to be successful.

GLA continued to monitor the disturbance area in 2019 and conducted a focused qualitative monitoring on May 2, 2019. The area exhibited significant growth of native and non-native vegetation since the 2018 monitoring event as a result of significant rainfall events in the winter of 2018/2019. Given that there was noted growth in native vegetation within the western and central portions since the 2018 monitoring event along with continuing natural recruitment, passive habitat reestablishment was expected to succeed assuming there was no future disturbance. On June 10, 2019, GLA biologists reviewed the encroachment area and it appeared that someone had recently driven on the disturbance area, likely with an off-road vehicle. Plants were depressed and broken from tires. GLA installed a camera in a security box along the disturbance area on July 1, 2019. GLA biologists reviewed the encroachment area again on November 4, 2019 and it appeared that no further disturbance had taken place and that the area had likely rebounded to the condition in Spring 2019.

GLA conducted a third focused quantitative monitoring on May 26, 2020. New impacts to native vegetation were observed within approximately 0.04 acre (175 linear feet) or approximately 30-percent of the Encroachment Area during this visit. As such, the 2020 monitoring and the fourth quantitative monitoring conducted on May 3, 2021 (results attached as Appendix H) describe these results as two categories: Re-disturbed Area and Previously Disturbed Area. Note that GLA wildlife cameras detected two individuals driving a mule within the encroachment area on May 8, 2021, five days after GLA conducted the quantitative monitoring on May 3, 2021. However, GLA reviewed the area again on October 29 and November 12, 2021 and it did not appear that any disturbance had occurred as a result of the mule driving through the area.

Due to the impacts described above, the Re-disturbed Area remains relatively bare. The fourth quantitative monitoring indicates that this area consists of approximately 65-percent bare ground, approximately 19-percent native species coverage, and approximately 16-percent non-native species coverage. Signs of passive restoration from prior impact are continuing at a slow rate due to drought conditions during the

2021 growing season. Non-native species coverage during the fourth quantitative monitoring is higher than previous years, with one non-native species, Crete weed (*Hedypnois cretica*), comprising 15-percent of this area. This is due to the re-disturbance activities that removed native and non-native vegetation. The Re-disturbed Area is likely to be susceptible to additional weed invasion for the remaining bare areas in the upcoming wet season (winter/spring 2022).

The Previously Disturbed Area has been reestablishing vegetative cover and diversity with native species since the original unauthorized disturbance detected in 2017. Passive restoration successfully reduced non-native coverage and revegetated the area through naturally recruited seedlings and the expansion of existing shrubs. The current lack of rainfall and trending heat over the year has since increased bare ground due to lack of herbaceous annual species that typically follow the spring rains. Total native vegetative cover is approximately 72-percent, while non-native species contribute approximately 3-percent and 25-percent remains bare ground. Establishing native vegetation has suppressed non-native growth as indicated by the low percentage of non-native species coverage noted again during the fourth quantitative monitoring.

OCTA will elevate or try to coordinate with other County staff regarding this enforcement issue. As previously stated, the County had required the homeowner to restore multiple areas on and adjacent to the Preserve, which to date, has not occurred.

No other vegetation encroachments or adjacency issues related to habitat management such as landscape encroachment or excessive irrigation were observed.

#### **1. Recommendations**

GLA will continue to monitor the Re-disturbed and Previously Disturbed Areas in the winter and spring months when vegetation is actively growing to determine native and nonnative species development and provide timely site recommendations. The focus of any maintenance activities for the Previously Disturbed Area should be weed abatement in the winter months. Within the Re-disturbed Area, GLA recommends the installation of additional fencing or staking to clearly demarcate the property boundary and prevent future disturbance. Due to the evidence of natural recruitment, successful habitat development is expected to occur provided that there is no future disturbance within the Re-disturbed Area, although active restoration would expedite habitat recovery. Weed abatement should be conducted within the Re-disturbed Area in winter months. Installation of coast prickly pear pads and/or hand seeding of black sage, California buckwheat, and California sagebrush during the winter months would also aid in the quicker infill with native species. GLA plans to survey for potentially affected intermediate mariposa lily during spring 2022 effectiveness monitoring.



GLA will continue to monitor other adjacent properties for signs of unauthorized access/encroachment. Continue to use a camera for noting unauthorized activities. As noted above, public education should be continued through public outreach and education as described in the RMP for the Preserve, including the use of two-way communication with adjacent residents to collect and disseminate Preserve information.

**iii. Bobcat Ridge - Site/Trail Use**

The Preserve contains two dirt trails in the eastern portion of the property [Exhibit 5 – Trails, Utility, and Maintenance Map]. One of the trails jogs back and forth between OCTA-owned property and property owned by State of California (CDFW). The other trail is found along the ridge line of the Preserve and provides good vantages of the site. As such, this is the main trail for providing access for management and monitoring purposes. As noted above, wildlife cameras detected trespassing on several occasions including two people driving a mule through the encroachment area, people on foot, and a dog. No mountain bike activity was documented.

**1. Recommendations**

None.

**c. Bobcat Ridge - General Maintenance**

**i. Bobcat Ridge - Fencing/Gates/Signage**

GLA did not observe any fence maintenance issues. One OCTA Preserve sign that was previously removed was removed again and repaired by RECON.

**1. Recommendations**

Continue to monitor signage and repair as-needed. At this time fencing is not recommended for the Bobcat Ridge Preserve. GLA may map fencing and gates along Live Oak Canyon Road as directed by OCTA for inclusion in the GIS database.

**ii. Bobcat Ridge - Trash/Dumping**

No issues with trash or dumping were observed.

**1. Recommendations**

None.

**iii. Bobcat Ridge - Erosion/Sedimentation**

No erosion/sedimentation issues were documented.

**1. Recommendations**

None.

**iv. Bobcat Ridge - Trees**

The team arborist, Dudek, conducted invasive shot hole borer (ISHB; *Euwallacea* sp.) surveys in 2017, 2019, and 2020. No sign and/or symptom of ISHB was observed. Dudek conducted emergent pest trapping and a visual evaluation in March/April 2021 to re-evaluate for the presence of ISHB and found no sign and/or symptom of ISHB during the surveys. The report containing detailed information of this study dated September 2, 2021 is attached as Appendix E.

**1. Recommendations**

Continue to monitor the site for signs and/or symptoms of ISHB following recommendations in Appendix E.

**Silverado Chaparral Preserve**

**a. Silverado Chaparral - Plants and Wildlife**

**i. Silverado Chaparral - Covered Wildlife Species**

GLA conducted focused surveys for gnatcatcher and cactus wren on March 19 and April 13, 2021. No gnatcatchers were detected. One cactus wren territory was identified in the southwestern most corner of the Preserve. Based on its behavior and observation of feathers in the nest entrance, the cactus wren appeared to be nesting. This was the first onsite detection of cactus wren on this Preserve. Detections of Covered Wildlife Species are depicted on Exhibit 3 – OCTA Covered Species Map. A report detailing focused survey results for gnatcatcher and cactus wren is attached as Appendix C.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023 based on the feedback received during the 2022 pilot program.

**1. Recommendations**

Continue effectiveness monitoring in 2022 and continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. Implement pilot program for visual encounter surveys for coast horned lizard and orangethroat whiptail. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.

**ii. Silverado Chaparral - Covered Plant Species**

GLA's monitoring did not focus on covered plant species in 2021 due to drought conditions. As a result, GLA did not detect any many-stemmed dudleya and did not confirm previous locations or detect new locations of intermediate mariposa lily at the property. Previous locations of the mariposa lily are depicted on Exhibit 3 – OCTA Covered Species Map.

**1. Recommendations**

Implement effectiveness monitoring in 2022 in order to detect potential trends in intermediate mariposa lily population growth or decline and to potentially detect many-stemmed dudleya.

**iii. Silverado Chaparral - Non-Covered Sensitive Wildlife Species**

GLA did not detect non-covered sensitive wildlife species while performing biological monitoring in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**iv. Silverado Chaparral - Non-Covered Sensitive Plant Species**

GLA did not document any new non-covered sensitive plant species in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**v. Silverado Chaparral - Wildlife Cameras**

Two cameras were installed in May 2019. Camera A was documented as stolen by GLA biologists on June 20, 2019. Through coordination with OCTA, GLA removed the remaining wildlife camera on an interim basis in September 2019 due to the theft risk as well as reducing the effort through the winter months to save funding for spring monitoring. While the cameras were installed, deer and bobcat were detected. In addition, the cameras detected unauthorized people on the Preserve including mountain bikers, hikers, and dogs.

**1. Recommendations**

GLA recommends re-installing cameras for tracking wildlife use and to capture images of unauthorized access throughout the Preserve. Note that GLA recommends increased security for the cameras such as cemented poles and boxes.

**vi. Silverado Chaparral - Invasive Plant Species**

GLA prepared an ISMP, which was approved by the Wildlife Agencies in 2019.

**1. Recommendations**

Implement ISMP based on priorities outlined in the plan.

**vii. Silverado Chaparral - Invasive Animal Species**

GLA did not observe any animal species within the Preserve that would be classified as invasive.

**1. Recommendations**

The property has the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.

**b. Silverado Chaparral - Human Environment**

**i. Silverado Chaparral - Land Use**

Public access is not currently authorized at the Silverado Chaparral Preserve. Mountain biking continues to be an ongoing issue. Along the southeastern boundary, fencing was cut and signage was missing in two locations (Sign Areas B and C) [Exhibit 5 - Trails, Utility, and Maintenance Map]. Fencing and signage was intact at Sign Area A. Encroachments associated with SCE utility work were documented:

- 1) A new pole or newly replaced/not previously documented pole was mapped onsite with vegetation cleared around the pole; and
- 2) A new pole or newly replaced pole just offsite; however, a new access trail was cut on OCTA property.

In addition, it appears that access to two offsite poles is occurring from OCTA property on unauthorized trails. Also, the fencing at one offsite pole location was cut to access the pole.

**1. Recommendations**

Repair the fencing and signage damage. Coordinate with SCE regarding encroachments. The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity. Continue to coordinate with the County of Orange and staff at Irvine Ranch Conservancy as-needed regarding mountain biking disturbance.

The RMP for the Preserve describes additional methods to support compliance with the RMP restrictions and enforcement actions as detailed above.

ii. **Silverado Chaparral - Adjacent Land Use**

As noted above, SCE encroachments have occurred on OCTA property to access pole areas on the adjacent property on the western boundary. No other vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other adjacency issues were observed.

1. **Recommendations**

None.

iii. **Silverado Chaparral - Site/Trail Use**

The Preserve is bisected by one main vehicular access road, Black Star Helo Pad Road, which is an unpaved utility road utilized by Southern California Edison in order to service utility lines that run along the western property boundary of the Silverado Chaparral Preserve. There are two smaller unpaved private access roads that enter Silverado Chaparral from the northern portion of the Preserve off Baker Canyon Road. Hall Canyon Road and an unnamed road traverse south onto the Silverado Chaparral Preserve. In addition, a series of dirt trails traverse the Preserve and travel predominantly from east to west. The Preserve RMP identifies three categories of trails/roads, including trails/roads for recreational use, trails/roads maintained for Preserve management, and trails to be decommissioned. Exhibit 5 [Trails, Utility, and Maintenance Map] depicts the location and type of each trail use.

As noted above, GLA documented mountain bike usage throughout all major trails and observed heavy erosion in some areas due to the unauthorized activity. Within interior trails, pruning of hoary leaved ceanothus (*Ceanothus crassifolius*) and thick leaved yerba santa (*Eriodictyon crassifolium*) was documented as was pruning of vegetation on both sides of interior trespass fencing.

1. **Recommendations**

GLA will continue to monitor the site to document unauthorized trail use and fire/access road maintenance/repair needs.

c. **Silverado Chaparral - General Maintenance**

i. **Silverado Chaparral - Fencing/Gates/Signage**

Along the southeastern boundary, the fencing was cut and signage was missing in two locations (Sign Areas B and C) [Exhibit 5 - Trails, Utility, and Maintenance Map]. Fencing and signage was intact at Sign Area A, but trespass is occurring by walking over a large cactus berm (offsite, adjacent to fence). GLA did not observe any maintenance issues with gates. RECON repaired fencing in several locations throughout 2021.

**1. Recommendations**

Repair the cut fence lines and replace signage at Areas B and C. Continue to monitor the fence lines to make sure they are intact and not cut for mountain biking use. Continue to monitor for sign replacement needs and any gate issues.

**ii. Silverado Chaparral - Trash/Dumping**

No issues with trash or dumping were observed.

**1. Recommendations**

None.

**iii. Silverado Chaparral - Erosion/Sedimentation**

Heavy erosion is occurring in the northern portion of the Preserve associated with an access road. In addition, mountain biking has caused moderate to heavy erosion, especially in Area B [Exhibit 5 - Trails, Utility, and Maintenance Map].

**1. Recommendations**

Repair erosion. The fencing and signage in Area B should be repaired to keep bikers out. GLA will continue to monitor these areas and will recommend additional management strategies, as needed.

**iv. Silverado Chaparral - Trees**

The team arborist, Dudek, conducted ISHB surveys in June and July 2017. No sign and/or symptom of ISHB was observed. Since the onsite trees primarily consist of coast live oak, the arborist determined that further monitoring is not necessary.

**1. Recommendations**

None.

**Wren's View Preserve**

**a. Wren's View - Plants and Wildlife**

**i. Wren's View - Covered Wildlife Species**

GLA conducted focused surveys for gnatcatcher and cactus wren on March 17 and April 8, 2021. One gnatcatcher pair was observed lining a nest in black sage on April 8, 2021, a few feet offsite of the northern Preserve boundary. Adults were seen flying well within the Preserve boundary. Historically, CAGN have been detected broadly onsite and offsite within this northern area. Thirteen cactus wren territories were identified within the Preserve boundary. One additional cactus wren male was mapped for a total of 14 cactus wren locations, but its territory was not determined. Detections of Covered Wildlife Species are depicted on Exhibit 3 – OCTA Covered Species Map. A report detailing focused survey results for gnatcatcher and cactus wren is attached as Appendix C.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023 based on the feedback received during the 2022 pilot program.

**1. Recommendations**

Continue effectiveness monitoring in 2022 and continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above. Implement visual encounter surveys for coast horned lizard and orangethroat whiptail in 2023 based on pilot program results and additional Wildlife Agency coordination, as applicable.

**ii. Wren's View - Covered Plant Species**

GLA's monitoring did not focus on covered plant species in 2021 due to drought conditions. As a result, GLA did not confirm previous locations or detect new locations of intermediate mariposa lily at the property. Previous locations of the mariposa lily are depicted on Exhibit 3 – OCTA Covered Species Map.

**1. Recommendations**

Due to some intermediate mariposa lilies growing in and immediately adjacent to the road, if maintenance is necessary when intermediate mariposa lily is present, schedule biological monitors to flag the plants so that individuals can be seen more easily for avoidance and consider biological monitoring during work activities, especially for areas where intermediate mariposa lily is located within the road or adjacent. Implement effectiveness monitoring in 2022 in order to detect potential trends in intermediate mariposa lily population growth or decline.

**iii. Wren's View - Non-Covered Sensitive Wildlife Species**

GLA did not detect non-covered sensitive wildlife species while performing biological monitoring in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**iv. Wren's View - Non-Covered Sensitive Plant Species**

GLA did not document any new non-covered sensitive plant species in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**v. Wren's View - Wildlife Cameras**

Three wildlife cameras were installed on the Preserve in 2018. Through coordination with OCTA, GLA removed the wildlife cameras in October 2019 on an interim basis due to the level of effort and costs associated with maintenance, checking the cameras, and managing the data combined with the lack of new data being collected. While the cameras were installed, mountain lion, bobcat, deer, coyote, and gray fox were detected. In addition, the cameras detected unauthorized people on the Preserve, including hikers and mountain bikers.

**1. Recommendations**

Since the wildlife cameras are not providing new data, discontinue the use through 2022 unless an issue arises that warrants the usage of the cameras on the property, to direct funding resources toward other monitoring activities.

**vi. Wren's View - Invasive Plant Species**

GLA prepared an ISMP, which was approved by the Wildlife Agencies in 2019.

**1. Recommendations**

Implement ISMP based on priorities outlined in the plan.

**vii. Wren's View - Invasive Animal Species**

GLA did not observe any animal species within the Preserve that would be classified as invasive.

**1. Recommendations**

The property has the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.

**b. Wren's View - Human Environment**

**i. Wren's View - Land Use**

OCTA-sponsored docent hikes are allowed on the Preserve; however, open public access is not allowed. GLA did not observe any new trail cuts; however, bike tracks



were noted on the main access road [Exhibit 5 – Trails, Utility, and Maintenance Map]. In addition, the RMP notes that trespassing through the property has been a common daytime and nighttime occurrence, in part due to the location of the former homesite to the northeast of the Preserve. Trespassing has been documented by the OCTA private security company and warnings were issued.

GLA assisted with one public hike in 2021 at Wren's View.

**1. Recommendations**

The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity.

The RMP for the Preserve describes additional methods to support compliance with the RMP restrictions and enforcement actions as detailed above.

**ii. Wren's View - Adjacent Land Use**

No vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other adjacency issues were observed.

**1. Recommendations**

GLA will continue to monitor adjacent properties for signs of unauthorized access/encroachment. As noted above, public education should be continued through public outreach events as described in the RMP for the Preserve.

**iii. Wren's View - Site/Trail Use**

The Preserve is bisected by one main unpaved vehicular access road (Trabuco Ridge Drive) that comes off Trabuco Canyon Road and continues north off the Preserve onto private property to the north. There is an additional portion of this internal road that veers off the main road and curves west towards an adjacent private property near Live Oak Canyon Road. There is one additional trail that comes in from the northern adjacent private property and connects down to Trabuco Ridge Road. This unmaintained trail is quite possibly a historic roadbed, but due to lack of maintenance over the years is currently inaccessible with a vehicle. Exhibit 5 [Trails, Utility, and Maintenance Map] depicts the location and type of each trail use. As noted above, bike tracks were noted on the main access road. No other unauthorized trail use was documented. RECON removed vegetation on fire roads and access roads and trimmed back overhanging vegetation that was blocking safe access along the roads.

**1. Recommendations**

GLA will continue to monitor the site to document any unauthorized trail use and will assist with any public outreach events, as applicable.

**c. Wren's View - General Maintenance**

**i. Wren's View - Fencing/Gates/Signage/Utility Poles and Lines**

In regard to fencing, GLA again noted the downed internal chain link fence along a road within the Preserve, a few areas where barbed-wire fencing was damaged along that road, and the same fallen tree on an interior barbed-wire fence as 2019 and provided all locations to OCTA [Exhibit 5 – Trails, Utility, and Maintenance Map]. RECON repaired fencing at three locations along the perimeter of the Preserve. No issues with gates or signs were observed.

**1. Recommendations**

Repair or remove the downed internal chain link fence to avoid wildlife entanglement. Remove the previously discussed and mapped internal barbed-wire fencing that does not appear to have a present function and that could pose a risk to wildlife. Continue to coordinate with Transportation Corridor Agencies (TCA) as they are the landowner of the parcel to the west, to determine appropriate fencing needs and improvements to promote wildlife movement between the two properties. In addition, as previously noted, there is a segment of pre-existing chain link fencing along the southern border of the Preserve which could be replaced with smooth wire fencing to facilitate wildlife movement.

**ii. Wren's View - Trash/Dumping**

No issues with trash or dumping were observed.

**1. Recommendations**

None.

**iii. Wren's View - Erosion/Sedimentation**

No issues with erosion were noted; however, the access road to the main gate has been known to be an ongoing issue.

**1. Recommendations**

Repair/control erosion as needed. GLA will continue to monitor the site for erosion effects and will report any changes to OCTA.

**iv. Wren's View - Trees**

Due to the ongoing (2017 through 2020) on-site identification of ISHB by Dudek, ISHB monitoring and evaluation surveys were conducted in 2021 to evaluate levels of ISHB infestation within the Preserve. Dudek arborists evaluated a total 27 riparian trees within the Wren's View Preserve. Of the 27 trees evaluated, a total of 14 trees exhibited signs and symptoms of ISHB, of which nine were determined to have low infestation rates and five had moderate infestation rates. Two new trees exhibited sign of ISHB. As discussed below, GSOB was positively identified on Wren's View Preserve in 2019 and 2020; however, no trees exhibited sign of GSOB in 2021. No other new pests and/or disease were observed on the Preserve.

Based on the results of the 2021 surveys, ISHB is considered active within the Wren's View Preserve. However, based on the findings of the previous surveys, ISHB continues to be in the early stages of infestation. Furthermore, with the exception of two interior trees found on the Wren's View Preserve, the majority of ISHB signs and symptoms continue to be found on the periphery of the western boundary. The observation of ISHB along the site's western boundary along Trabuco Canyon is believed to be due to high infestation levels observed throughout O'Neill Regional Park and ISHB's active spread throughout the region. Alternatively, the observation of ISHB within the interior of the Preserve continues to be considered an outlier from the observed population along the edge of the property. However, based on the ISHB's potential for spread, it is within the ISHB's zone of influence/impact for the area.

Dudek arborists conducted a site visit in June 2019 to confirm the presence of GSOB within a coast live oak tree found to be exhibiting symptoms (D-shaped holes) of GSOB. The samples were confirmed to be GSOB by Kevin Turner (Southern California Invasive Pest Coordinator, Retired) at the University of California Division of Agriculture and Natural Resources. The tree was recommended for removal, which occurred in July 2019.

Dudek conducted GSOB extent and presence/absence surveys of the Wren's View Preserve in 2019, 2020, and 2021. The 2020 findings were the same as the 2019 findings, which found that nine coast live oak trees out of 690 mapped and evaluated exhibited signs of GSOB. In 2020, OCFA removed and chipped one dead oak tree infected with GSOB and treated the remaining OCTA oak trees with signs of GSOB and oak trees within the 100-meter buffer area, totaling 248 trees. All these areas were re-treated by OCFA in 2021 [Exhibit 6 – Wren's View Preserve Oak Tree Map]. In 2021, Dudek evaluated 297 oak trees for signs of GSOB, and none were found to exhibit signs at the time of the evaluation. This does not mean that these trees do not have GSOB, it only means that they did not exhibit sign of GSOB at the time of the inventory.

The previous observation of GSOB within the Wren's View Preserve is still considered a threat to Trabuco Canyon's oak tree resources. The total extent of GSOB within the canyon is unknown. However, based on the 2019, 2020, and 2021 surveys conducted within the Preserve, the infestation is suspected to be at the early stages and, as such, may be controllable. To aid in the control of the observed GSOB outbreak within Wren's View, OCTA has partnered with OCFA. OCFA received funding under the CalFire Fire Prevention Grant Program, to treat infested trees located on both County- and privately-owned properties with a contact insecticide to prevent the spread of resident beetles to neighboring trees and re-infestation of current host trees. In addition, trees lacking pest exit holes, but within approximately 100 meters of trees with exit holes, are treated preventatively with a barrier spray. These trees may either be infested from eggs laid during the previous flight season or may be un-infested but vulnerable due to their proximity to infested trees.

Treatment of infested trees would eliminate pests and slow the spread rate, enhancing the survival rate of existing tree populations. A decrease in tree mortality would ultimately reduce the wildfire risks to habitable structures by reducing potential fuel within parks and adjacent to roads, homes, and HOAs. The treatment involves the spraying of insecticide, using up to two large diesel trucks with attached pressurized rigs, on beetle infested trees. All infested trees are treated with a barrier insecticide to prevent the spread of resident beetles to neighboring trees and re-infestation of current host trees. Contact insecticides kill adult beetles when ingested at emergence and kill eggs laid on the bark surface. These sprays would not control larvae feeding in the tree but are effective at killing adult beetles as they directly contact the insecticide on the bark surface. It is moderately to very toxic to humans and nontoxic to wild bird species, but it is toxic to bees and beneficial insects and would not be applied to flowers when bees are active. Carbaryl is non-toxic to plant species. Furthermore, carbaryl is toxic to aquatic and estuarine invertebrates and would not be applied to water or wetted areas. Treatment of infested trees include oak trees, sycamores, and other infected trees (outside of water areas). Treatment will reduce tree mortality and fire risk, will improve the quality of oak woodland and riparian habitat and natural communities, and will benefit species that occur within those habitats.

Additionally, two trees near the main gate entrance were observed to have stressed limbs.

### **1. Recommendations**

The observation of ISHB signs and symptoms within the interior of Wren's View Preserve is significant due to the risk presented to the adjacent California sycamore tree population. However, all 14 trees exhibited low to moderate signs of ISHB and only two new occurrences of ISHB were observed. As such, the following treatment options are recommended:

- ISHB Treatment – As with many insect infestations, it is at the early stages that the outbreak/infestation can be controlled. In an effort to maintain and limit the spread of ISHB throughout the remaining areas of the Preserve, it is recommended that the 14 trees observed to have low to moderate signs and symptoms of ISHB be treated by means of a trunk spray with Bifenthrin, Bacillus subtilis, and Penra-Bark or similar. The above recommended pesticide and fungicide treatments should be conducted by a reputable licensed company that specializes in such and has a Pest Control Advisor and Applicator on staff.
- Monitoring – Dudek recommends that OCTA maintain an active ISHB monitoring and treatment program that focuses on the identified and mapped riparian tree species in Appendix E. Specifically, it is recommended that this program focus on high-priority areas located throughout the Preserve. Areas that should

be considered for monitoring include but are not limited to high-use recreation areas, native oak woodlands, and riparian areas that do not contain ISHB, and those areas identified in Appendix E. The frequency of ISHB monitoring within the selected areas should be conducted on a biweekly (i.e., every other week) basis during peak flight season (November through March). Active and frequent monitoring would allow OCTA land managers to quickly identify ISHB and to remove infested material before ISHB spreads into uninfested areas. Routine monitoring of the site will play an important role in managing ISHB within the Preserve.

Based on the 2021 GSOB survey conducted by Dudek, which found no trees exhibiting sign of GSOB, the treatments conducted by OCFA appear to be effective at minimizing the spread of GSOB. However, based on the estimated early stages of the GSOB infestation, it is unknown if the GSOB treatments were completely effective at eliminating the infestation. As such, continued monitoring of the site's oak tree resource (and those located on the adjacent properties) will play a critical role in the continued management of GSOB within Trabuco Canyon. As such, it is recommended that OCTA continue annual monitoring of the site for the presence/absence and spread of GSOB on site and retreat infected trees, as needed. It is recommended that the annual surveys occur during peak emergence/flight season for GSOB. This will allow surveyors to assess trees that exhibit newly emerged GSOB and recommend the appropriate treatment if needed.

The Trabuco Canyon area GSOB infestations and treatments are being overseen and implemented by OCFA who is partnering with multiple landowners as well as the University of California Cooperative Extension and the California Department of Food and Agriculture. Through this coordination, all adjacent landowners and land managers are coordinating closely to ensure that all known GSOB areas are known and treated. In addition, OCTA is a member of the Emerging Tree Pests of Orange County Task Force in which data and recommendations are shared with multiple land managers throughout Orange County on a quarterly basis.

In June, two trees near the main gate entrance were pruned to remove stressed limbs.

## Live Oak Creek Preserve

### a. Live Oak Creek - Plants and Wildlife

#### i. Live Oak Creek - Covered Wildlife Species

GLA conducted focused surveys for gnatcatcher and cactus wren on March 9 and 16, 2021. No gnatcatchers were detected. Four cactus wren territories were

identified within the Preserve boundary. Cactus wren was also detected during the October 29, 2021 site visit. Additionally, two orangethroat whiptail were detected on the ridge road adjacent to the cattle ranch. Detections of Covered Species are depicted on Exhibit 3 – OCTA Covered Species Map. A report detailing focused survey results for gnatcatcher and cactus wren is attached as Appendix C.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023 based on the feedback received during the 2022 pilot program.

**1. Recommendations**

Continue effectiveness monitoring in 2022 and continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above. Implement visual encounter surveys for coast horned lizard and orangethroat whiptail in 2023 based on pilot program results and additional Wildlife Agency coordination, as applicable.

**ii. Live Oak Creek - Covered Plant Species**

GLA's monitoring did not focus on covered plant species in 2021 due to drought conditions. Previous locations of the mariposa lily are depicted on Exhibit 3 – OCTA Covered Species Map.

**1. Recommendations**

Implement effectiveness monitoring in 2022 in order to detect potential trends in intermediate mariposa lily population growth or decline.

**iii. Live Oak Creek - Non-Covered Sensitive Wildlife Species**

GLA did not detect non-covered sensitive wildlife species while performing biological monitoring in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**iv. Live Oak Creek - Non-Covered Sensitive Plant Species**

GLA did not detect non-covered sensitive plant species while performing biological monitoring in 2021.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**v. Live Oak Creek - Wildlife Cameras**

Two wildlife cameras were installed on the Preserve in 2018. Through coordination with OCTA, GLA removed the wildlife cameras in November 2019 on an interim basis due to the level of effort and costs associated with maintenance, checking the cameras, and managing the data combined with the lack of new data being collected. While the cameras were installed, deer, coyote, bobcat, and gray fox were detected. In addition, the cameras detected unauthorized people on the Preserve.

**1. Recommendations**

Since the wildlife cameras are not providing new data, discontinue the use through 2022 unless an issue arises that warrants the usage of the cameras on the property, to use funding resources toward other monitoring activities.

**vi. Live Oak Creek - Invasive Plant Species**

GLA prepared an ISMP, which was approved by the Wildlife Agencies in 2019. In addition, GLA biologists detected and removed a clump of an invasive plant (stink net) in 2019.

**1. Recommendations**

Implement ISMP based on priorities outlined in the plan and continue to monitor for stink net.

**vii. Live Oak Creek - Invasive Animal Species**

GLA did not observe any animal species within the Preserve that would be classified as invasive.

**1. Recommendations**

The property has the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.

**b. Live Oak Creek - Human Environment**

**i. Live Oak Creek - Land Use**

Public access is not currently authorized at the Live Oak Creek Preserve. GLA did not observe any new trail cuts. Wildlife cameras have historically documented occasional unauthorized access.

**1. Recommendations**

The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity.

The RMP for the Preserve describes additional methods to support compliance with the RMP restrictions and enforcement actions as detailed above.

**ii. Live Oak Creek - Adjacent Land Use**

No vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other adjacency issues were observed. RECON conducted fuel modification within approved limits in February and April 2021.

**1. Recommendations**

None.

**iii. Live Oak Creek - Site/Trail Use**

The Preserve contains one main dirt access road that enters the Preserve from Live Oak Canyon Road. A series of small dirt trails also exists on the Preserve. RECON sprayed vegetation on fire roads on February 15, 2021. The October 29, 2021 monitoring indicated that the ridge access road is weedy and needs maintenance. Exhibit 5 [Trails/Maintenance Map] depicts the location and type of each trail use. As noted above, wildlife cameras have previously unauthorized access on the Preserve.

**1. Recommendations**

Maintain the ridge access road. GLA will continue to monitor the site to document unauthorized trail use.

**c. Live Oak Creek - General Maintenance**

**i. Live Oak Creek - Fencing/Signage/Gates**

GLA documented a fallen tree on a section of perimeter fence near Live Oak Canyon Road. No issues signage or gates were observed. The Preserve RMP refers to a section of chain link fencing that demarcates the boundary between the Preserve and an adjoining property (19071 Live Oak Canyon Road). The RMP states that a portion of the fence that crosses a drainage feature may be altering the natural



function of the waterway. In 2018, GLA reviewed this area of fencing with OCTA, as well as internal fencing recommended for removal, and provided the GPS location to OCTA. The RMP recommends to further coordinate with the adjoining landowner to identify alternate solutions that would not affect the functions of the waterway while maintaining a barrier with the adjoining property.

**1. Recommendations**

Repair downed fence. Continue monitoring for fencing, signage, and gate repair needs. GLA recommends ongoing coordination with the landowner at 19071 Live Oak Canyon Road regarding the section of fencing identified in the RMP. GLA also recommends the removal of the internal fencing mapped by GLA.

**ii. Live Oak Creek - Trash/Dumping**

No issues with trash or dumping were observed.

**1. Recommendations**

None.

**iii. Live Oak Creek - Erosion/Sedimentation**

No erosion/sedimentation was observed requiring action.

**1. Recommendations**

None.

**iv. Live Oak Creek - Trees**

The team arborist, Dudek, conducted invasive shot hole borer (ISHB; *Euwallacea* sp.) surveys in 2017, 2019, and 2020. No sign and/or symptom of ISHB was observed. Dudek conducted emergent pest trapping and a visual evaluation in March/April 2021 to re-evaluate for the presence of ISHB and found no sign and/or symptom of ISHB during the surveys. The report containing detailed information of this study dated September 2, 2021 is attached as Appendix E. RECON removed fallen oak tree branches that were blocking the entrance of the Preserve and portions on the shoulder of Live Oak Canyon Road. All branches were left within the Preserve, removed from the roads, and not placed into any waterways.

**1. Recommendations**

Continue to monitor the site for signs and/or symptoms of ISHB following recommendations in Appendix E.

## Eagle Ridge Preserve

### a. Eagle Ridge - Plants and Wildlife

#### i. Eagle Ridge - Covered Wildlife Species

GLA conducted focused surveys for least Bell's vireo on June 27 and June 29, 2021. GLA detected one least Bell vireo on the very western edge of the property, which is also using the contiguous willow habitat beyond the property. Surveys were also conducted for the southwestern pond turtle. GLA biologists and USGS biologists on separate occasions detected pond turtles inside and outside the Preserve. On August 19, 2021, USGS biologists detected one adult pond turtle within Soquel Canyon Creek within the Preserve and several pond turtles offsite within Carbon Canyon Creek. USGS were also onsite on September 15, 2021 but did not detect pond turtle on the Preserve. GLA biologists also detected pond turtles offsite within Carbon Canyon Creek on June 29 and October 22, 2021. Detections of Covered Species are depicted on Exhibit 3 – OCTA Covered Species Map.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023 based on the feedback received during the 2022 pilot program.

#### 1. Recommendations

Since USGS and GLA biologists were onsite on three separate days in 2021 surveying for pond turtle, use that data for pond turtle effectiveness monitoring. Continue to monitor pond turtle threats/stressors including cattle and human disturbance and invasive plant and wildlife species. Continue effectiveness monitoring in 2022 and continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above. Implement visual encounter surveys for coast horned lizard and orangethroat whiptail in 2023 based on pilot program results and additional Wildlife Agency coordination, as applicable.

#### ii. Eagle Ridge - Covered Plant Species

GLA's monitoring did not focus on covered plant species in 2021 due to drought conditions. No covered plant species have been detected at the property.

#### 1. Recommendations

GLA does not recommend implementing effectiveness monitoring for covered plant species at this Preserve due to lack of detections of many-stemmed dudleya, intermediate mariposa lily, and southern tarplant during

the baseline surveys and several years of biological monitoring work. Any incidental detections will be mapped during biological monitoring visits.

**iii. Eagle Ridge - Non-Covered Sensitive Wildlife Species**

GLA did not detect non-covered sensitive wildlife species while performing biological monitoring.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**iv. Eagle Ridge - Non-Covered Sensitive Plant Species**

GLA did not detect non-covered sensitive plant species while performing biological monitoring.

**1. Recommendations**

GLA has no recommendations pertaining to non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected.

**v. Eagle Ridge - Wildlife Cameras**

Three wildlife cameras were installed on the Preserve in 2018. Through coordination with OCTA, GLA removed the wildlife cameras in October 2019 on an interim basis due to the level of effort and costs associated with maintenance, checking the cameras, and managing the data combined with the lack of new data being collected. While the cameras were installed, deer, coyote, and bobcat were detected. In addition, the cameras regularly detected feral cattle using the property, as well as occasional occurrences of trespassing (mountain biking and hiking).

**1. Recommendations**

Since the wildlife cameras are not providing new data, discontinue the use through 2022 unless an issue arises that warrants the usage of the cameras on the property, to use funding resources toward other monitoring activities.

**vi. Eagle - Invasive Plant Species**

GLA prepared an ISMP, which was approved by the Wildlife Agencies in 2019.

**1. Recommendations**

Implement ISMP based on priorities outlined in the plan, after removal of the cattle.

**vii. Eagle Ridge - Invasive Animal Species**

GLA did not observe any animal species within the Preserve that would be classified as invasive.

**1. Recommendations**

The property has the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable. GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.

**b. Eagle Ridge - Human Environment**

**i. Eagle Ridge - Land Use**

Public access is not currently authorized at the Eagle Ridge Preserve. GLA did not observe any new trail cuts. Wildlife cameras have historically documented multiple occurrences of unauthorized access, including mountain biking, hiking including with dogs, and horseback riding. In addition, cattle are still using the property and have been detected by GLA biologists in the field, as well as by wildlife cameras in the past. GLA biologists observed four cows during the monitoring on October 22, 2021.

**1. Recommendations**

The site will continue to be monitored to document unauthorized access and activities by GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity.

The RMP for the Preserve describes additional methods to support compliance with the RMP restrictions and enforcement actions as detailed above.

The cattle should be removed from the property as soon as possible, since the cows are heavily degrading portions of the site through grazing, trampling, and manure. OCTA has made contact with the adjacent cattle rancher (Joanne Friend), who has up to six cattle on the Preserve, to have them removed. A baiting station was set and some of the cattle were removed. Mrs. Friend was also requested to check the fence line on a regular basis to ensure its integrity. Coordination will be ongoing until the cattle are all removed and while grazing is occurring on the adjacent lands.

**ii. Eagle Ridge - Adjacent Land Use**

No vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other adjacency issues were observed.

**1. Recommendations**

None.

**iii. Eagle Ridge - Site/Trail Use**

The western portion of the Preserve contains a primary ridge road that is accessible from Carbon Canyon Road, as well as a trail in the bottom of the main canyon in the middle of the Preserve. Multiple historical occurrences of unauthorized use have been documented through the wildlife cameras, including mountain biking, hiking, and equestrian use. RECON line-trimmed vegetation growing on the access/ridge road located on the top of the Preserve for fire prevention.

**1. Recommendations**

GLA will continue to monitor the site to document unauthorized use.

**c. Eagle Ridge - General Maintenance**

**i. Eagle Ridge - Fencing/Signage/Gates**

No issues with fencing or gates were observed. GLA noted during the October 22, 2021 biological monitoring visit that there is no property sign on the western canyon bottom boundary and that anyone entering from the west, on State property, would not know they are on OCTA property until well into the Preserve. This was done strategically as sometimes placing signs creates more interest in these remote areas. Over the past several years, more signs have been added to attempt to limit trespassing. Note there is a property sign on the eastern canyon bottom fence and at least two signs within the canyon bottom riparian area. RECON installed several additional wilderness signs in 2021 and installed a fence along a boundary that borders a home – refer to Appendix B for details. RECON also secured the gate at the eastern boundary with a new combination lock.

**1. Recommendations**

Consider installing a sign on the western canyon bottom boundary. GLA will continue to monitor the site to document fencing, signage, and gate issues.

**ii. Eagle Ridge - Trash/Dumping**

No issues with trash or dumping were observed.

**1. Recommendations**

None.

**iii. Eagle Ridge - Erosion/Sedimentation**

No issues with erosion or sedimentation were noted on the Preserve.

**1. Recommendations**

None.

**iv. Eagle Ridge - Trees**

Monitors observed improper/aggressive pruning of several California walnuts on the ridge road, resulting in exposure to potential invasion. Photos were provided to OCTA.

**1. Recommendations**

Discuss proper pruning methods with maintenance contractor as-needed.

**C. GIS Data**

Included in this report submittal to OCTA is the comprehensive GIS dataset for the Preserves, which contains all biological monitoring data collected to date for the Preserves by any contractor, updated as appropriate.

**D. CNDDDB Submittals**

GLA will submit CNDDDB records for sensitive species detected during biological monitoring, including new detections of covered species.

**IV. MANAGEMENT RECOMMENDATIONS**

A summary of management recommendations for the ongoing management of resources at the M2 Preserves is provided below. General summaries of management recommendations applicable to all Preserves are included first, with management recommendations specific to each Preserve following. Adaptive management strategies related to public access and wildlife activity (i.e., covered animals), covered plants and vegetation management, and trails revegetation and/or decommissioning have been included to improve future management actions.

**A. Covered Species**

For covered plant species, implement effectiveness monitoring in 2022, supplemented by incidental detections obtained during general biological monitoring. Monitoring should include areas of documented mariposa lily and suitable habitat along access roads where maintenance occurs, to confirm that the maintenance activities are not adversely affecting mariposa lily populations.

For covered animal species, implement effectiveness monitoring for the covered reptiles (orangethroat whiptail and coast horned lizard) in 2021. The reptile surveys are intended to follow a time-constrained methodology identified in the Preserve RMPs, although GLA will implement a modified methodology better suited for the Preserves that will be reviewed and approved by USFWS and CDFW. As noted above, an invasive lizard (Sonoran whiptail) has been detected within Orange County that looks very similar to the orangethroat whiptail. Although the Sonoran whiptail has not yet been observed near any of the OCTA Preserves, GLA biologists will attempt to identify the orangethroat whiptail from the Sonoran whiptail as described above.

Incidental detections of the coastal California gnatcatcher and cactus wren will be mapped during Preserve visits including for focused reptile surveys and general biological monitoring. Note that incidental detections

for the covered mammals (bobcat and mountain lion) are unpredictable, and oftentimes rare. Monitoring of the mammals are best achieved through the ongoing use of wildlife cameras (as discussed below), supplemented by the detection of tracks and/or scat during general monitoring. As applicable, analyze data in order to detect potential trends in population growth or decline. Non-covered sensitive species detected during general monitoring should be added to the GIS database as is applicable based on the species detected.

## **B. Wildlife Cameras**

Wildlife cameras are a valuable tool in tracking wildlife use and abundance throughout the Preserves, as well to provide a potential secondary benefit of documenting unauthorized human uses. Specific recommendations for each Preserve regarding wildlife cameras are provided below. Where cameras are present, as part of adaptive management strategies, photographs should be reviewed regularly to determine whether cameras should be moved to provide better or additional data.

## **C. Unauthorized Access**

The Preserves will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company, the Orange County Sheriff Department's mounted unit, and GLA's monitoring team. Where present, perimeter fencing will be checked periodically. As part of adaptive management strategies, the frequency of this monitoring will be adjusted as needed based on information collected during other monitoring visits, such as presence of trash, new trails, or vegetation encroachments. Also, as part of adaptive management strategies, signage, fencing, placement of cactus, or other means may be recommended in areas where unauthorized access is occurring to help deter the public from entering the Preserve or sensitive areas (if public access is allowed).

Since the Pacific Horizon Preserve is open for public access, there are challenges for monitoring authorized versus unauthorized activities. The public education and outreach program for Trabuco Rose, Pacific Horizon, and Wren's View Preserves are in part intended to communicate the importance of self-monitoring in reinforcing the value and purpose of the Preserve. Only two docent hikes were conducted in 2021 due to the ongoing COVID-19 pandemic; however, the hikes are scheduled as normal for 2022. GLA recommends that the public use restrictions be reinforced as frequently as necessary during the various public outreach events at those three properties. The RMP for the Preserve describes additional methods to support compliance with the RMP restrictions and enforcement actions as detailed above.

## **D. General Maintenance**

Maintenance should be performed as needed and as applicable to fencing, gates, and roads/trails at each of the Preserves, including checking for slacked wire that may pose an entanglement threat to wildlife. Remnant barbed wire fencing should be removed, as recommended. GLA will identify future maintenance concerns as part of ongoing monitoring. As part of adaptive management strategies, GLA recommends conducting Preserve monitoring visits after heavy rainfall events to inspect for erosion and sedimentation.

Trail/road erosion should be repaired and/or controlled, as needed. GLA will continue to monitor the Preserves for erosion effects and will report any issues to OCTA.

Trees within the Preserves should continue to be monitored for signs of infestation. GLA will continue to coordinate with OCTA regarding GSOB and ISHB and will consult with GLA's team arborist as needed for recommendations to monitor trees within the Preserves, and to track/control any documented infestations.

### **Trabuco Rose Preserve**

Implement Preserve-wide focused plant surveys in 2022 to confidently determine presence/absence of many-stemmed dudleya and to confirm previous populations of intermediate mariposa lily populations and map any new locations. Monitoring should include areas of documented mariposa lily and suitable habitat along access roads where maintenance occurs, to confirm that the maintenance activities are not adversely affecting mariposa lily populations. As part of adaptive management strategies, GLA recommends increasing monitoring efforts for intermediate mariposa lily and many-stemmed dudleya when good rainfall occurs and will continue to survey areas within the Preserve with the greatest potential to support the dudleya as a function of both soil suitability and topography.

A total of 29 cactus wren territories were documented during focused surveys in 2021 at the Preserve. An additional six cactus wren individuals were mapped without their territories being defined, for a total of 35 distinct cactus wren locations. One gnatcatcher pair was detected during focused surveys on April 7, 2021 along a ridgeline located near the Preserve's southernmost boundary. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher.

Focused visual encounter surveys will be performed in 2022 for reptiles, with the focus on orangethroat whiptail and coast horned lizard. OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose to survey for these species.

Mountain lion and bobcat usage at the Preserve has been well-documented via wildlife cameras, as well as tracks, scat, and direct observation. Since the wildlife cameras continue to provide useful data for wildlife use, especially for mountain lions, continue to leave some cameras on the property as long as there is a budget to cover such monitoring.

Implementation of the ISMP is ongoing. RECON conducted initial treatment of the Priority 1 invasive species and some of the Priority 2 invasive species in fall 2018. RECON conducted follow-up treatment in spring 2019 and primarily retreated artichoke thistle/cardoon. Additional follow-up retreatments of artichoke thistle/cardoon were conducted in January/February 2020 and March/June 2021. No retreatment of pampas grass or salt cedar was necessary in 2020 or 2021. Additionally, GLA mapped Bermuda grass on an access road and an African flag plant and recommended removal. Continue to implement the ISMP, including monitoring areas that have been treated, and map incidental detections of invasive species.

Trespassing was documented on Camera J three times. A mountain biker was documented on March 22 and June 20, 2021. Two people and two dogs were documented on July 4, 2021. Additionally, on March 3, 2021, OCTA informed GLA regarding an encroachment onto the Preserve from an adjacent property. The perimeter fencing had been cut and a previously unmapped trail was observed leading from the property onto the Preserve. The fencing was repaired and a new sign was installed by RECON and a camera was installed by GLA. The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company and GLA's monitoring team. Since the wildlife cameras continue to provide



useful data for human use, continue to leave some cameras on the property as long as there is a budget to cover such monitoring.

GLA will continue to monitor the decommissioned trails until they have passively revegetated. GLA will continue to monitor the site for erosion effects and will report any changes to OCTA. GLA did not identify any maintenance needs related to existing fencing, signage, or gates, but will continue to monitor for any issues.

GLA noted that oak trees near Drainage 2 are stressed and falling over. The team arborist reviewed the trees and determined the cause to be drought and did not recommend removal. RECON performed maintenance including trimming and/or clearing fallen branches/trees from fire/access roads. The observation of ISHB signs and symptoms within the interior of Trabuco Rose Preserve is significant due to the risk presented to the adjacent California sycamore tree population. However, all eight of the trees exhibited low to moderate signs of ISHB. Furthermore, observed levels of ISHB within the Preserve were consistent with the 2018 through 2020 surveys, and no new occurrences of ISHB were observed. Chemical treatment and ongoing monitoring are recommended as detailed above and as previously provided to OCTA.

### **Pacific Horizon Preserve**

For covered plants, implement effectiveness monitoring in 2022 in order to detect potential trends in many-stemmed dudleya and intermediate mariposa lily growth or decline. Additionally, GLA recommends the continued monitoring of the dudleya population relative to potential mountain bike activity for potential disturbance. As part of adaptive management strategies, GLA recommends increasing monitoring efforts for intermediate mariposa lily and many-stemmed dudleya when good rainfall occurs and will continue to survey areas within the Preserve with the greatest potential to support the dudleya as a function of both soil suitability and topography.

Focused surveys were performed for the coastal California gnatcatcher and cactus wren in 2021 following protocols identified in the Preserve RMP. No gnatcatchers or cactus wren were detected. The cactus wren has not been previously observed at the Preserve; however, the Preserve contains some limited suitable habitat for the species. Although the site contains limited habitat for the coastal California gnatcatcher, a gnatcatcher has been detected in multiple years near the western boundary. A gnatcatcher was also detected in 2019 in the northern portion of the property. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Pacific Horizon Preserve in 2023 based on the feedback received during the 2022 pilot program.

The Preserve is likely utilized by bobcats, though none have been incidentally detected at the site during baselines studies or subsequent monitoring. However, the Preserve is not expected to be utilized by mountain lions due to its location. Wildlife cameras will assist in the detection of any bobcats at the Preserve.

Invasive species are present on the Preserve. RECON, conducted several maintenance visits in 2021 to treat artichoke thistle, hottentot fig, and pampas grass. Hottentot fig was also treated on County of Orange property bordering the Preserve, as approved by the County. GLA recommends that OCTA continue to implement the approved ISMP and DLRP based on priorities outlined in the plans. This includes specifically targeting artichoke thistle, pampas grass, and hottentot fig in January – March 2021, as needed.

Mountain biking and hiking are ongoing at the Pacific Horizon Preserve, which are authorized activities; however, usage is occurring on unauthorized trails and trail modifications have occurred. To better understand the level of access GLA has recommended the placement of cameras. The cameras will also help document wildlife species and movement on the site.

Due to the public-use trail in the northern portion of the Preserve, the monitoring of authorized versus unauthorized uses along the trail is challenging. As discussed above, two existing trail access points at the northern boundary were decommissioned in 2020. As part of adaptive management strategies, cactus cuttings were placed on the decommissioned trail and debris was placed along the fence to deter access. In addition, several new habitat restoration signs were installed along the existing fence line to educate the public regarding the sensitivity of the area. Portions of the fence line were also repaired due to vandalism along the northern boundary of the Preserve.

The “newly cut trail” previously mapped by GLA in the eastern portion of the site that spurs south from the Sewer Drop Trail has been extended so that it connects to other existing trails. It also appears that the Sewer Drop Trail itself has gotten deeper with more erosion, been subject to more vegetation cutting, and has new small offshoots that lead back up or down to the “newly cut trail”. A lot of yellow flagging was present throughout the “newly cut trail” down to the SCE connection by the telephone pole. GLA noted a section of missing fence line in the eastern portion of the Preserve near an SCE pole. The fencing was recommended for repair. As part of adaptive management strategies, the cut native vegetation that’s laying around the trail and on top of native scrub should be placed within the trail area to break down and visually obscure trail.

The SCE encroachment documented in 2020 in the northern portion of the Preserve continues to be maintained by SCE’s consultant, AECOM. Additionally, new impacts from SCE activities were documented in 2021 consisting of newly cut trails and access clearing around utility poles. In total, approximately 0.45 acre of access impacts have been mapped. OCTA staff is working with SCE and the Wildlife Agencies to resolve these unauthorized impacts. In the interim, the areas are being maintained to be kept free of weeds. As part of adaptive management strategies, GLA mapped SCE poles occurring on or near the Preserve boundary.

As part of adaptive management strategies, trails should be inspected for erosion after large storm events. GLA will continue to note future maintenance needs during ongoing monitoring.

The southern Preserve boundary with The Ranch will be monitored for unauthorized activities, including maintenance crews associated with the golf course.

There are currently no recommendations regarding trees at Pacific Horizon Preserve.

## Bobcat Ridge Preserve

For covered plants, implement effectiveness monitoring in 2022 in order to detect potential trends in intermediate mariposa lily population growth or decline. As part of adaptive management strategies, the monitoring of known populations of intermediate mariposa lily should include additional focus on the area of disturbance along the southern boundary to determine the potential extent of impact due to the disturbance. Additionally, GLA recommends increasing monitoring efforts for intermediate mariposa lily when good rainfall occurs and will continue to survey areas within the Preserve with the greatest potential to support the dudleya as a function of both soil suitability and topography.

GLA conducted focused surveys for gnatcatcher and cactus wren on March 9 and 16, 2021. No gnatcatchers were detected. Four cactus wren territories were identified within the Preserve boundary. Cactus wren was also detected during site visits on January 27, October 29, and November 12, 2021. The coastal California gnatcatcher has not been previously detected at the Preserve, although the site does contain suitable habitat for the gnatcatcher. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Bobcat Ridge Preserve in 2023 based on the feedback received during the 2022 pilot program.

Wildlife cameras detected bobcat on four occasions in 2021. The Preserve is likely utilized by mountain lion, but it has not been detected during baseline surveys/monitoring. GLA recommends leaving at least one camera on the Preserve for tracking wildlife use, as long as there is a budget to cover such monitoring.

Invasive species are present on the Preserve. GLA recommends that OCTA implement the approved ISMP based on priorities outlined in the plan and to continue to monitor for stink net, which has been previously detected and removed adjacent to the Preserve boundary.

As noted above, wildlife cameras were installed in 2019. Bobcat, deer, fox, and coyote were identified in 2021 on the cameras. GLA recommends the continued use for tracking wildlife use, as well as for the secondary benefit of noting unauthorized activities.

Public access is prohibited at the Bobcat Ridge Preserve. The Preserve has one north-south trail for access along the main ridge traversing the middle of the Preserve, with rural residential areas located to the north and south. The presence of private property on both the north and south establishes a definite need to monitor unauthorized access and activities within the Preserve. Monitoring is particularly critical along the southern boundary where the adjacent landowner created access during or before January 2017 and re-disturbed in November 2017, May or June 2019, and again on May 26, 2020, resulting in ongoing habitat disturbance within the Preserve. Additionally, wildlife cameras detected two individuals driving a mule within the encroachment area on May 8, 2021, five days after GLA conducted the quantitative monitoring on May 3, 2021. However, GLA reviewed the area again on October 29 and November 12, 2021 and it did not appear that any further disturbance had occurred. As part of adaptive management strategies, GLA will continue to monitor the Re-disturbed and Previously Disturbed Areas as detailed above. The RMP also notes an

unauthorized trail adjacent to the Preserve that was documented in 2014. The Preserve will continue to be monitored for unauthorized activities, including utilizing the wildlife cameras for this purpose.

GLA did not identify any maintenance needs related to existing fencing. One OCTA Preserve sign had been removed from the pole and GLA recommended replacement/maintenance to OCTA, which was repaired by RECON.

No sign and/or symptom of ISHB was observed during surveys in 2021. However, ongoing monitoring is recommended since it is at the early stages that any outbreak/infestation can be controlled.

### **Silverado Chaparral Preserve**

Implement Preserve-wide focused plant surveys in 2022 to confidently determine presence/absence of many-stemmed dudleya and to confirm previous populations of intermediate mariposa lily populations and map any new locations. As part of adaptive management strategies, GLA recommends increasing monitoring efforts for intermediate mariposa lily and many-stemmed dudleya when good rainfall occurs and will continue to survey areas within the Preserve with the greatest potential to support the dudleya as a function of both soil suitability and topography.

Focused surveys were performed for the coastal California gnatcatcher and cactus wren in 2021 following protocols identified in the Preserve RMP. No gnatcatchers were detected. One cactus wren territory was identified in the southwestern most corner of the Preserve. Based on its behavior and observation of feathers in the nest entrance, the cactus wren appeared to be nesting. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher.

The coast horned lizard has been detected at the Preserve in multiple locations during the last monitoring cycle, and during previous baseline work. GLA continued to map potential invasive ant species that could represent a threat to coast horned lizards, as well as other native harvester ant colonies. Eradication of invasive ant species would be achieved through chemical treatment, if it were determined that extent of invasive ants warranted treatment. However, the site would need to be studied to know the full extent of invasive ant colonies to determine the efficacy of treatment. The orangethroat whiptail was not detected during the last monitoring cycle but was detected in the past at one location. OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Silverado Chaparral to survey for these species.

GLA previously detected bobcat at the Preserve via wildlife cameras. The Preserve is likely utilized by mountain lion and was detected via tracks during past visits by OCTA and OC Parks staff. Future wildlife cameras use at the Preserve will assist in the detection of both species at the Preserve.

Invasive species are present on the Preserve. GLA recommends that OCTA implement the approved ISMP based on priorities outlined in the plan. GLA mapped one Spanish broom in the southwestern corner of the Preserve which was removed by RECON. As part of adaptive management strategies, this area should be inspected for Spanish broom during future monitoring visits.

As noted above, two wildlife cameras were installed in 2019. Wildlife cameras detected deer and bobcat. Cameras also detected unauthorized people and dogs on the Preserve. One camera was stolen approximately one month after installation. Through coordination with OCTA, GLA removed the remaining wildlife camera on an interim basis in September 2019 due to the theft risk as well as reducing the effort through the winter months to save funding for spring monitoring. The Preserve is large with multiple trails extending through both ridgelines and canyons, providing considerable opportunity for camera use; however, as noted above, posts are necessary to secure the cameras. As such, GLA recommends re-installing wildlife cameras for tracking wildlife use with increased security for the cameras such as lock boxes.

Open public access is not currently authorized at the Silverado Chaparral Preserve. As part of GLA's efforts, the biological monitors periodically check for any evidence of habitat disturbance within the Preserve due to human activity. GLA documented mountain biking usage and pruning of ceanothus and yerba santa on either side of interior trespass fencing. As noted above, wildlife cameras previously detected unauthorized mountain bikers, people, and dogs on the Preserve. Additional fencing with signage was installed to block access to newly cut trails and demarcate property boundaries; however, along the southeastern boundary, the fencing was cut and signage was missing in two locations (Sign Areas B and C). Two encroachments associated with SCE utility work were documented including a new pole or newly replaced/not previously documented pole onsite with vegetation cut around the pole and a new pole placed just offsite; however, a new access trail was cut on OCTA property. In addition, it appears that access to two offsite poles is occurring from OCTA property on unauthorized trails. Also, the fencing at one offsite pole location was cut to access the pole. OCTA is coordinating with SCE regarding the encroachments. As part of adaptive management strategies, GLA mapped SCE poles occurring on or near the Preserve boundary.

The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company and GLA's monitoring team. In addition, the fence lines will be repaired and signage replaced, as necessary. As part of adaptive management, GLA will recommend future fencing/signage needs to address mountain bike use.

Due to the unauthorized trail use, revegetation assessment of trails has not been conducted. For the trails to revegetate, the unauthorized use will need to cease. As part of adaptive management strategies, GLA will continue to assist OCTA with OC Parks and Irvine Ranch Conservancy coordination to deter unauthorized access and restore the mountain biking disturbed areas. GLA will continue to monitor the trail use and any vegetation changes on the trails (or new trails) within the Preserve.

Heavy erosion was documented onsite along an access road in the northern portion of the Preserve and is pending repair.

Due to the relative remoteness of the Silverado Chaparral Preserve and the observation of unauthorized activities related to mountain bike use, ongoing monitoring is critical. Public outreach is recommended to educate the public regarding allowable and unauthorized uses. OCTA and Irvine Ranch Conservancy have begun discussions to plan guided tours that would occur across the OCTA Preserve.

No issues with trees were observed. There are currently no recommendations regarding trees at Silverado Chaparral Preserve.

## Wren's View Preserve

Implement Preserve-wide focused plant surveys in 2022 to confidently determine presence/absence of many-stemmed dudleya and to confirm previous populations of intermediate mariposa lily populations and map any new locations. As part of adaptive management strategies, if road maintenance is necessary when intermediate mariposa lily is present, biological monitors are onsite to flag the plants and oversee work activities.

Focused surveys were performed for the coastal California gnatcatcher and cactus wren in 2021 following protocols identified in the Preserve RMP. One gnatcatcher pair was observed lining a nest in black sage a few feet offsite of the northern Preserve boundary. Adults were seen flying well within the Preserve boundary. Historically, gnatcatcher have been detected broadly onsite and offsite within this northern area. Thirteen cactus wren territories were identified within the Preserve boundary. One additional cactus wren male was mapped for a total of 14 cactus wren locations, but its territory was not determined. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher.

The orangethroat whiptail was detected at the Preserve in multiple locations during previous monitoring visits and during the baseline work. Although the coast horned lizard has not been previously detected at the Preserve, the site has the potential to support the species. OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Wren's View Preserve in 2023 based on the feedback received during the 2022 pilot program.

Bobcat scat and mountain lion tracks have been documented at the Preserve. Three wildlife cameras were installed at the Preserve in 2018 and discontinued in October 2019. While the cameras were installed, mountain lion and bobcat were identified on the wildlife cameras, as were coyote, fox, and deer; however, no new data is being obtained. Since the wildlife cameras are not providing new data, discontinue the use through 2022 to use funding resources toward other monitoring activities. As part of adaptive management strategies, the cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property.

The Wren's View Preserve has the potential for ongoing unauthorized public access and some evidence of unauthorized public access was detected during biological monitoring including mountain bike tracks and barbed wire that has been pushed to make openings in three places along the ridge road, with two areas showing a visible trail going downslope. The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity. As noted above, since the wildlife cameras are not providing new data, discontinue the use through 2022 to use funding resources toward other monitoring activities. As part of adaptive management strategies, the cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property. Future monitoring will continue to include perimeter fencing where encroachment potential exists. In general, the site will continue to be monitored for trespassing through the property.

In regard to fencing, GLA again noted the downed internal chain link fence along a road within the Preserve, a few areas where barbed-wire fencing was damaged along that road, and the same fallen tree on an interior

barbed-wire fence as 2019 and provided all locations to OCTA. Fencing should be repaired, removed, or replaced, as appropriate. Depending on future uses of the adjacent TCA property, OCTA may want to consider modifications to the existing fencing to better facilitate wildlife movement. No issues with gates or signs were observed. GLA will continue to note future maintenance needs during ongoing monitoring.

No new issues with erosion were noted; however, the access road to the main gate has been known to be an ongoing issue. As part of adaptive management strategies, trails should be inspected for erosion after large storm events. GLA will continue to note future maintenance needs during ongoing monitoring.

The observation of ISHB signs and symptoms within the interior of Wren's View Preserve is significant due to the risk presented to the adjacent California sycamore tree population. Dudek arborists evaluated a total of 27 riparian trees within the Wren's View Preserve. Of the 27 trees evaluated, a total of 14 trees exhibited signs and symptoms of ISHB, of which nine were determined to have low infestation rates and five had moderate infestation rates. Two new trees exhibited sign of ISHB. Chemical treatment and ongoing monitoring are recommended as detailed above and previously provided to OCTA.

In 2021, Dudek evaluated 297 oak trees for signs of GSOB, and none were found to exhibit signs at the time of the evaluation. This does not mean that these trees do not have GSOB, it only means that they did not exhibit sign of GSOB at the time of the inventory. The observation of GSOB within the Wren's View Preserve is considered a threat to the canyon's oak tree resources. It is recommended that OCTA follow the protocol to manage the GSOB outbreak, as detailed above. In addition to treating and managing the outbreak in Wren's View, it is recommended that OCTA work with adjacent landowners, as feasible, to identify and manage GSOB.

In June, two trees near the main gate entrance were pruned to remove stressed limbs.

### **Live Oak Creek Preserve**

Implement Preserve-wide focused plant surveys in 2022 to confidently determine presence/absence of many-stemmed dudleya and to confirm previous populations of intermediate mariposa lily populations and map any new locations. As part of adaptive management strategies, GLA recommends increasing monitoring efforts for intermediate mariposa lily and many-stemmed dudleya when good rainfall occurs and will continue to survey areas within the Preserve with the greatest potential to support the dudleya as a function of both soil suitability and topography.

Focused surveys were performed for the coastal California gnatcatcher and cactus wren in 2021 following protocols identified in the Preserve RMP. No gnatcatchers were detected. Four cactus wren territories were identified within the Preserve boundary. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the coastal California gnatcatcher.

Two orangethroat whiptail were detected on the ridge road adjacent to the cattle ranch. OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Live Oak Creek Preserve in 2023 based on the feedback received during the 2022 pilot program.

Wildlife cameras were installed at the Preserve in 2018 and discontinued in November 2019. While the cameras were installed, deer, coyote, bobcat, and gray fox were detected; however, no new data is being obtained. Since the wildlife cameras are not providing new data, discontinue the use through 2022 to use funding resources toward other monitoring activities. As part of adaptive management strategies, the cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property.

Invasive species are present on the Preserve as outlined in the ISMP. GLA recommends that OCTA implement the approved ISMP based on priorities outlined in the plan and to continue to monitor for stink net, which was detected in 2019.

Monitors noted that the ridge access road was weedy and noted a fallen tree on the perimeter fence near the gate and recommended maintenance. GLA recommends coordination with the landowner at 19071 Live Oak Canyon Road regarding the section of fencing that crosses a drainage, identified in the RMP. GLA also recommends the removal of the internal fencing mapped by GLA. No issues signage or gates were observed. GLA will note future maintenance needs during ongoing monitoring.

No sign and/or symptom of ISHB was observed during surveys in 2021. However, ongoing monitoring is recommended since it is at the early stages that any outbreak/infestation can be controlled.

### **Eagle Ridge Preserve**

For covered plants, implement effectiveness monitoring in 2022 in order to confidently determine presence/absence of intermediate mariposa lily, many-stemmed dudleya, and southern tarplant

GLA conducted focused surveys for least Bell's vireo on June 27 and June 29, 2021. GLA detected one least Bell vireo on the very western edge of the property, which is also using the contiguous willow habitat beyond the property. The Preserve is generally not expected to support the cactus wren or the coastal California gnatcatcher due to a lack of habitat, particularly the cactus wren due to the lack of cactus scrub. As such, focused surveys were not conducted for these species. However, the Preserve should still be generally reviewed annually for the gnatcatcher during ongoing monitoring.

OCTA and GLA coordinated extensively with the Wildlife Agencies in 2021 to develop a visual encounter survey protocol for coast horned lizard and orangethroat whiptail. GLA will implement a pilot survey program in 2022 at Trabuco Rose and Silverado Chaparral Preserves to survey for these species. It is anticipated that visual encounter surveys will be conducted at Eagle Ridge Preserve in 2023 based on the feedback received during the 2022 pilot program.

GLA biologists and USGS biologists on separate occasions detected pond turtles inside and outside the Preserve. On August 19, 2021, USGS biologists detected one adult pond turtle within Soquel Canyon Creek within the Preserve and several pond turtles offsite within Carbon Canyon Creek. GLA biologists also detected pond turtles offsite within Carbon Canyon Creek on June 29 and October 22, 2021. Continue to monitor pond turtle threats/stressors including cattle and human disturbance and invasive plant and wildlife species.

GLA established three wildlife camera stations in 2018 and discontinued in 2019. While the cameras were installed, deer, coyote, and bobcat were detected; however, no new data is being obtained. Since the wildlife



cameras are not providing new data, discontinue the use through 2022 to use funding resources toward other monitoring activities. As part of adaptive management strategies, the cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property.

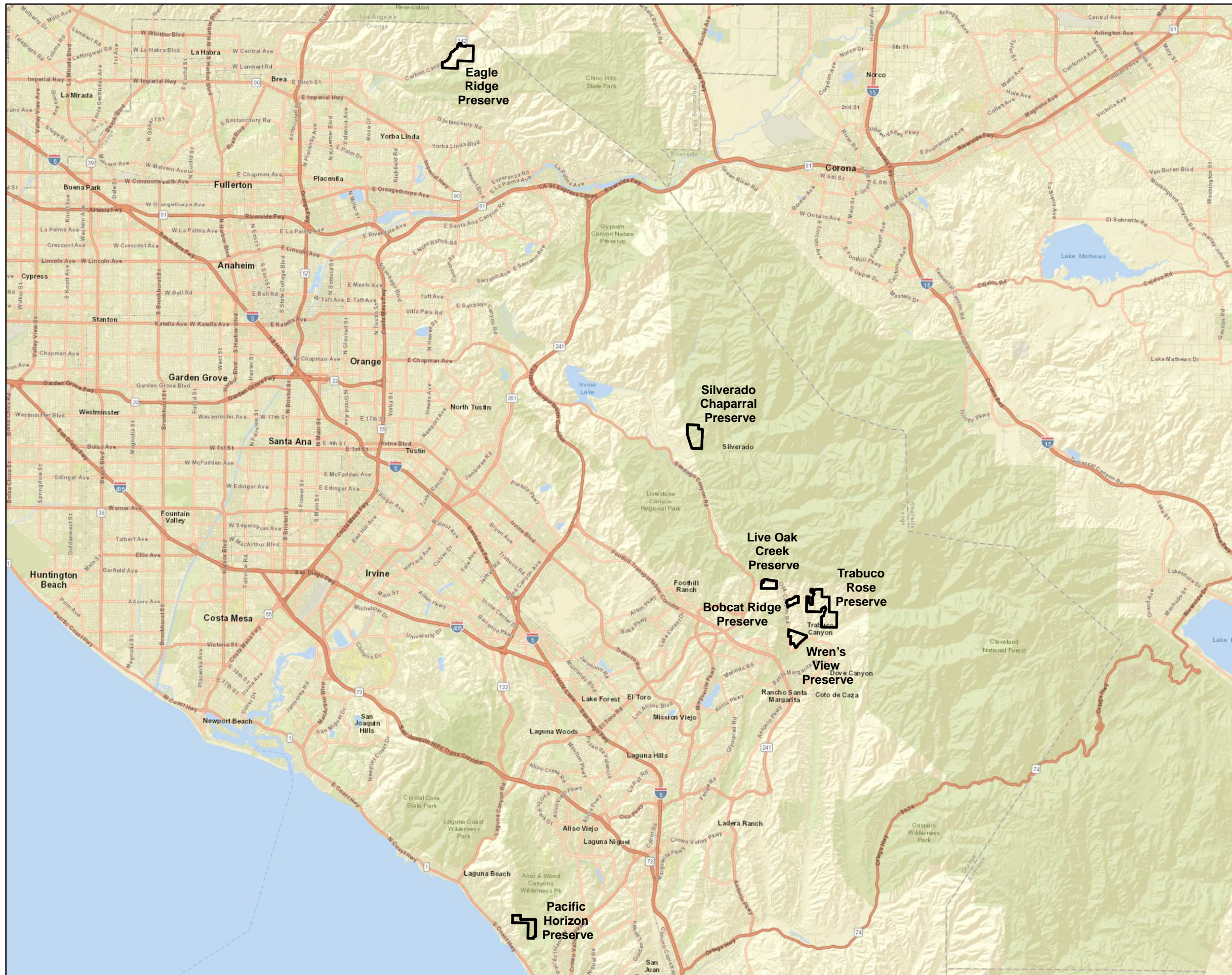
Invasive species are present on the Preserve. GLA recommends that OCTA implement the approved ISMP based on priorities outlined in the plan once the cattle are removed from the property.

Wildlife cameras have previously documented multiple occurrences of unauthorized mountain biking, hiking, and equestrian use. In addition, cattle are currently on the Preserve causing on-going impacts. The cattle should be removed from the property, since the cows are heavily degrading portions of the site through grazing, trampling, and manure. OCTA has contacted the adjacent cattle rancher (Joanne Friend) to have them removed. A baiting station was set and some of the cattle were removed. Mrs. Friend was also requested to check the fence line on a regular basis to ensure its integrity. Coordination will be ongoing until the cattle are all removed and while grazing is occurring on the adjacent lands.

The Preserve will continue to be monitored for unauthorized activities. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity. Since the wildlife cameras are not providing new data, discontinue the use through 2022 to use funding resources toward other monitoring activities. As part of adaptive management strategies, the cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property.

GLA did not note any issues with fences, signs, or gates; however, monitors noted the potential need for a sign on the western canyon bottom boundary. GLA will note future maintenance needs during ongoing monitoring.

Monitors observed improper/aggressive pruning of several California walnuts on the ridge road, resulting in exposure to potential invasion. Photos were provided to OCTA, who should discuss proper pruning methods with their maintenance contractor as needed.



 OCTA Preserve Boundaries



1 inch = 3 miles

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

**OCTA PRESERVES**  
 Location Map



Exhibit 1



Photograph 1: View from Permanent Photo Station #1. Photo taken November 12, 2021.



Photograph 2: View from Permanent Photo Station #1. Photo taken September 26, 2013.



Photograph 3: View from Permanent Photo Station #2. Photo taken November 12, 2021.



Photograph 4: View from Permanent Photo Station #2. Photo taken September 26, 2013.



GLENN LUKOS ASSOCIATES

Exhibit 2A1

**TRABUCO ROSE PRESERVE**  
Monitoring Photos



Photograph 5: View from Permanent Photo Station #3. Photo taken November 12, 2021.



Photograph 6: View from Permanent Photo Station #3. Photo taken September 26, 2013.



Photograph 7: View from Permanent Photo Station #4. Photo taken November 12, 2021.



Photograph 8: View from Permanent Photo Station #4. Photo taken September 26, 2013.



GLENN LUKOS ASSOCIATES

Exhibit 2A2



TRABUCO ROSE PRESERVE

Monitoring Photos



Photograph 9: View from Permanent Photo Station #5. Photo taken November 12, 2021.



Photograph 10: View from Permanent Photo Station #5. Photo taken September 26, 2013.



Photograph 11: View facing east of gully erosional repair area post-installation. Photo taken May 25, 2021.



Photograph 12: View facing north of stressed oaks due to drought. Photo taken November 1, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2A3

TRABUCO ROSE PRESERVE

Monitoring Photos



Photograph 13: View of mountain lion and kitten at Photo Station J. Photo taken July 16, 2021.



Photograph 14: View of mountain lion at Photo Station J. Photo taken August 20, 2021.



Photograph 15: View of bobcat at Photo Station J. Photo taken November 5, 2021.



Photograph 16: View of buck mule deer at Photo Station J. Photo taken July 10, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2A4

TRABUCO ROSE PRESERVE

Monitoring Photos



Photograph 1: View of missing fence section near SCE pole facing northwest. Photo taken October 12, 2021.



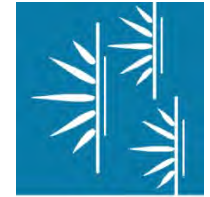
Photograph 2: View of mountain bike tracks and severe erosion on "Kamikaze Trail" facing east. Photo taken October 12, 2021.



Photograph 3: View of cut vegetation on "Kamikaze Trail" facing east. Photo taken October 12, 2021.



Photograph 4: View of treated artichoke thistle field facing west. Photo taken October 12, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2B1

PACIFIC HORIZON PRESERVE

Monitoring Photos



Photograph 5: View of habitat in the southern portion of the Preserve facing east. Photo taken October 12, 2021.



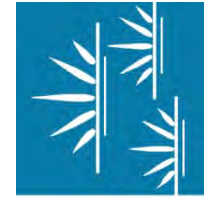
Photograph 6: View of trail and restoration sign on OCTA Property. Also shown in the foreground is an installed post for wildlife camera placement. Photo taken October 12, 2021.



Photograph 7: View of trail closure area in the northern portion of the Preserve facing east. Photo taken October 12, 2021.



Photograph 8: View of habitat taken from the western portion of the Preserve facing northeast. Photo taken October 12, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2B2

PACIFIC HORIZON PRESERVE

Monitoring Photos





Photograph 1: Overview of Preserve facing west. Photo taken October 29, 2021.



Photograph 2: View of disturbance area and sign off post facing east. Photo taken November 12, 2021.



Photograph 3: View of disturbance area facing east. Photo taken November 12, 2021



Photograph 4: View of bobcat captured by Wildlife Camera B. Photo taken May 20, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2C

**BOBCAT RIDGE PRESERVE**

Monitoring Photos



Photograph 1: Close-up view of access road erosion recommended for repair. Photo taken November 3, 2021.



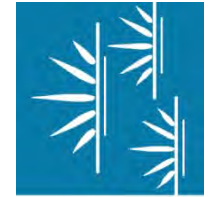
Photograph 2: View of erosion facing west. Photo taken November 3, 2021.



Photograph 3: Overview of Preserve facing west. Photo taken March 19, 2021.



Photograph 4: New or newly replaced SCE pole on OCTA property. Photo taken November 3, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2D1





Photograph 1: View of utility line drooping into coastal sage scrub habitat. Photo taken November 1, 2021.



Photograph 2: View of oak tree at main gate recommended for removal. Note dying branches to the right of the photo and diseased trunk in the center. Photo taken March 12, 2021.



Photograph 3: Overview of Preserve facing north. Photo taken November 1, 2021.



Photograph 4: Overview of Preserve facing southeast. Photo taken November 1, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2E

WRENS VIEW PRESERVE

Monitoring Photos



Photograph 1: View of habitat facing north. Photo taken October 29, 2021.



Photograph 2: View of orange-throated whiptail location facing west. Recommend road maintenance to clear vegetation. Photo taken October 29, 2021.



Photograph 3: View of fallen tree and damaged fence facing north. Photo taken October 29, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2F

LIVE OAK CREEK PRESERVE

Monitoring Photos



Photograph 1: View facing west of Preserve habitat with Soquel Canyon Creek shown to the right of the photo. Photo taken October 22, 2021.



Photograph 2: View facing south of Preserve habitat with Soquel Canyon Creek shown. Photo taken October 22, 2021.



Photograph 3: View of onsite pool where western pond turtle was detected by USGS. Photo taken October 22, 2021.



Photograph 4: View of improper pruning of California black walnut. Photo taken October 22, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2G

EAGLE RIDGE PRESERVE

Monitoring Photos



Trabuco Rose Preserve Boundary

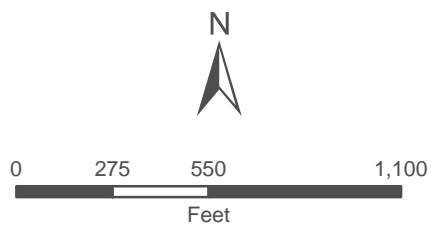
**Previous Monitoring Periods**

**Covered Species**

- Intermediate Mariposa Lily

**Non-Covered Species**

- Catalina Mariposa Lily
- Chaparral Nolina
- Cooper's Rein Orchid
- Coulter's Matilija Poppy
- Fish's Milkwort
- Humboldt Lily



Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

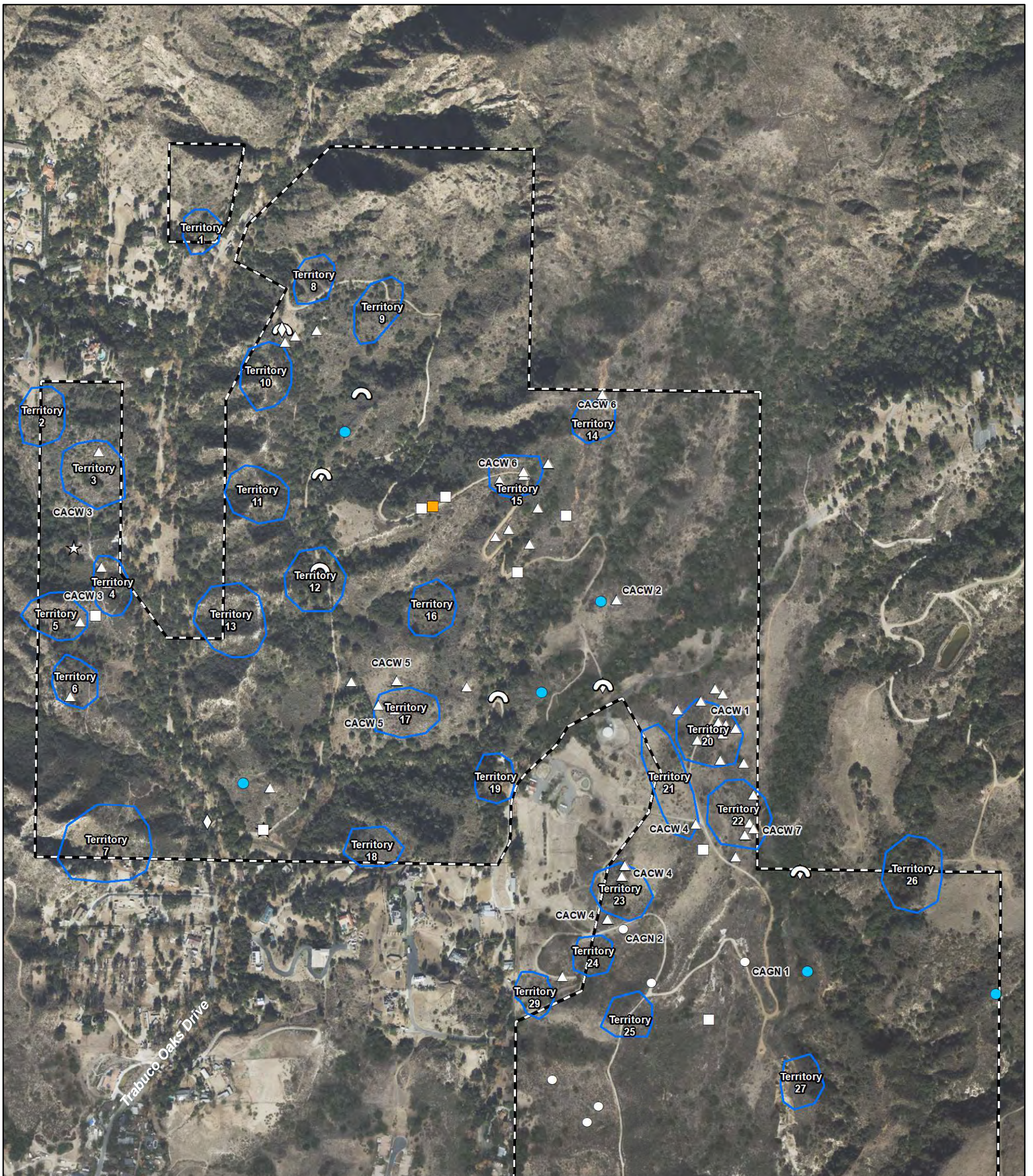
**TRABUCO ROSE PRESERVE**

OCTA Covered/Sensitive Plant Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3A



Trabuco Rose Preserve Boundary

**Current Monitoring Period**

**Covered Species**

- CAGN Territory
- CAWR Territory
- Cactus Wren Territory not Determined
- Orangethroat Whiptail

**Previous Monitoring Periods**

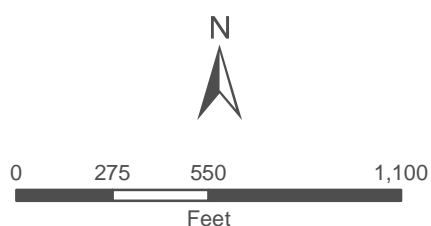
**Covered Species**

- Bobcat
- Coastal Cactus Wren
- Coastal California Gnatcatcher
- Mountain Lion
- Orangethroat Whiptail

**Non-Covered Species**

- San Diego Desert Woodrat

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 4, 2022



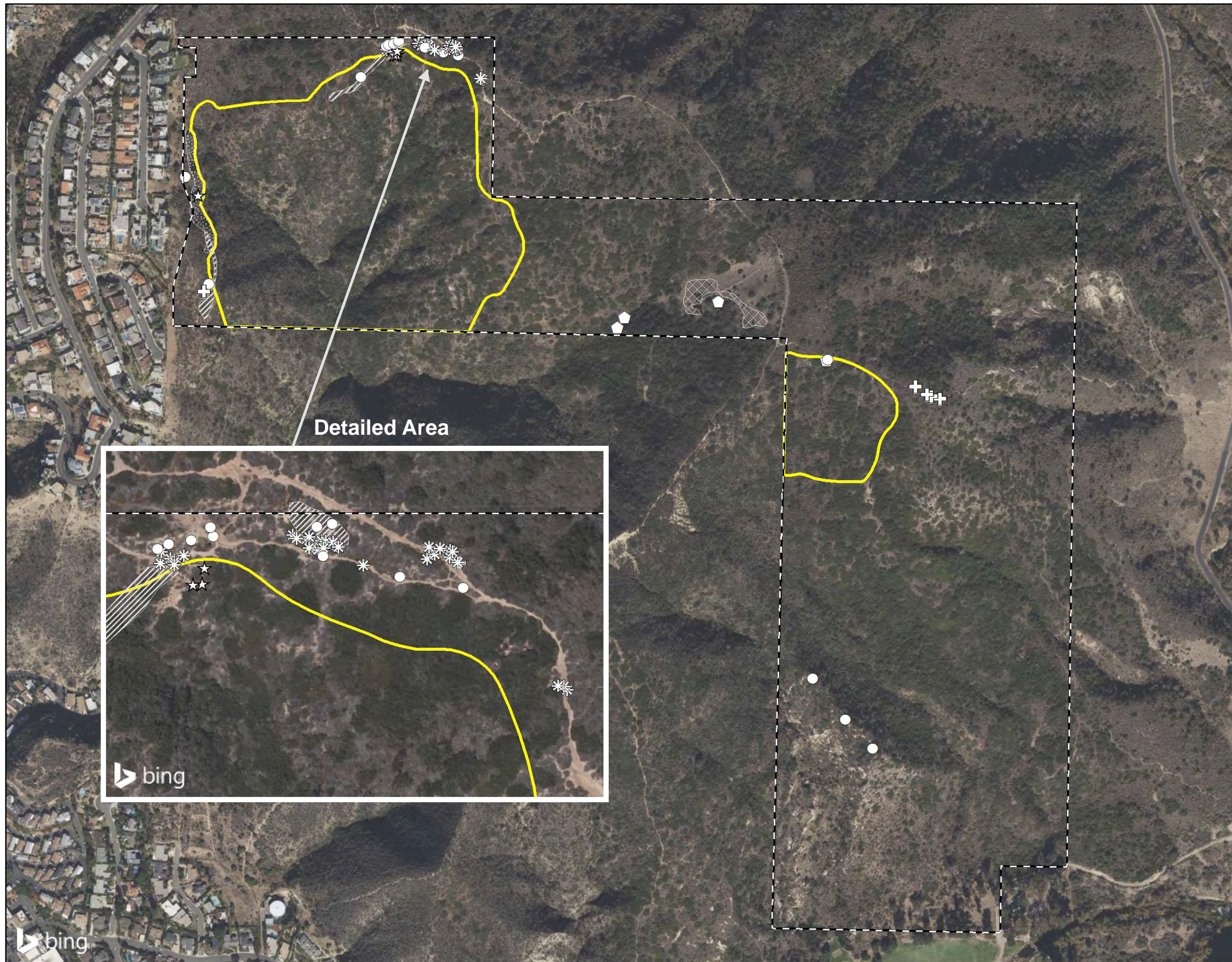
**TRABUCO ROSE PRESERVE**

OCTA Covered/Sensitive Animal Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3B



Pacific Horizon Preserve Boundary

**Previous Monitoring Periods**

**Covered Species**

Intermediate Mariposa Lily

Intermediate Mariposa Lily

Many-stemmed Dudleya

**Non-Covered Sensitive Species**

Catalina Mariposa Lily

Crownbeard

Catalina Mariposa Lily

Crownbeard

Western dichondra

Approximate Extent of Crownbeard of Various Densities



1 inch = 425 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

**PACIFIC HORIZON PRESERVE**

OCTA Covered/Sensitive Plant Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3C





 Pacific Horizon Preserve Boundary

**Previous Monitoring Periods**

***Covered Species***

 Coastal California Gnatcatcher



**1 inch = 425 feet**

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 9, 2022

**PACIFIC HORIZON PRESERVE**

OCTA Covered/Sensitive Animal Species Map

GLENN LUKOS ASSOCIATES




Exhibit 3D

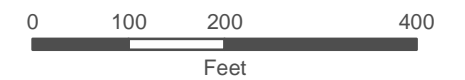


 Bobcat Ridge Preserve Boundary

**Previous Monitoring Periods**

**Covered Species**

 Intermediate Mariposa Lily



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

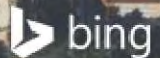
**BOBCAT RIDGE PRESERVE**

OCTA Covered/Sensitive Plant Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3E





Bobcat Ridge Preserve Boundary

**Current Monitoring Period**

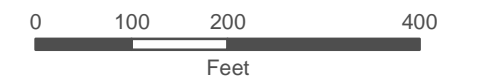
**Covered Species**

CAWR Territory

**Previous Monitoring Periods**

**Covered Species**

- Coastal Cactus Wren
- Orangethroat Whiptail



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 2, 2022

**BOBCAT RIDGE PRESERVE**

OCTA Covered/Sensitive Animal Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3F



bing

Silverado Chaparral Preserve Boundary

**Previous Monitoring Periods**

**Covered Species**

Intermediate Mariposa Lily

**Non-Covered Sensitive Species**

Chaparral Nolina

Paniculate Tarplant



1 inch = 425 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

**SILVERADO CHAPARRAL PRESERVE**

OCTA Covered/Sensitive Plant Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3G



Baker Canyon Road

Territory 1

Silverado Chaparral Preserve Boundary

**Current Monitoring Period**

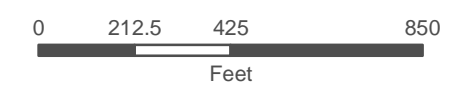
**Covered Species**

CAWR Territory

**Previous Monitoring Periods**

**Covered Species**

- Bobcat
- Coast Horned Lizard
- Orangethroat Whiptail



1 inch = 425 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 4, 2022

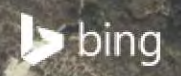
**SILVERADO CHAPARRAL PRESERVE**

OCTA Covered/Sensitive Animals Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3H




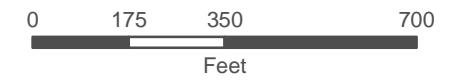


 Wren's View Preserve Boundary

**Previous Monitoring Periods**

***Covered Species***

 Intermediate Mariposa Lily



1 inch = 350 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

**WREN'S VIEW PRESERVE**

OCTA Covered/Sensitive Plant Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3I



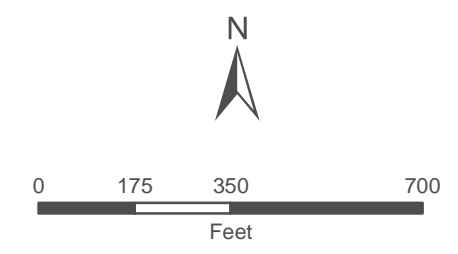
Wren's View Preserve Boundary

**Current Monitoring Period**

- Covered Species**
- CAGN Territory
  - CAWR Territory
  - Cactus Wren Territory not Determined

**Previous Monitoring Periods**

- Covered Species**
- Bobcat
  - Coastal Cactus Wren
  - Coastal California Gnatcatcher
  - Mountain Lion
  - Orangethroat Whiptail



1 inch = 350 feet


Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 2, 2022

**WREN'S VIEW PRESERVE**  
 OCTA Covered/Sensitive Animal Species Map

GLENN LUKOS ASSOCIATES   
 Exhibit 3J






 Live Oak Creek Preserve Boundary

**Previous Monitoring Periods**

**Covered Species**

 Intermediate Mariposa Lily

**Non-Covered Sensitive Species**

 Catalina Mariposa Lily



1 inch = 225 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

**LIVE OAK CREEK PRESERVE**

OCTA Covered/Sensitive Plant Species Map

GLENN LUKOS ASSOCIATES




Exhibit 3K








 Live Oak Creek Preserve Boundary

**Current Monitoring Period**

*Covered Species*


 CAWR Territory

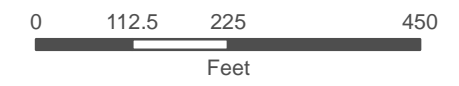
 Orangethroat Whiptail

**Previous Monitoring Periods**

*Covered Species*

 Bobcat

 Coastal Cactus Wren



1 inch = 225 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 2, 2022

**LIVE OAK CREEK PRESERVE**

OCTA Covered/Sensitive Animal Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3L




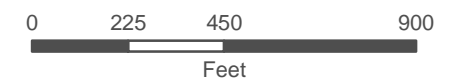


 Eagle Ridge Preserve Boundary

**Previous Monitoring Periods**

***Non- Covered Sensitive Species***

 Hubby's Phacelia



**1 inch = 450 feet**

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 12, 2022

**EAGLE RIDGE PRESERVE**

OCTA Covered/Sensitive Plant Species Map

GLENN LUKOS ASSOCIATES



Exhibit 3M





Eagle Ridge Preserve Boundary

**Current Monitoring Period**

**Covered Species**

- Least Bell's Vireo
- Western Pond Turtle

**Previous Monitoring Periods**

**Covered Species**

- Golden Eagle
- Bobcat, 2019



1 inch = 475 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 10, 2022

**EAGLE RIDGE PRESERVE**

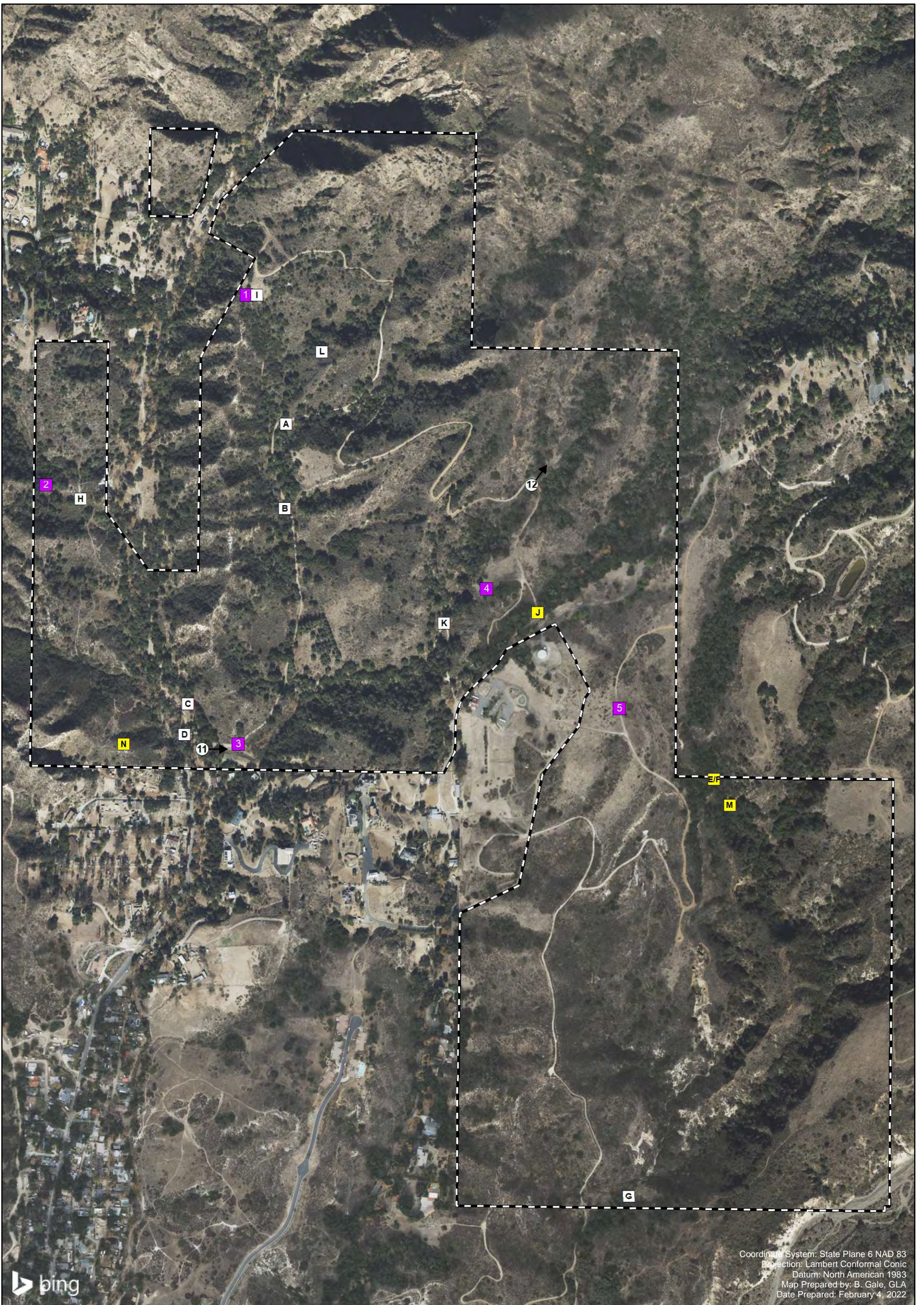
OCTA Covered/Sensitive Animal Species Map






GLENN LUKOS ASSOCIATES

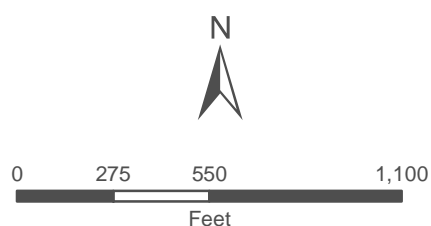


Exhibit 3N





-  Trabuco Rose Preserve Boundary
-  Wildlife Camera Station
-  Wildlife Camera Station Inactive in 2021
-  Permanent Photo Station
-  Photo Location



1 inch = 550 feet

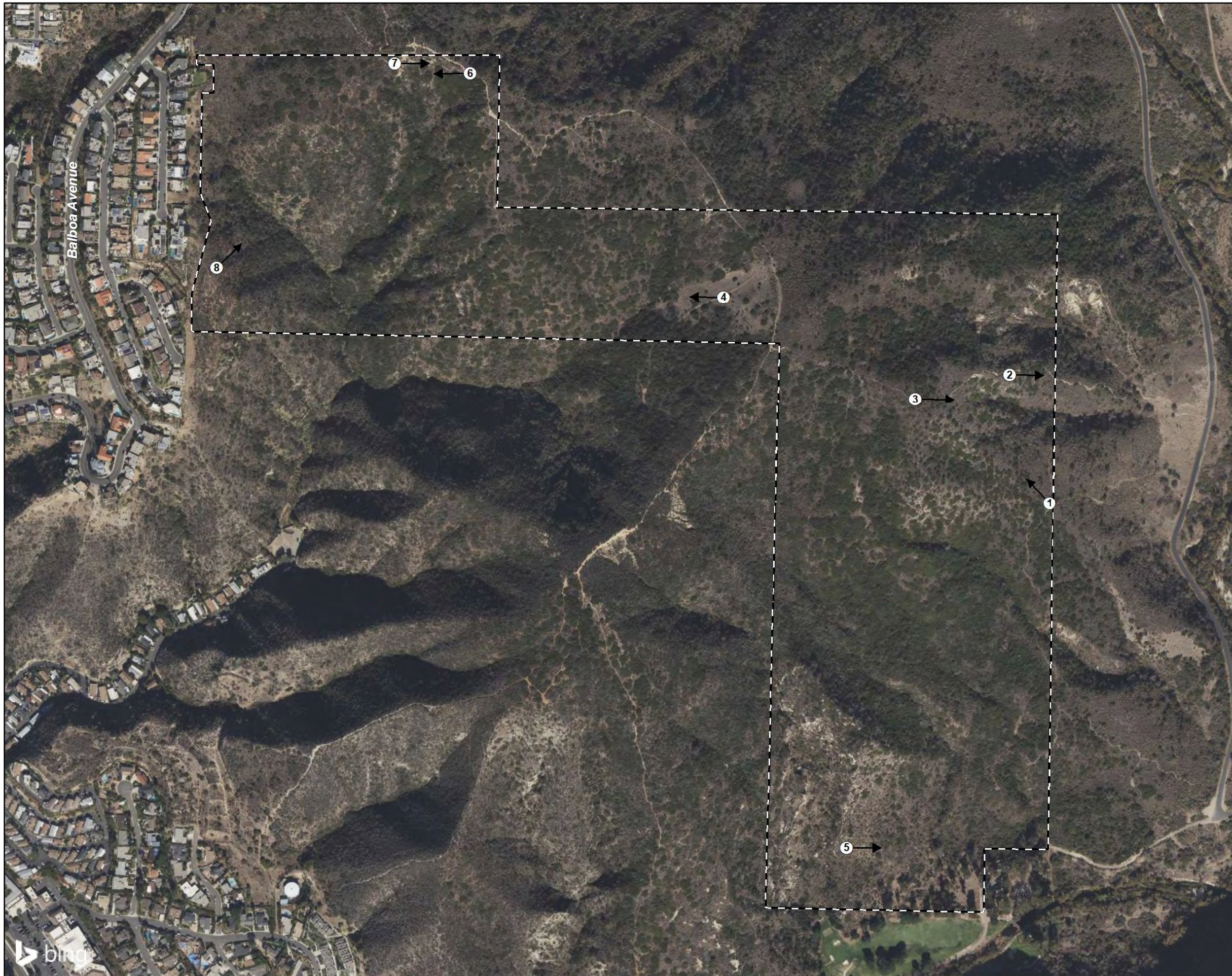
## TRABUCO ROSE PRESERVE

Photo Locations Map

GLENN LUKOS ASSOCIATES



Exhibit 4A




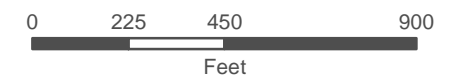
 Pacific Horizon Preserve Boundary

 Photo Location



1 inch = 450 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 8, 2022

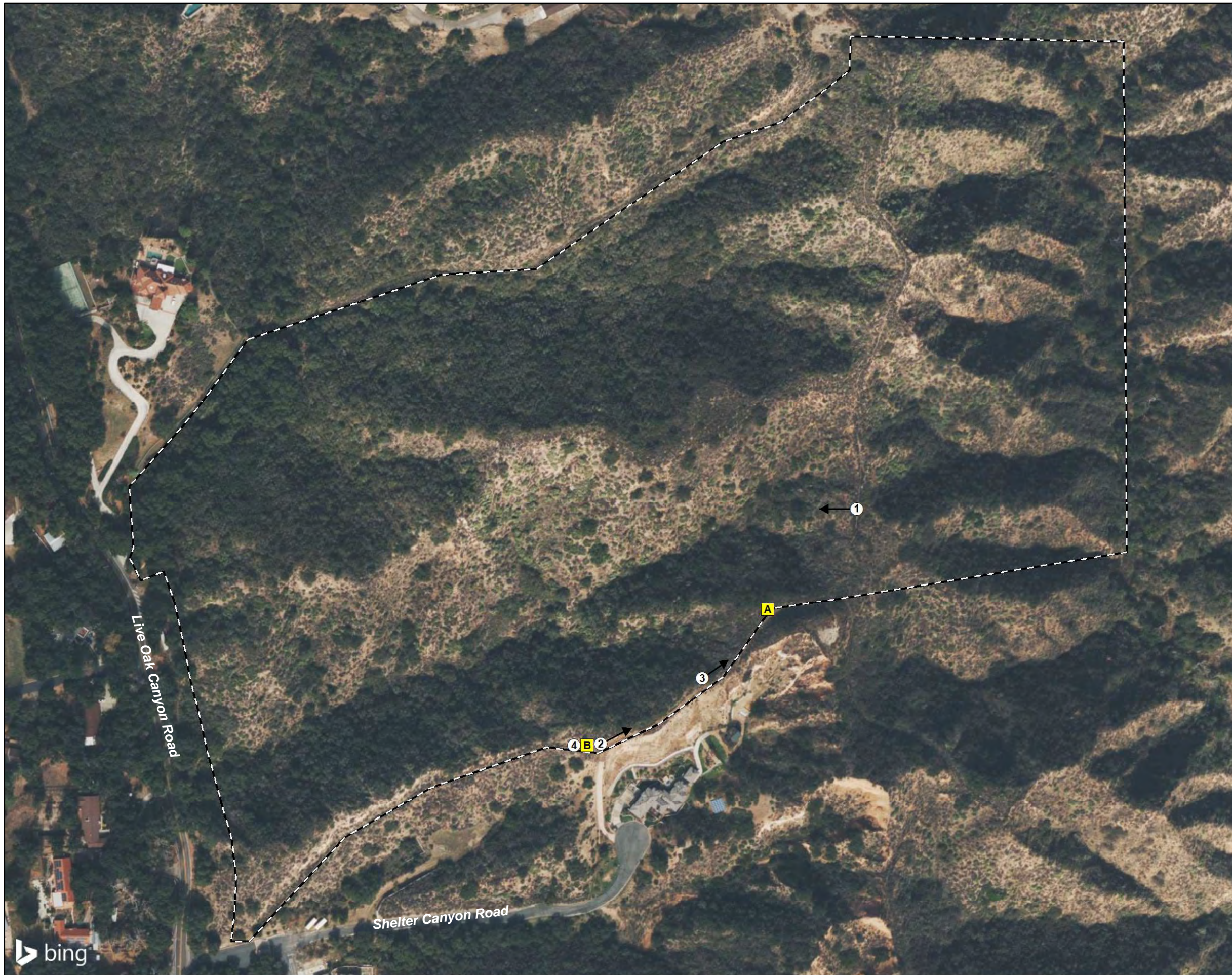
**PACIFIC HORIZON PRESERVE**


Photo Locations Map

GLENN LUKOS ASSOCIATES



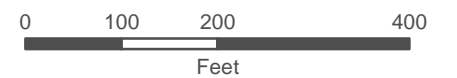
Exhibit 4B



 Bobcat Ridge Preserve Boundary

 Wildlife Camera Station

 Photo Locations



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: January 31, 2022

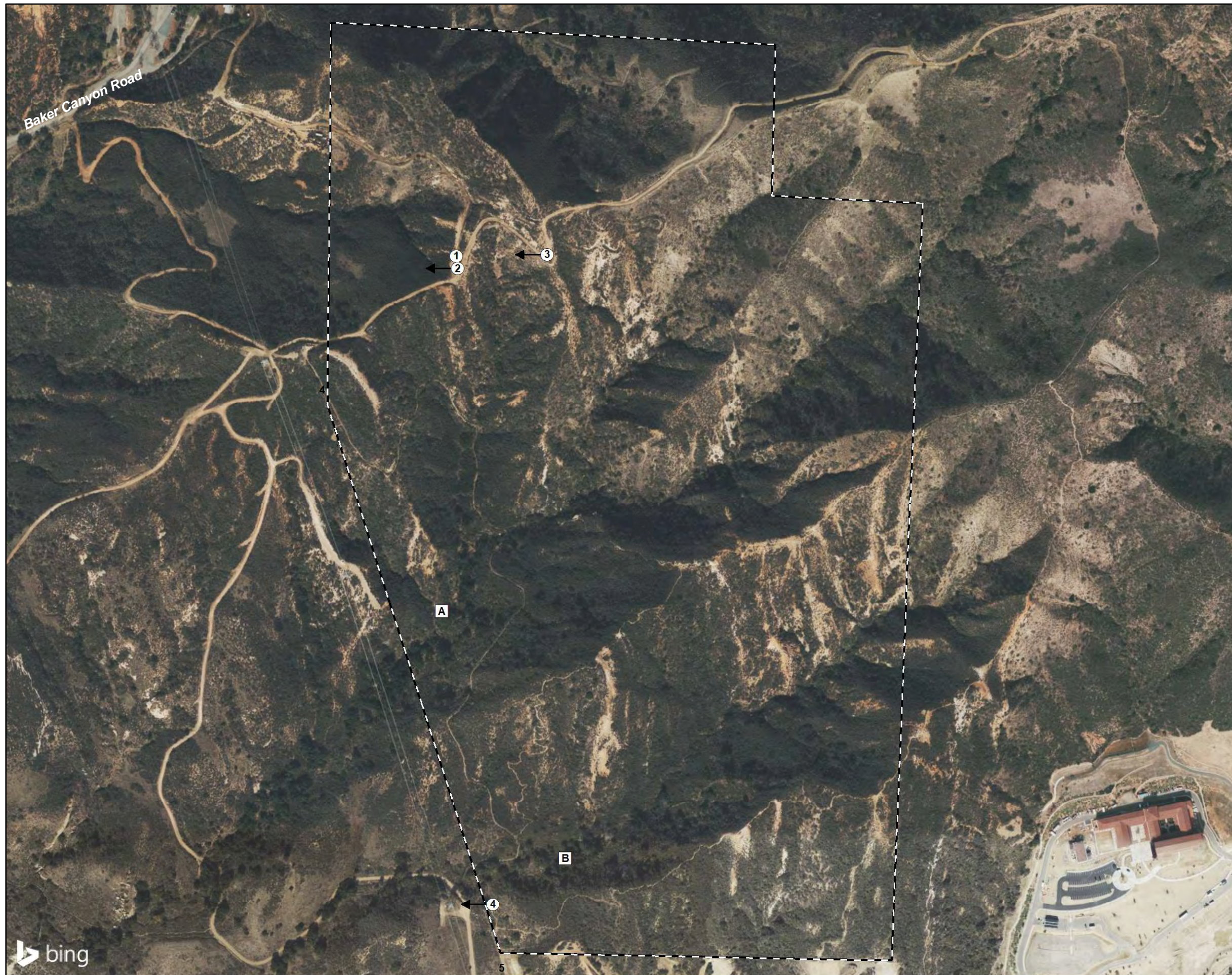
## BOBCAT RIDGE PRESERVE


Photo Locations Map

GLENN LUKOS ASSOCIATES



Exhibit 4C



 Silverado Chaparral Preserve Boundary


 Wildlife Camera Station Inactive in 2021

 Photo Locations



1 inch = 425 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 14, 2022




**SILVERADO CHAPARRAL PRESERVE**

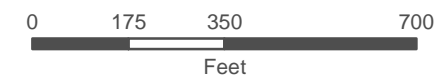
Photo Locations Map

GLENN LUKOS ASSOCIATES 

Exhibit 4D



-  Wren's View Preserve Boundary
-  Wildlife Camera Station Inactive in 2021
-  Photo Locations



1 inch = 350 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: February 1, 2022

## WREN'S VIEW PRESERVE

Photo Locations Map

GLENN LUKOS ASSOCIATES




Exhibit 4E







 Live Oak Creek Preserve Boundary


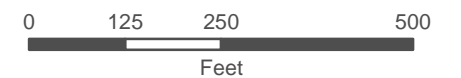
 Wildlife Camera Station Inactive in 2021

 Photo Locations



1 inch = 250 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: January 25, 2022

**LIVE OAK CREEK PRESERVE**


Photo Locations Map


GLENN LUKOS ASSOCIATES




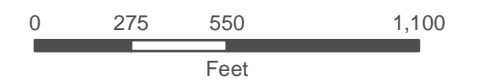
Exhibit 4F



 Eagle Ridge Preserve Boundary

 Wildlife Camera Station Inactive in 2021

 Photo Locations



1 inch = 550 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: January 31, 2022

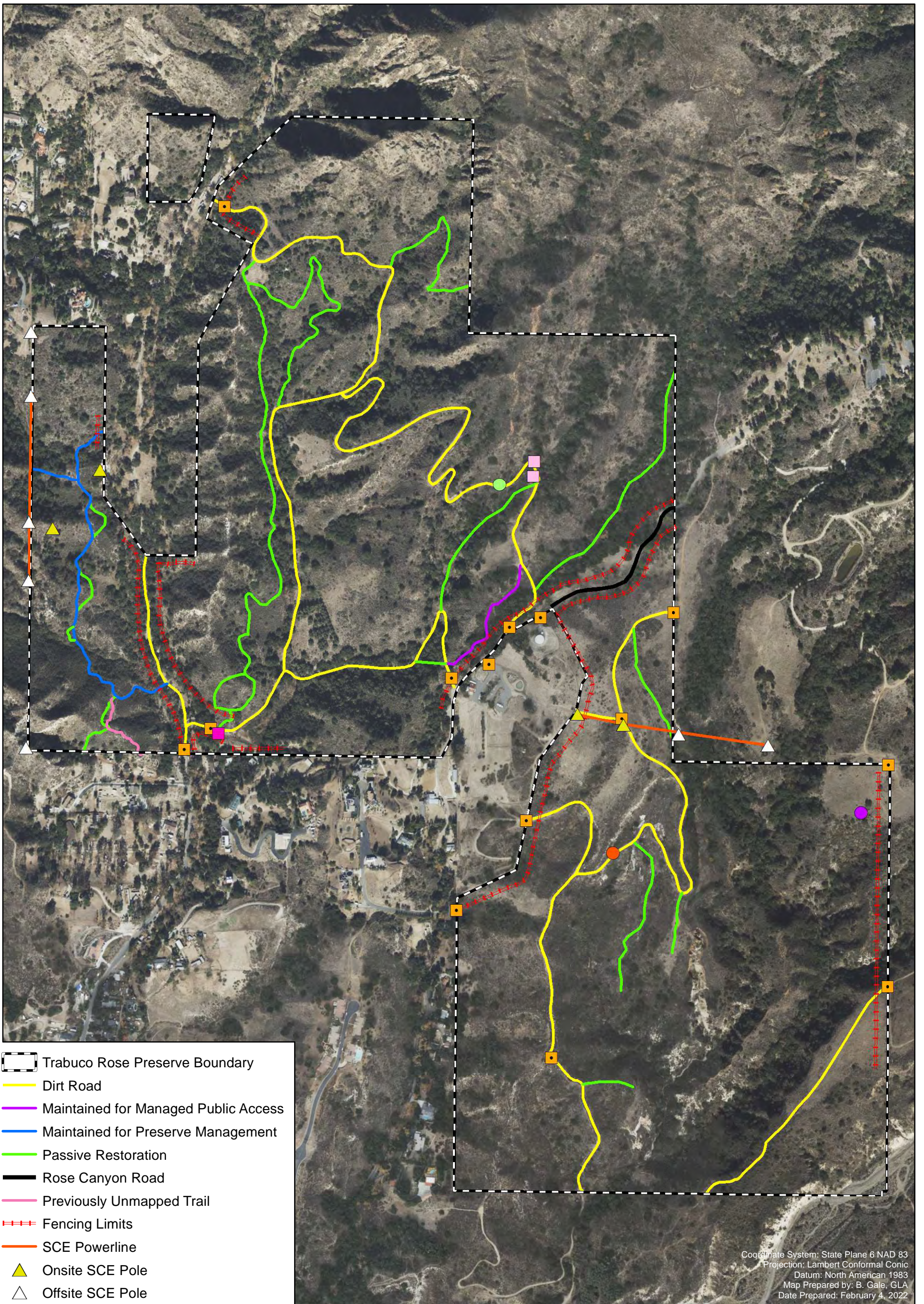
## EAGLE RIDGE PRESERVE

Photo Locations Map

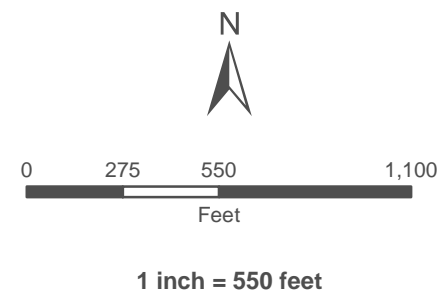
GLENN LUKOS ASSOCIATES



Exhibit 4G



- Trabuco Rose Preserve Boundary
  - Dirt Road
  - Maintained for Managed Public Access
  - Maintained for Preserve Management
  - Passive Restoration
  - Rose Canyon Road
  - Previously Unmapped Trail
  - Fencing Limits
  - SCE Powerline
  - Onsite SCE Pole
  - Offsite SCE Pole
  - Stressed/Falling Oaks
  - Gully Erosional Area
  - Gate Location
- Invasive Plant**
- African Flag
  - Artichoke Thistle
  - Bermuda Grass

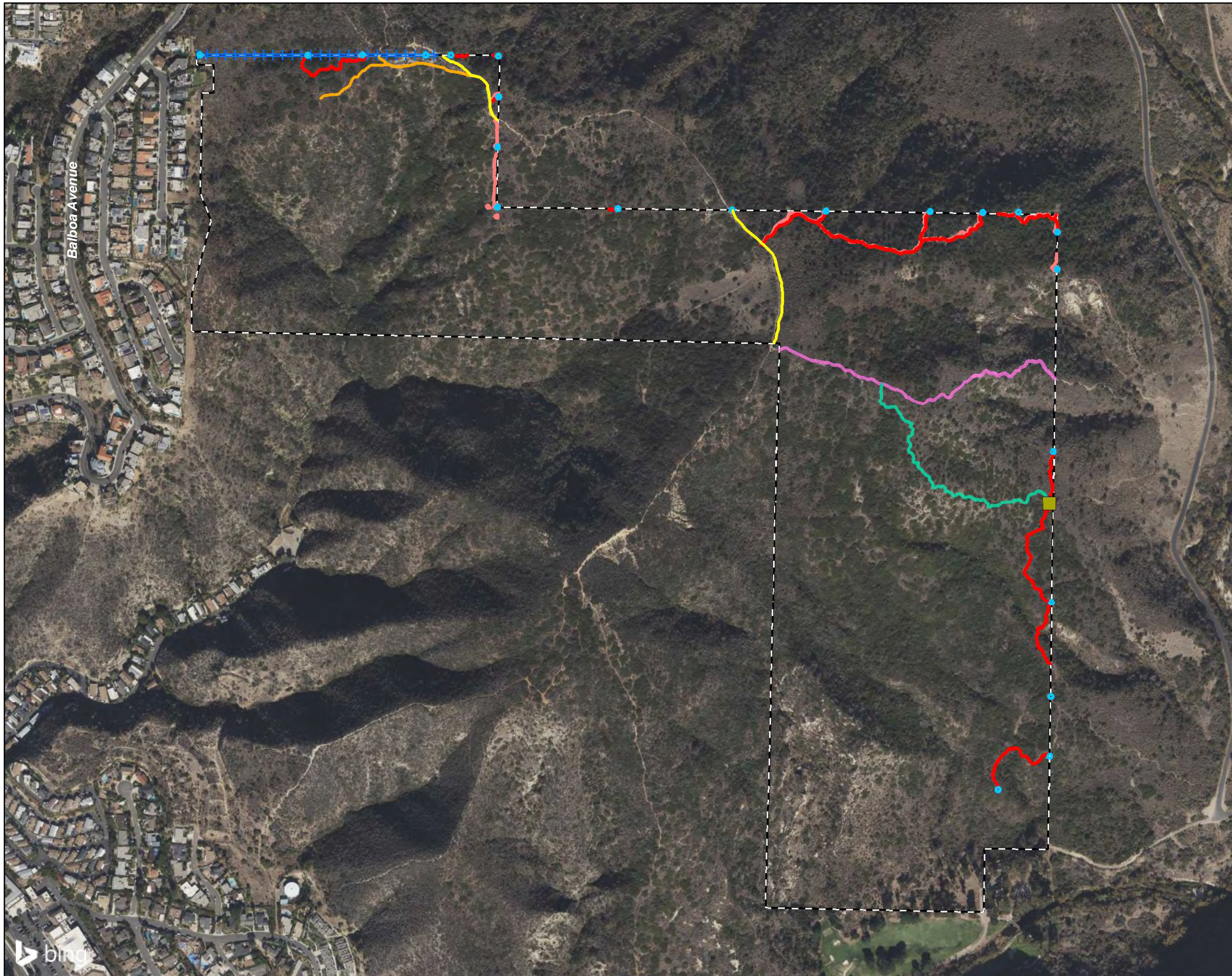











**TRABUCO ROSE PRESERVE**

Trails, Utility, and Maintenance Map

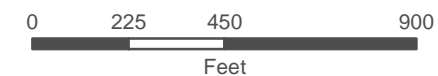
GLENN LUKOS ASSOCIATES

Exhibit 5A



-  Pacific Horizon Preserve Boundary
-  SCE-Created Linear Impacts (Trails)  
To Be Permanent and Mitigated - 0.28 ac.
-  SCE 2020 Temporary Impacts Being  
Maintained and Monitored by SCE - 0.20 ac.
-  SCE Pole - Permanent Work Area  
To Be Permanent and Mitigated - 0.17 ac.
-  Sewer Drop Trail
-  Newly Cut Trail
-  Foot Trails Open for Recreational Use\*
-  Foot Trails Proposed for Decommission
-  Updated Fence Line
-  Cut Fence Line

\*Pursuant to the OCTA managed public access program



1 inch = 450 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 10, 2022

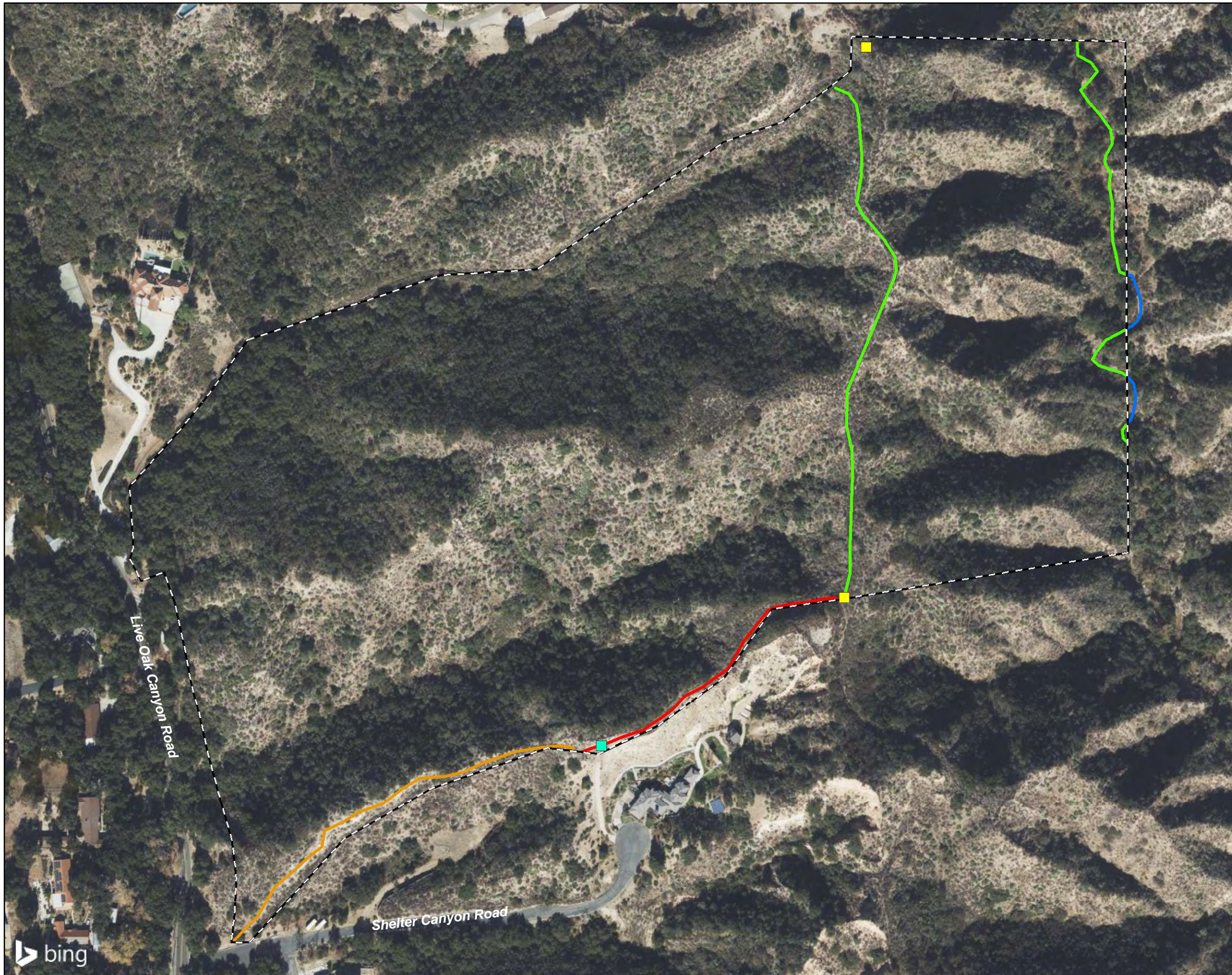
## PACIFIC HORIZON PRESERVE








Trails, Utility, and Maintenance Map

GLENN LUKOS ASSOCIATES



Exhibit 5B



-  Bobcat Ridge Preserve Boundary
-  Foot Trails Maintained for Preserve Management
-  Foot Trails (Decommissioned)
-  Unauthorized Trail
-  Offsite Trail
-  OCTA Sign
-  OCTA Sign - Off Post



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 10, 2022

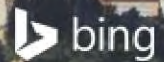
## BOBCAT RIDGE PRESERVE

Trails and Maintenance Map

GLENN LUKOS ASSOCIATES



Exhibit 5C

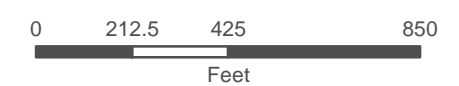




Baker Canyon Road

Fence cut for passage

-  Silverado Chaparral Preserve Boundary
-  Foot Trails and Dirt Roads Maintained for Preserve Management
-  Foot Trails and Dirt Roads for Recreational Use\*
-  Foot Trails (Decommissioned)
-  Unauthorized Trail Documented in 2018
-  Unauthorized Trail Documented in 2021
-  Unauthorized Utility Trail
-  Fencing Installed in 2019
-  Fence - Vegetation Cut for Passage
-  Heavy Erosion Caused by Mountain Biking
-  Mountain Bike Habitat Disturbance 2019
-  Heavy Erosion Access Road
-  Vegetation Cut for Passage - Offsite Fence
-  Ceanothus Pruning
-  Yerba Mansa Pruning
-  Sign Area A - Fence and Sign Intact. Unauthorized Entry by Walking Across Cactus Berm
-  Sign Area B - Fence Down and OCTA Sign Down
-  Sign Area C - Fence Down and OCTA Sign Missing
-  Sign Area D - 2 OCTA Signs
-  OCTA Sign Facing Wrong Way - Offsite
-  SCE Pole - Onsite
-  SCE Pole - Offsite



1 inch = 425 feet



Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: NAD 1983 2011  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 4, 2022

**SILVERADO CHAPARRAL PRESERVE**














Trails, Utility, and Maintenance Map

GLENN LUKOS ASSOCIATES

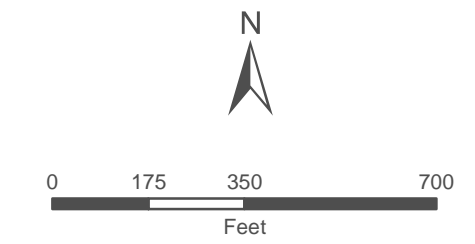


Exhibit 5D



-  Wren's View Preserve Boundary
-  Foot Trails and Dirt Roads Maintained for Preserve Management
-  Dirt Roads Proposed for Recreational Use\*
-  Unauthorized Trail
-  Barbed Wire Fence
-  Barbed Wire Fence (Downed)
-  Barbless Wire Fence
-  Chainlink Fence
-  AT&T Powerline
-  AT&T Pole - Onsite
-  Damaged Barbed-wire Fence
-  Downed Chainlink Fence
-  Gate

\*Pursuant to the OCTA managed public access program



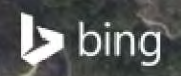
1 inch = 350 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 10, 2022









**WREN'S VIEW PRESERVE**  
 Trails, Utility, and Maintenance Map

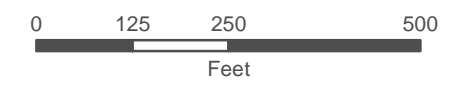
GLENN LUKOS ASSOCIATES 

Exhibit 5E





-  Live Oak Creek Preserve Boundary
-  Dirt Roads Maintained for Preserve Management
-  Foot Trails Maintained for Preserve Management
-  Foot Trails Decommissioned
-  SCE Powerline
-  SCE Pole - Onsite
-  SCE Pole - Offsite
-  Gate



1 inch = 250 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 4, 2022

## LIVE OAK CREEK PRESERVE

Trails, Utility, and Maintenance Map







GLENN LUKOS ASSOCIATES

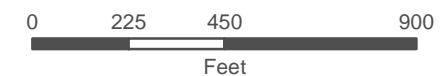


Exhibit 5F





-  Eagle Ridge Preserve Boundary
-  Foot Trails and Dirt Roads Maintained for Preserve Management
-  SCE Powerline
-  SCE Pole - Onsite
-  SCE Pole - Offsite
-  Gate



1 inch = 450 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: March 4, 2022

## EAGLE RIDGE PRESERVE

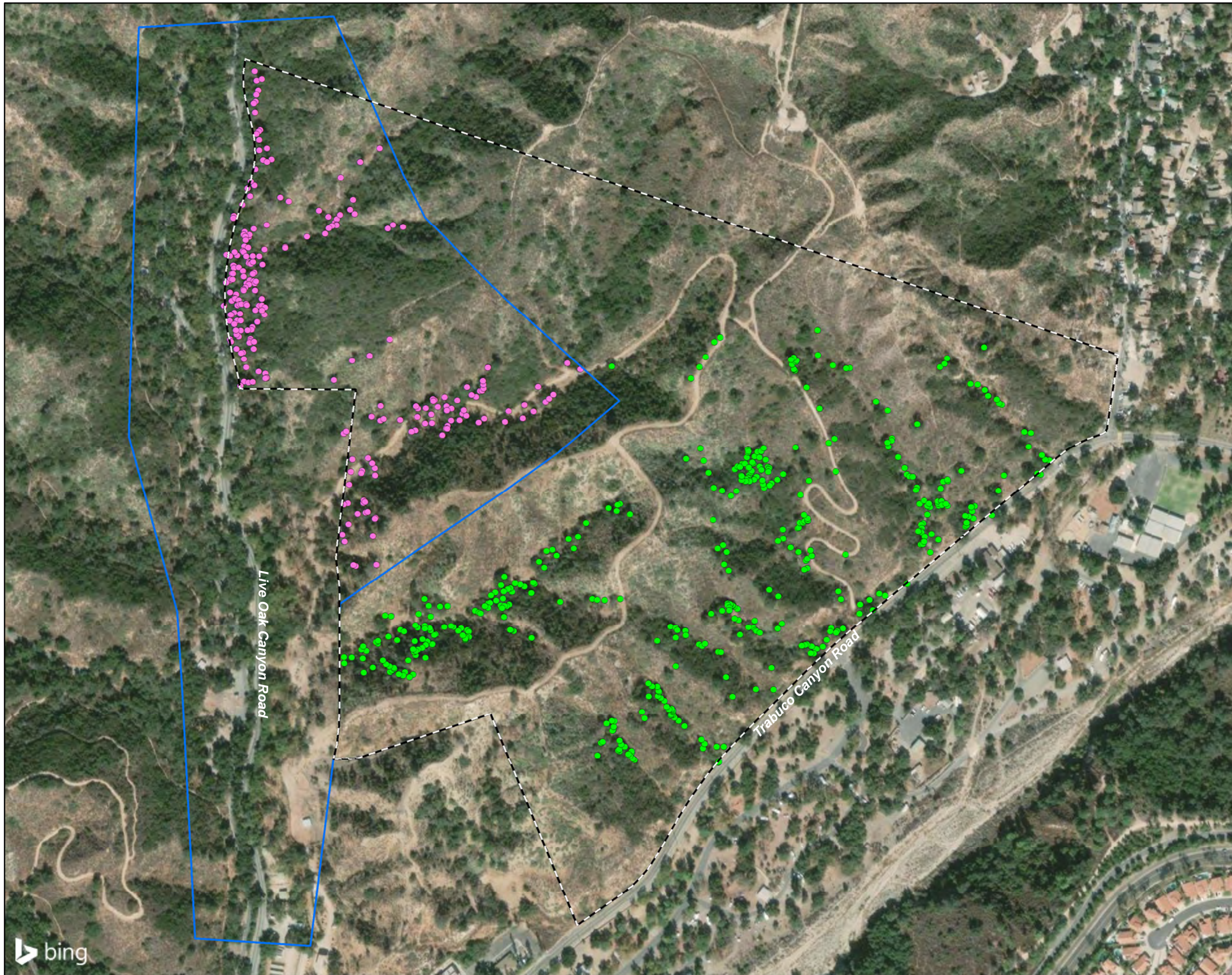
Trails, Utility, and Maintenance Map

GLENN LUKOS ASSOCIATES



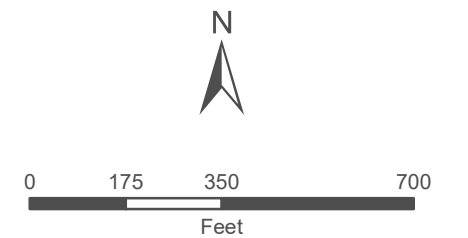
Exhibit 5G





- Wren's View Preserve Boundary
- Orange County Fire Authority Treatment Area\*
- GSOB-Treated Oak Tree (248 Total)
- Oak Tree

\*Digitized from OCFA "Final\_GSOB\_Trabuco" PDF



1 inch = 350 feet

## WREN'S VIEW PRESERVE

Oak Tree Map

GLENN LUKOS ASSOCIATES



Exhibit 6

## APPENDIX A

# TRABUCO ROSE PRESERVE

## USACE/SWRCB ANNUAL MONITORING FORM

A total of 1.75 acres of waters of the U.S., of which 0.14 acre consists of wetlands, within Trabuco Rose Preserve is compensatory mitigation for U.S. Army Corps of Engineers (USACE) and California State Water Resources Control Board (SWRCB) in the form of preservation (Exhibit 1). While monitoring and reporting for the entire Preserve is related to the USACE/SWRCB mitigation sites since these are surrounding buffer areas, this appendix provides the USACE/SWRCB with the information they require regarding tasks within the Trabuco Rose RMP that are specific to their mitigation areas. The tasks also apply to a 50-foot buffer from these preserved waters of the U.S./waters of the State to ensure the sustainability of the USACE/SWRCB mitigation site. This form constitutes the third annual monitoring of the USACE/SWRCB mitigation areas.

### A. Biological Resources

#### Element A.1 – Waters of the U.S., including wetlands

- I. *Task: At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of these habitats. General topographic conditions, hydrology, general vegetation cover and composition, invasive species, and erosion or aggradation will be noted, evaluated and mapped during a site examination in the spring. Notes to be made will include observations of species encountered, general water quality (i.e., turbidity, pollutants such as oil sheen), general extent and condition of non-wetland waters of the U.S., and any occurrences of erosion or aggradation, and weed/non-native species invasion.*

Monitoring Summary: GLA conducted an annual walk-through survey to qualitatively monitor the general condition of preserved waters of the U.S. on June 8, 2021. Preserved waters of the U.S. are depicted on Exhibit 1. Reference photographs were taken from the established locations and are attached as Exhibit 2. A map depicting photograph locations is attached as Exhibit 1.

See below for a summary of the monitoring results:

**Drainage 1/Site Photo 1** – Drainage 1 consists of an ephemeral tributary in a steep canyon. No water was present during the monitoring. The drainage is mostly vegetated, primarily with healthy California sagebrush scrub/cactus and some coast live oak woodland. No invasive perennial species were noted within Drainage 1; however, non-native grasses and weeds (i.e., bromes) are present within the road. The non-native species appear to be contained to the road and are not encroaching into waters of the U.S.; however, routine road maintenance is recommended. No active restoration is recommended at this time. No erosion or aggradation was noted. Overall, the drainage is in good condition and does not appear to have changed in extent since the baseline mapping. Other than routine road maintenance, no actions are recommended to maintain the current condition.

**Drainage 2/Site Photos 2, 3, 5, 6, and 7** – The upper ephemeral tributaries associated with Drainage 2 (photographs 2, 3, and 7) are within steep canyons and are mostly vegetated. No water

was present during the monitoring. Vegetation includes California sagebrush scrub, coast live oak woodland, laurel sumac-lemonade berry chaparral, and California buckwheat scrub. No invasive perennial species were noted within the upper tributaries of Drainage 2; however, non-native weeds Italian thistle (*Carduus pycnocephalus*) and tocalote (*Centaurea melitensis*) were encroaching into the drainage and non-native grasses and weeds (i.e., mustard, tocalote, Italian thistle, and bromes) were present along the roadside buffer. Removal of non-native grasses and weeds encroaching into the drainage and routine road maintenance is recommended. No active restoration is recommended at this time. No erosion or aggradation was noted. Overall, the upper tributaries associated with Drainage 2 are in good condition and do not appear to have changed in extent since the baseline mapping. Other than removal of non-native grasses and weeds encroaching into the drainage and routine road maintenance, no actions are recommended to maintain the current condition.

The lower portion of Drainage 2 (photograph 6) is a lower gradient ephemeral stream segment in the valley floor and is mostly vegetated. No water was present during the monitoring. Vegetation includes arroyo willow thickets, mulefat (*Baccharis salicifolia*), coast live oak woodland, olive (*Olea europaea*), and Eucalyptus. No invasive perennial species were noted within the upper tributaries of Drainage 2; however, Italian thistle was encroaching into the drainage and non-native grasses and weeds (i.e., mustard, tocalote, and bromes) were present along the roadside buffer. Removal of Italian thistle encroaching into the drainage and routine road maintenance is recommended. No erosion or aggradation was noted. Overall, the lower portion of Drainage 2 is in good condition and does not appear to have changed in extent since the baseline mapping. Other than removal of Italian thistle encroaching into the drainage and routine road maintenance, no actions are recommended to maintain the current condition.

The wetland (photograph 5) at the southernmost point of USACE/SWRCB mitigation associated with Drainage 2 was dry during the June 8, 2021 monitoring. Vegetation consisted of arroyo willow thickets, mulefat, Western ragweed (*Ambrosia psilostachya*), and California mugwort (*Artemisia douglasiana*). In addition, annual non-native grasses and weeds (i.e., Italian thistle, bull thistle (*Cirsium vulgare*), rabbitsfoot grass (*Polypogon monspeliensis*), artichoke thistle (*Cynara cardunculus*), and a single tamarisk (*Tamarix ramosissima*) were present. The Italian thistle, bull thistle and rabbitsfoot grass were widely distributed throughout the wetland; however, since these are common annual weeds and are not impeding the wetland function, removal is not recommended at this time. Removal of the artichoke thistle and tamarisk is recommended. No erosion or aggradation was noted. The wetland does not appear to have changed in extent since the baseline mapping. Other than removal of the artichoke thistle and tamarisk, no actions are recommended to maintain the current condition.

**Drainage 3/Site Photo 4** – Drainage 3 is a large drainage complex consisting of steep canyon ephemeral tributaries. No water was present during the monitoring. Vegetation includes California sagebrush scrub, coast live oak woodland, laurel sumac-lemonade berry chaparral, California buckwheat scrub, scrub oak chaparral, chamise chaparral, and needle grass grassland. Some non-native fennel (*Foeniculum vulgare*), mustard, bromes, and tocalote are present along the drainage edge and roadside buffer. Removal of the fennel and routine road maintenance is recommended. No active restoration is recommended at this time. Some areas are naturally erosive but are not actively eroding. No aggradation was noted. Overall, the drainage is in good condition and does not appear to have changed in extent since the baseline mapping. Other than removal of fennel and routine road maintenance, no actions are recommended to maintain the current condition.

- II. *Task: Hydrology and erosion control activities within preserved waters of the U.S. shall be coordinated with Regulatory Agencies. The Preserve Manager will inspect preserved waters of the U.S. immediately after a heavy rainstorm to identify problems with erosion and sedimentation. Where erosion or sedimentation is identified, the Preserve Manager will coordinate with the USACE to implement 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.*

Monitoring Summary: OCTA completed Phase 1 of the gully area project to stabilize the erosion adjacent to the access road east of the main gate (near the secondary gate). The project consisted of installation of 325 cubic yards of ½ ton rock and 65 cubic yards of 1-ton rock and filter fabric, which were the initial steps necessary to secure area. GLA continues to monitor this area and is assisting OCTA in securing regulatory permits to complete Phase 2. No active other erosion or sedimentation was identified within preserved waters of the U.S.

- III. *Task: 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.*

Status: Monitoring was initiated in 2019; the site will be assessed for the need for CRAM monitoring in 2024.

- IV. *Task: During each annual site visit, record general areas of persistent or problematic trash and trespass. Record type, location, and management mitigation recommendations to avoid, minimize, or rectify a trash, trespass, and/or potential fire hazard impact.*

Monitoring Summary: No trash was observed in preserved waters of the U.S. No signs of fire hazards within preserved waters of the U.S. were identified. Although there is occasional trespass documented on the Preserve, including as described below under C.II, none was documented in or near USACE/SWRCB mitigation areas over the past year.

- V. *Task: Reference photograph locations and a photo location map will be established. Site photographs depicting existing site conditions and documenting management activities will be taken from the reference sites.*

Monitoring Summary: Reference photograph locations and a photo location map [Exhibit 1] were established in 2019. Updated photos were taken from the reference locations in 2021 [Exhibit 2].

## Element A.2 - Threatened/Endangered Animal Species Minimization

- I. *Task: Avian Species: CAGN – Management activities during the breeding season<sup>1</sup> that have the potential to destroy active nests (e.g., spraying or pulling vegetation off existing roads or trails within coastal sage scrub) or disrupt nesting activities (e.g., weed whipping along roads and trails adjacent to coastal sage scrub) will be conducted under the oversight<sup>2</sup> of a monitoring biologist<sup>3</sup> who will ensure that nesting activities for gnatcatcher nests are not disrupted and that no nests are destroyed. In addition, a specific nesting bird policy for Preserve management (Appendix D of the RMP) has been approved by the Wildlife Agencies. This policy conforms to existing regulations and procedures for protection of nesting birds.*

*As normal operating practice, routine management activities are conducted during the non-breeding season. Since no activities are anticipated to occur during the nesting season for any of the listed species, no funding specific to this task is allocated. The USACE mitigation sites were specifically located in areas that are not anticipated to be subject to emergency work. In the unlikely event that work is necessary, the contingency fund (i.e., 15% contingency added to the annual task total) would be used.*

Monitoring Summary: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON Restoration Biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans (RMPs).

## Element A.3 - Invasive Species

- I. *Initial Task: A Restoration Ecologist shall prepare an invasive species management plan (see RMP Section 3.2) for the Preserve and include preserved waters of the U.S. in the plan to target the above species. The invasive species management plan must be approved prior to recordation of the conservation easement.*

Status: The USACE approved the invasive species management plan on January 18, 2018. Implementation is ongoing.

- II. *Task: Each year's annual walk-through survey (or a supplemental survey) will include a qualitative assessment of potential or observed weed invasions, primarily in or around the waters of the U.S. Additional actions to control invasive species will be evaluated and prioritized on an annual basis, as necessary, to ensure that any new growth of invasive plant species is treated and not permitted to*

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<sup>1</sup> The breeding season for gnatcatcher is February 15 through August 31.

<sup>2</sup> "Oversight" includes, but is not limited to, the following activities, which will be conducted as necessary to ensure that no nests are destroyed and that nesting activities of listed species are not disrupted: training personnel on vegetation to be avoided and removed; flagging specific areas to be avoided; training personnel on avoidance and minimization measures; regularly inspecting work activities; and providing direct supervision of management activities when necessary.

<sup>3</sup> The monitoring biologist will be familiar with the listed species that potentially occur in the affected habitat (i.e., gnatcatcher) and its breeding behavior.

*become large masses that degrade the functions and services provided by any of the conserved habitats.*<sup>4</sup>

Monitoring Summary: GLA conducted an annual walk-through survey to qualitatively monitor for weed invasions and invasive species within or adjacent to preserved waters of the U.S. on June 8, 2021. In general, the USACE/SWRCB mitigation sites currently appear to be very stable with established native habitat present; however, roads adjacent to the mitigation sites should continue to be maintained to prevent encroachment of invasive species (i.e., fennel, mustard, and other non-native grasses and weeds). Artichoke thistle and a single tamarisk were present within the wetland and were recommended for removal. Additionally, annual non-native grasses and weeds (i.e., Italian thistle, sow thistle, and rabbitsfoot grass) were abundant within the wetland; however, since these are common annual weeds and are not impeding the wetland function, removal is not recommended at this time. No other issues or recommendations were made regarding invasive species or weed invasions.

- III. *Task: Each year's annual walk-through survey (or a supplemental survey) will include an assessment of potential infestations of invasive insects and other pathogens that can threaten native habitat within preserved waters of the U.S. 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, Regulatory Agencies, and the Wildlife Agencies on any appropriate control actions.*

Monitoring Summary: On March 22, 23, and 24, 2021, Dudek arborists evaluated trees within the USACE/SWRCB mitigation areas and 50-foot buffer for invasive shot hole borer (*Euwallacea fornicatus*; ISHB), goldspotted oak borer (*Agrilus auroguttatus*; GSOB), and other invasive insects and pathogens and none were found. A report detailing the results of the tree survey is attached to the Annual Monitoring Report as Appendix E.

GLA documented a few stressed oaks associated with Drainage 2 during biological monitoring on November 1, 2021. Dudek arborists conducted a site visit on January 19, 2022 to evaluate the oaks and determined they are stressed due to drought conditions. No sign of GSOB was observed, only ambrosia beetles, which are a secondary pest that attack stressed oaks. Removal of the trees was not recommended.

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<sup>4</sup> Monitor and maintain control over target invasive plant species that threaten native plant communities within the USACE mitigation site, including cardoon (*Cynara cardunculus*), giant reed (*Arundo donax*), Mexican fan palm (*Washingtonia robusta*), pampas grass (*Cortaderia selloana*), shortpod mustard (*Hirschfeldia incana*), tree tobacco (*Nicotiana glauca*), salt cedar (*Tamarix ramosissima*), and wild oats (*Avena fatua* and *A. barbata*). These species are targeted due to their level of invasiveness within onsite habitats, rated as "high" or "moderate" by the California Invasive Plant Council (Cal-IPC). Monitor other potential infestations of invasive insects and other pathogens that can threaten native habitat within preserved waters of the U.S. The site will be monitored on an annual basis to ensure that the property maintains its biological functions and conservation value and does not degrade due to invasive plant species, trespassing, or illegal dumping.



## B. Security, Safety, and Public Access

### Element B.1 - Trash and Trespass Monitoring, Enforcement, and Repair

- I. *Task: Approved trails, roads, and recreational activities (see Section 3.1.3 of RMP, "Ferber Ranch Public Access Plan") shall be located outside of preserved waters of the U.S. 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.*

Monitoring Summary: No trails, roads, and recreational activities were located within preserved waters of the U.S. The Preserve Manager enforced public access guidelines and ensured that only permitted recreation and general access activities occurred within the Preserve.

- II. *Task: As needed, and at least once yearly collect and remove all observed trash and repair and rectify vandalism and trespass impacts within the USACE mitigation site.*

Monitoring Summary: The USACE mitigation sites were monitored for trash and none was observed. Although there is occasional trespass documented on the Preserve, including as described below under C.II., none was documented in or near USACE/SWRCB mitigation areas over the past year.

## C. Infrastructure and Facilities<sup>5</sup>

### Element C.1 - Signs, Fences, and Gates

- I. *Initial Task: Develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources and preserved waters of the U.S. during fire suppression activities, to the degree feasible. Post-fire response shall be consistent with Section 3.5.3 of the RMP, "Post-Fire Response".*

Status: In consultation with the local fire authority, OCTA is preparing fire management plans (FMPs) for each OCTA Preserve. The goal of this effort will be to develop FMPs that are easily implementable, establishes a framework for long-term benefits and protection, and guides decision-makers via policies and guidelines. The FMPs will address all stages of fire management: prevention, vegetation management, suppression, and post-fire responses and will help OCTA make decisions regarding fire management that also reflect conservation and stewardship responsibilities. The Trabuco Rose Preserve FMP has been drafted through coordination with Orange County Fire Authority. It is anticipated that the Trabuco Rose plan will be completed in 2022.

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<sup>5</sup> Signs, fences, and gates are not within the mitigation area, but are being utilized to control trespass into the mitigation site at other access points on the property. Fence and gate maintenance and repair frequency will be dependent on trespass and access control issues. There is no existing infrastructure within the USACE mitigation site that may require repairs such as culverts, riprap, and or gabion structures.

- II. *Task: During each annual site visit, record condition of signs, fences, and gates. Record location, type, and recommendations to implement fence and/or gate repair or replacement, if applicable.*

Monitoring Summary: On March 3, 2021, OCTA informed GLA regarding an encroachment onto the Preserve from an adjacent property in the southwest boundary [see Annual Report - Exhibit 5]. The perimeter fencing had been cut and a previously unmapped trail was observed leading from the property onto the Preserve. On March 17, 2021, OCTA, GLA, and RECON met onsite to review the encroachment and discuss options to deter trespass in this area. RECON installed additional signage and repaired the fence. GLA installed a wildlife camera for tracking unauthorized use in this area. No usage has been documented in this area since the adaptive measures were implemented. Additionally, the neighbor has moved out. No signs, fencing, or gates are currently in need of repair or replacement. The fencing is checked on an annual basis to ensure that the wires do not have slack that could ensnare wildlife. Although there is occasional trespass documented on the Preserve, none has been documented in or near USACE/SWRCB mitigation areas over the past year.

- III. *Task: Maintain fences and gates as necessary by replacing posts, wire, and/or gates. Replace signs, fences and/or gates, as necessary. Signage or fencing will be located at potential access points to deter unapproved access to preserved waters of the U.S. (see Section 3.7.4, "Signage" of the RMP).*

Monitoring Summary: RECON repaired the fencing as described above and also repaired two gates.

## D. Cultural Resources

### Element D.1 - Management of Cultural Resources

- I. *Task: Preserve Manager will follow directives set forth in the Archeological Sensitivity Assessment (ASA) of how and where cultural resources need to be protected, and the Preserve Manager will use this information to help ensure that activities on the Preserve do not impact any sensitive cultural resources. These include: monitoring by a qualified archaeologist for any ground-disturbing activities within 100 feet of culturally sensitive areas; and if significant portions of the Preserve are ever burned by a wildfire, sensitive areas will be resurveyed for archaeological resources.*

Status: No management activities with the potential to affect cultural resources were conducted.

## J. Reporting and Administration

### Element E.1 – Program Management

- I. *Task: Coordinate long-term management activities with land manager staff and/or third-party contractors conducting work on the Preserve (i.e., biologists, habitat restoration ecologists, and/or maintenance contractors).*

Status: The Preserve Manager (OCTA) coordinated long-term management activities as-necessary with the entities described above. Specifically, OCTA coordinated biological monitoring and habitat restoration activities with GLA as described in this Annual Report, while maintenance activities were coordinated with RECON.

- II. *Task: Coordinate as needed with the fire department, police department, utility and easement holders, and/or adjacent land owners regarding encroachment issues, transients, or illegal activities, access, or other reasons, as needed.*

Status: No encroachment issues, transients, or illegal activities, access, etc., were documented in USACE/SWRCB mitigation areas on the Preserve and as such, this coordination was not necessary.

## Element E.2 – Conservation Easement Enforcement

- I. *Task: This task will be carried out by OCTA or a third-party easement holder and consists of review of the conservation easement and one annual inspection to assess the condition of native and non-native plant species coverage; erosion and sedimentation; hydrology and water quality; signage, fencing, and gates; trespassing/vandalism; general site condition; and will identify remedial measures necessary to maintain site compliance, as applicable. The inspection results and completion of general and habitat maintenance activities described above, corrective actions (if any), and prohibited activities (if any) will be discussed in annual reports (described below).*

Status: Although the conservation easement has not been recorded, biological monitoring is ongoing. As documented throughout this annual monitoring form, the Trabuco Rose Preserve is in good condition. Waters of the U.S. are in stable condition regarding erosion/aggradation and native vegetation communities and composition. No major issues with invasive species or weed invasions were noted. No water quality issues were observed. Signage, fencing, and gates were checked throughout the Preserve and fixed as-needed. The USACE/SWRCB mitigation and buffer areas were monitored for trash and none was observed. Although there are signs of occasional trespass documented via wildlife cameras on the Preserve (not documented in USACE/SWRCB mitigation or buffer areas), including as described above under C.II., none was documented in or near USACE/SWRCB mitigation areas over the past year. As discussed above, roads adjacent to USACE/SWRCB mitigation areas should continue to be maintained to prevent the spread of invasive annual weeds and grasses and invasive species removal should continue to be conducted as-needed for artichoke thistle and tamarisk. No other recommendations were necessary.

## Element E.3 – Annual Report

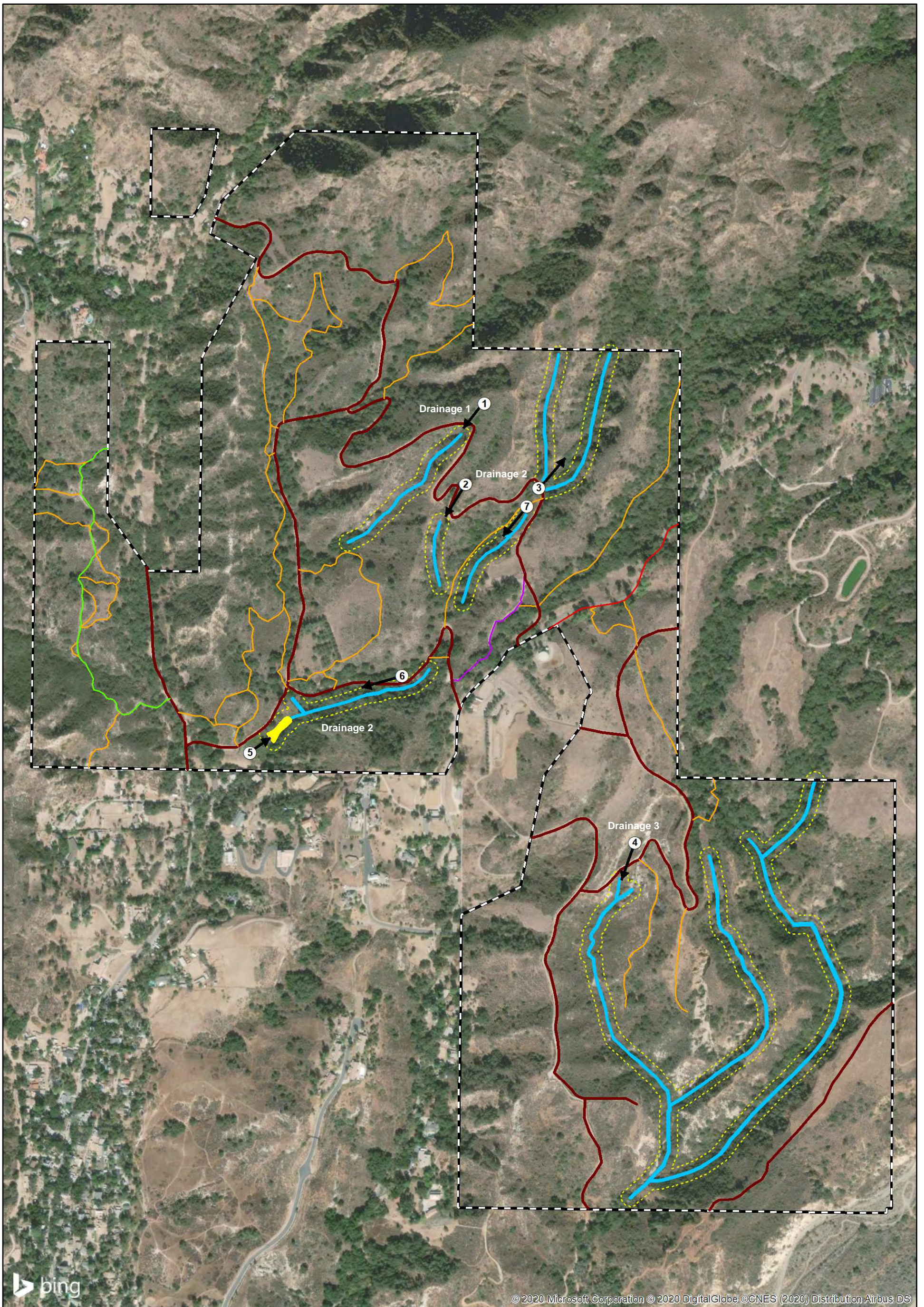
- I. *Task: Prepare a summary of general USACE mitigation site conditions/monitoring results and management activities for inclusion in the M2 NCCP/HCP Annual Progress Report, which will be submitted per the RMP.*

Monitoring Summary: GLA biologists conducted monitoring of the USACE/SWRCB mitigation site and adjacent buffer areas on the Trabuco Rose Preserve on June 8, 2021. On March 22, 23, and

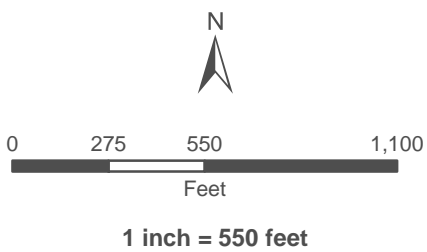
24, 2021, arborists from Dudek evaluated trees within the USACE/SWRCB mitigation areas and 50-foot buffer for ISHB, GSOB, and other invasive insects and pathogens and none were found. Overall, the Preserve is in good condition. Waters of the U.S. are in stable condition regarding erosion/aggradation and native vegetation communities and composition. A few oak trees associated with Drainage 2 are stressed due to drought conditions. No major issues with invasive species or weed invasions were noted. No water quality issues were observed. Fencing in the southwestern corner of the Preserve was cut for access by a neighbor; however, the fencing has been repaired and the neighbor no longer lives there. Additional signage was installed along with a wildlife camera to track trespass in the encroachment area. Two Preserve gates were repaired by RECON. No signs, fencing, or gates are currently in need of repair or replacement. The USACE/SWRCB mitigation and buffer areas were monitored for trash and none was observed. Although there is occasional trespass documented on the Preserve, none has been documented in or near USACE/SWRCB mitigation areas over the past year. As discussed above, roads adjacent to USACE/SWRCB mitigation areas should continue to be maintained to prevent the spread of invasive annual weeds and grasses and invasive species removal should continue to be conducted as-needed for artichoke thistle and tamarisk. No other recommendations were necessary.

- II. *Task: Make recommendations with regard to (1) any habitat enhancement or restoration measures deemed to be warranted, (2) any problems that need near term attention (e.g., weed removal, fence repair, erosion or aggradation control), and/or (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.*

Monitoring Summary: No habitat enhancement or restoration measures are warranted; no issues were documented that require near term attention, other than the recommended limited areas of invasive species removal and road maintenance to prevent the spread of invasive weeds and grasses; and no changes in the monitoring or management program are currently warranted based on 2021 monitoring results.



- Trabuco Rose Preserve Boundary
- Non-Wetland Preservation/Mitigation - 1.61 ac.
- Wetland Preservation/Mitigation - 0.14 ac.
- Corps 50-foot Buffer
- Dirt Roads
- Foot Trails (Decommissioned)
- Foot Trails (Preserve Management)
- Foot Trails (Public Access)
- Paved Road
- Photo Location



## TRABUCO ROSE PRESERVE

USACE/SWRCB Preservation/Photo Location Map

GLENN LUKOS ASSOCIATES



Exhibit 1



Photograph 1: Drainage 1 facing southwest. Photo dated June 8, 2021.



Photograph 2: Drainage 2 facing southwest. Photo dated June 8, 2021.



Photograph 3: Drainage 2 facing northeast. Photo dated June 8, 2021.

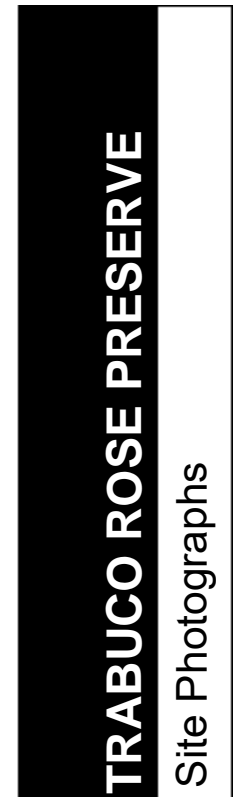


Photograph 4: Drainage 3 facing southwest. Photo dated June 8, 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2





Photograph 5: Drainage 2 facing northeast. Photo dated June 8, 2021.



Photograph 6: Drainage 2 facing southwest. Photo dated June 8, 2021.



Photograph 7: Drainage 2 facing south. Photo dated June 8, 2021.



GLENN LUKOS ASSOCIATES  
Exhibit 2

TRABUCO ROSE PRESERVE  
Site Photographs

## APPENDIX B

RECON Maintenance Memo - Provided as Appendix D to NCCP/HCP Annual Report



## APPENDIX C



August 5, 2021

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

**SUBJECT:** Results of Protocol Coastal California Gnatcatcher and Coastal Cactus Wren Surveys for Six Orange County Transportation Authority Preserves, Orange County, California.

Dear Ms. Love:

This letter report documents the results of protocol presence/absence surveys conducted by Glenn Lukos Associates, Inc. (GLA) for the federally listed threatened coastal California gnatcatcher (*Poliptila californica californica*) [CAGN] and the coastal cactus wren (*Campylorhynchus brunneicapillus*) [CAWR], a California Department of Fish and Game (CDFW) species of special concern, for six Orange County Transportation Authority (OCTA) Preserves located in Orange County [Exhibit 1 – Regional Map]. The Trabuco Rose, Wren’s View, Bobcat Ridge, and Live Oak Creek Preserves are located northwest of the City of Rancho Santa Margarita; the Silverado Chaparral Preserve is located in unincorporated Orange County; and the Pacific Horizon Preserve is located in the City of Laguna Beach. OCTA acquired all six Preserves to fulfill mitigation requirements under their approved Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) for highway improvement projects throughout Orange County. OCTA is required to conduct protocol surveys for the CAGN and CAWR every four years on their Preserves as part of their ongoing monitoring and management program under the NCCP/HCP.

Focused surveys for the CAGN and CAWR were conducted from March 16 to June 23, 2021, in all areas of potentially suitable habitat within the Preserves. The CAGN surveys were conducted as outlined in the February 28, 1997, U.S. Fish and Wildlife Service (USFWS) Presence/Absence Survey Guidelines, with modifications as identified in the approved Resource Management Plans (RMPs) for the OCTA Preserves.

A total of two CAGN territories, 51 CAWR territories, and seven CAWR individuals (where territories could not be determined) were identified within the OCTA Preserves.

## **1.0 SITE LOCATION AND DESCRIPTION**

### **Trabuco Rose Preserve**

The 399-acre Trabuco Rose Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon [Exhibit 2A – Vicinity Map] and is accessed from Trabuco Oaks Road and Rose Canyon Road. Trabuco Oaks Road becomes Hickey Canyon Road near the OCTA property line. The Preserve is located immediately adjacent to the CDFW-managed Hafen Reserve to the west and near other open space lands, including the Cleveland National Forest to the north, Trabuco Creek and O’Neill Regional Park to the south, and the Joplin Youth Center to the east, which is maintained predominately as open space. The Trabuco Rose Preserve is comprised of Accessor Parcel Numbers (APN) 842-041-08, 842-051-13, 842-011-28, and 842-011-27. Exhibit 3A depicts an aerial view of the Preserve boundary.

The Trabuco Rose Preserve contains 18 native vegetation communities including arroyo willow thickets, California sagebrush scrub, California sagebrush scrub/needle grass grassland, chamise-laurel sumac-lemonade berry chaparral with California sagebrush scrub, chamise chaparral, cliff/rock, coast live oak woodland, coast prickly pear scrub, giant wild rye grassland, laurel Sumac-lemonade berry chaparral with California sagebrush-California buckwheat scrub, mulefat thickets, needle grass grassland, needle grass grassland/semi-natural herbaceous stands, scale broom scrub, scrub oak chaparral, semi-natural herbaceous stands, semi-natural woodland stand, and white alder groves (Bonterra Psomas 2013). The Preserve supports 156.2 acres of scrub habitats.

### **Wren’s View Preserve**

The 119-acre Wren’s View Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon [Exhibit 2B – Vicinity Map], and is accessed from Trabuco Oaks Drive, Live Oak Canyon Road, and Trabuco Canyon Road. Live Oak Canyon Road becomes Trabuco Canyon Road south of the Preserve’s southern boundary. Surrounding land uses include the O’Neill Regional Park, miscellaneous agriculture, and areas of low density, rural and medium density residential development. The Wren’s View Preserve is comprised of APN 125-035-33. Exhibit 3B depicts an aerial view of the Preserve boundary.

The Wren’s View Preserve contains seven native vegetation communities including chamise–laurel sumac–lemonade berry chaparral with California sagebrush–California buckwheat scrub, scrub oak–toyon chaparral association, laurel sumac scrub–chamise chaparral association, California sagebrush scrub, California sagebrush–California buckwheat scrub, coast live oak woodland, and cliff/rock (Bonterra Psomas 2013). The Preserve supports 20.3 acres of scrub habitats.

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### **Bobcat Ridge Preserve**

The 48-acre Bobcat Ridge Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon [Exhibit 2C – Vicinity Map], immediately adjacent to the east side of Live Oak Canyon Road, north of its intersection with Shelter Canyon Road and is accessed from Live Oak Canyon Road, Shelter Canyon Road, and Hunky Dory Lane. Surrounding land uses include California Department of Fish and Wildlife’s (CDFW’s) Hafen property, Cleveland National Forest, O’Neill Regional Park, and areas of low density, rural residential development. The Bobcat Ridge Preserve is comprised of APN 856-042-18. Exhibit 3C depicts an aerial view of the Preserve boundary.

The Bobcat Ridge Preserve contains four native habitat communities including scrub oak chaparral, California sagebrush–California buckwheat scrub, coast live oak–California sycamore woodland association, and coast live oak woodland (Bonterra Psomas 2013). The Preserve supports 11.5 acres of scrub habitats.

### **Live Oak Creek Preserve**

The 84-acre Live Oak Creek Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon [Exhibit 2D – Vicinity Map] and is accessed from Live Oak Canyon Road approximately 0.3 mile from its intersection with El Toro Road/Santiago Canyon Road. Surrounding and nearby land uses include the Saddle Creek North Preserve, Cleveland National Forest, Live Oak Plaza Conservation Area, miscellaneous agricultural and commercial, St. Michael’s Preparatory School, and areas of low density, rural residential development. The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 1,160 to 1,600 feet above mean sea level (msl). Two principal ephemeral drainages that flow in a westerly direction occur on the property: one adjacent to Live Oak Canyon Road and the other in the center of the property. The Live Oak Creek Preserve is comprised of APNs 856-021026 and 856-021-27. Exhibit 3D depicts an aerial view of the Preserve boundary.

The Live Oak Creek Preserve contains eight native vegetation communities including scrub oak chaparral, laurel sumac scrub–toyon chaparral, California sagebrush scrub, California sagebrush–white sage scrub association, needle grass grassland, semi-natural herbaceous stands, California sycamore woodland, and coast live oak woodland (Bonterra Psomas 2013). The Preserve supports 11.5 acres of scrub habitats.

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### **Silverado Chaparral Preserve**

The 204-acre Silverado Chaparral Preserve is located in unincorporated Orange County, east of the cities of Orange and Irvine [Exhibit 2E – Vicinity Map]. Baker Canyon Road is to the north, Ladd Canyon Road is to the east, Silverado Canyon Road is to the south, and Black Star Canyon Road is to the west. The Preserve is accessed from Black Star Helo Pad Road and Hall Canyon Road in the northwest portion of the site. Both of these roads are dirt roads off of Baker Canyon Road. The property is within the Cleveland National Forest administrative boundary and Cleveland National Forest land holdings are to the north and east of the Preserve. The western edge of the Preserve is immediately adjacent to County of Orange open space managed by the Irvine Ranch Conservancy. Low density rural residential development occurs along Silverado Canyon Road south of the property, and a recreational vehicle (RV) park occurs to the north along Baker Canyon Road. The Silverado Chaparral Preserve is comprised of APNs 105-051-06 and 105-051-08. Exhibit 3E depicts an aerial view of the Preserve boundary.

The Silverado Chaparral Preserve contains eight native vegetation communities including southern mixed chaparral, open southern mixed chaparral, California sagebrush scrub, mixed sage scrub, southern coast live oak riparian forest, poison oak scrub, coast live oak woodland, and cliff/rock (Bonterra Psomas 2015). The Preserve supports 198.57 acres of scrub habitats of which 40.35 acres consists of California sage brush scrub and mixed sage scrub..

### **Pacific Horizon Preserve**

The 150-acre Pacific Horizon Preserve is located east of Pacific Coast Highway in the City of Laguna Beach in Orange County [Exhibit 2F – Vicinity Map]. The northwestern edge of the property is adjacent to residential development along Barracuda Way and Loretta Drive, while the southeastern edge of the property is adjacent to The Ranch at Laguna Beach (The Ranch). The northern and eastern boundaries abut open space in Aliso and Wood Canyons Wilderness Park. The Pacific Horizon Preserve is comprised of APN 056-240-66. Exhibit 3F depicts an aerial view of the Preserve boundary.

The Pacific Horizon Preserve contains 12 native vegetation communities including southern mixed chaparral, mixed sage/chaparral scrub ecotone, coyote brush scrub, mixed sage scrub, disturbed mixed sage scrub, mixed sage/cactus scrub, annual grassland, *Elymus* grassland, needle grass grassland, clustered tarweed field, and ruderal cliff/rock (Bonterra Psomas 2015). The Preserve supports 67.31 acres of scrub habitats.

## **2.0 METHODOLOGY**

Protocol surveys for the CAGN were conducted as outlined in the February 28, 1997, U.S. Fish and Wildlife Service (USFWS) Presence/Absence Survey Guidelines, with modifications as identified in the approved Resource Management Plans (RMPs) for the OCTA Preserves. Specifically, the RMPs state that two surveys will be conducted in late winter/early spring in suitable habitats with at least one week between site visits. The biologist conducted all visits during the morning hours up until noon and surveyed no more than 100 acres of suitable habitat per visit. A third survey was conducted for Trabuco Rose and Pacific Horizon primarily due to a combination of factors including but not limited to; the large size of each Preserve, difficulty in accessibility, and for Preserves where GLA had negative survey results, but were aware that CAGN were previously documented on site.

All of the Preserves except for Trabuco Rose constituted one CAGN/CAWR survey polygon. Due to the size and amount of suitable habitat, Trabuco Rose was divided into three survey polygons to allow for complete coverage of the site. Two survey polygons were located north of Trabuco Oaks Drive and Rose Canyon Road. A third polygon was located south of Rose Canyon Road and continued down to Trabuco Creek.

GLA biologist Jeff Ahrens (TE 052159-5) conducted the presence/absence surveys. GLA biologist Stephanie Cashin (non-permitted) accompanied Mr. Ahrens on all but two of the focused surveys. Areas of suitable habitat were surveyed by walking slowly and methodically through the habitat, utilizing game trails and natural openings to navigate through the vegetation. Care was taken to avoid trampling vegetation. The presence/absence of CAGN was determined through vocalization and visual identification. If a CAGN was not first detected audibly, a combination of gnatcatcher vocalization recordings and “pishing” sounds were then employed (as needed, depending on the vegetation density and topography) to elicit responses from gnatcatchers.

Per the Preserves RMPs, focused CAWR surveys were conducted concurrently with the CAGN surveys following the same survey protocol. As with the CAGN methodology, when necessary, taped CAWR vocalizations were employed to elicit responses. Both Mr. Ahrens and Ms. Cashin are very familiar with the Preserves and areas of suitable habitat. The surveyors scanned suitable cactus patches for evidence of CAWR nests and/or roosts.

Weather conditions during the surveys were conducive to a high level of bird activity. All surveys were conducted during the morning hours and were completed before 12:00 P.M. No surveys were conducted during extreme weather conditions (i.e., winds exceeding 15 miles per hour, rain, or temperatures above 35°C/95°F). Table 1 summarizes the survey dates/times and weather conditions.

**Table 1. Summary of Survey Dates and Weather Data.**

Date	Preserve	Survey Time	Temperature (°F)	Cloud Cover (%)	Wind Speed (Mph)	Surveying Biologists
<b>Trabuco Rose</b>						
3/22/21	Trabuco Rose	0610-1200	45/62	50/50	1-2/2-4	JA/SC
3/23/21	Trabuco Rose	0610-1200	45/62	50/50	1-2/2-4	JA/SC
3/26/21	Trabuco Rose	0600-1200	45/60	50/30	1-3/2-3	JA/SC
4/5/21	Trabuco Rose	0615-1200	50/70	0/0	1-2/1-2	JA/SC
4/6/21	Trabuco Rose	0600-1145	50/63	0/0	1-2/2-3	JA/SC
4/7/21	Trabuco Rose	0610-1200	53/73	0/0	2-3/2-3	JA/SC
6/8/21	Trabuco Rose	0625-1100	54/73	100/50	1-3/2-3	JA/SC
<b>Wren's View</b>						
3/17/21	Wren's View	0625-1145	41/46	0/0	1-2/2-3	JA/SC
4/8/21	Wren's View	0600-1030	52/68	0/0	1-2/1-3	JA/SC
<b>Bobcat Ridge</b>						
3/16/21	Bobcat Ridge	0630-0840	41/46	0/0	2-3/2-3	JA/SC
4/9/21	Bobcat Ridge	0900-1200	56/67	0/0	1-2/2-3	JA/SC
<b>Live Oak Creek</b>						
3/16/21	Live Oak Creek	0845-1200	47/56	0/0	1-2/2-4	JA/SC
4/9/21	Live Oak Creek	0600-0845	47/53	0/0	1-2/1-2	JA/SC
<b>Silverado Chaparral</b>						
3/19/21	Silverado Chaparral	0625-1200	46/70	0/0	1-3/3-4	JA/SC
4/13/21	Silverado Chaparral	0630-1030	52/53	100/100	1-2/2-4	JA/SC
<b>Pacific Horizon</b>						
3/18/21	Pacific Horizon	0620-1200	48/54	0/0	1-2/3-4	JA/SC
4/14/21	Pacific Horizon	0600-1130	54/61	100/50	1-2/1-3	JA
6/23/21	Pacific Horizon	0545-1120	61/75	70/40	1-2/2-3	JA

JA = Jeff Ahrens, SC = Stephanie Cashin (non-permitted)

### 3.0. RESULTS

One CAGN territory was identified within the Trabuco Rose Preserve, and one CAGN territory was identified within the Wren's View Preserve. In addition, one CAGN pair was identified off site, but within close proximity to the Trabuco Rose Preserve. A total of 51 CAWR territories were identified at five of the six Preserves and include Bobcat Ridge, Live Oak Creek, Silverado Chaparral, Trabuco Rose and Wren's View. In addition, seven additional CAWR individuals

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were identified at two Preserves (Trabuco Rose and Wren's View), however, territories could not be defined due to either brief encounter times or when CAWR were not observed in cactus scrub habitat. Mr. Ahrens and Ms. Cashin spent approximately 87 and 76 hours (respectively) of survey effort during the focused surveys. Detailed survey results for each Preserve are described below.

The brown-headed cowbird (*Molothrus ater*) which is a known nest parasite of many songbirds including the CAGN, was not detected within the Preserves during the focused surveys. However, it is expected that cowbirds do occur within and adjacent to some of the Preserves, especially in areas that support riparian habitat.

### **Trabuco Rose**

One CAGN pair was detected on April 7, 2021 along a ridgeline located near the Preserve's southernmost boundary. The CAGN pair was detected by tape playback in a relatively small patch of California sagebrush (*Artemisa californica*) and black sage (*Salvia mellifera*) intermixed with toyon (*Heteromeles arbutifolia*) during the second CAGN survey. Based on the observed behavior, the pair likely had young chicks in a nearby nest. In addition, a second CAGN pair was detected offsite (not depicted), during two surveys approximately 250 feet northeast of the Preserve's eastern boundary, below the County of Orange Joplin Youth Center.

Twenty-nine CAWR territories were identified within or partially within the Preserve boundary. An additional six CAWR individuals were mapped without their territories being defined, for a total of 35 distinct CAWR locations. Evidence of territoriality (e.g., counter singing), nest building, and active nesting (e.g., adult carrying food or fecal sac removal) was observed throughout the entire Preserve. CAGN and CAWR locations are depicted in Exhibit 4A.

Previous focused surveys last detected CAGN and CAWR in 2017 (Beck 2017).

### **Wren's View**

One CAGN pair was observed lining a nest in black sage on April 8, 2021, a few feet offsite of the northern Preserve boundary. Adults were seen flying well within the Preserve boundary. Historically, CAGN have been detected broadly onsite and offsite within this northern area.

Thirteen CAWR territories were identified within the Preserve boundary. One additional CAWR male as mapped for a total of 14 CAWR locations, but its territory was not determined. CAGN and CAWR locations are depicted in Exhibit 4B.



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Previous focused surveys last detected CAGN in 2012 (Psomas Bonterra 2013) and CAWR in 2017 (Beck 2017).

### **Bobcat Ridge**

No CAGN were detected at Bobcat Ridge. Four CAWR territories were identified within or partially within the Preserve boundary and are depicted in Exhibit 4C.

Previous focused surveys last detected CAWR in 2012 and CAGN have not been detected at this Preserve (Psomas Bonterra 2013 and Beck 2017).

### **Live Oak Creek**

No CAGN were detected at Live Oak Creek. Four CAWR territories were identified within the Preserve boundary and are depicted in Exhibit 4D.

The CAGN has not been detected during previous focused surveys (Psomas Bonterra 2013 and Beck 2017). Previous focused surveys last detected CAWR in 2017 (Beck 2017).

### **Silverado Chaparral**

No CAGN were detected at Silverado Chaparral. One CAWR territory was identified in the southwestern most corner of the Preserve and is depicted in Exhibit 4E. Based on its behavior and observation of feathers in the nest entrance, the CAWR appeared to be nesting.

Previous focused surveys have not detected CAGN or CAWR at this Preserve before (OCTA 2017).

### **Pacific Horizon**

No CAGN or CAWR were detected at Pacific Horizon during the 2021 focused surveys.

Previous focused surveys last detected the CAGN on site in 2015 within the extreme northwest corner of the Preserve. (Beck 2017). In previous years, GLA has also observed CAGN in the northwest corner of the Preserve and offsite to the southwest of the Preserve's southernmost boundary.

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#### **4.0. LITERATURE CITED**

Beck, Christine 2017. California Gnatcatcher and Cactus Wren Presence/Absence Surveys on Five Orange County Transportation Authority Preserves, Orange County, California. 7 pp.

Bonterra Psomas 2013. Baseline Biological Surveys Technical Report for the South County Properties Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California. Prepared for OCTA, Orange, California. 142 pp.

Bonterra Psomas 2015. Baseline Biological Surveys Technical Report for the Aliso Canyon Property Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California. Prepared for OCTA, Orange, California. 76 pp.

Bonterra Psomas 2015. Baseline Biological Surveys Technical Report for the MacPherson Property Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California. Prepared for OCTA, Orange, California. 47 pp.

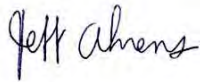
Orange County Transportation Authority 2017. Final MacPherson Preserve Resource Management Plan. 47 pp.

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If you have any questions regarding the findings of this report, please contact me at (949) 340-2521 or by email at jahrens@wetlandpermitting.com.

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

GLENN LUKOS ASSOCIATES, INC.



TE 052159-5

August 5, 2021

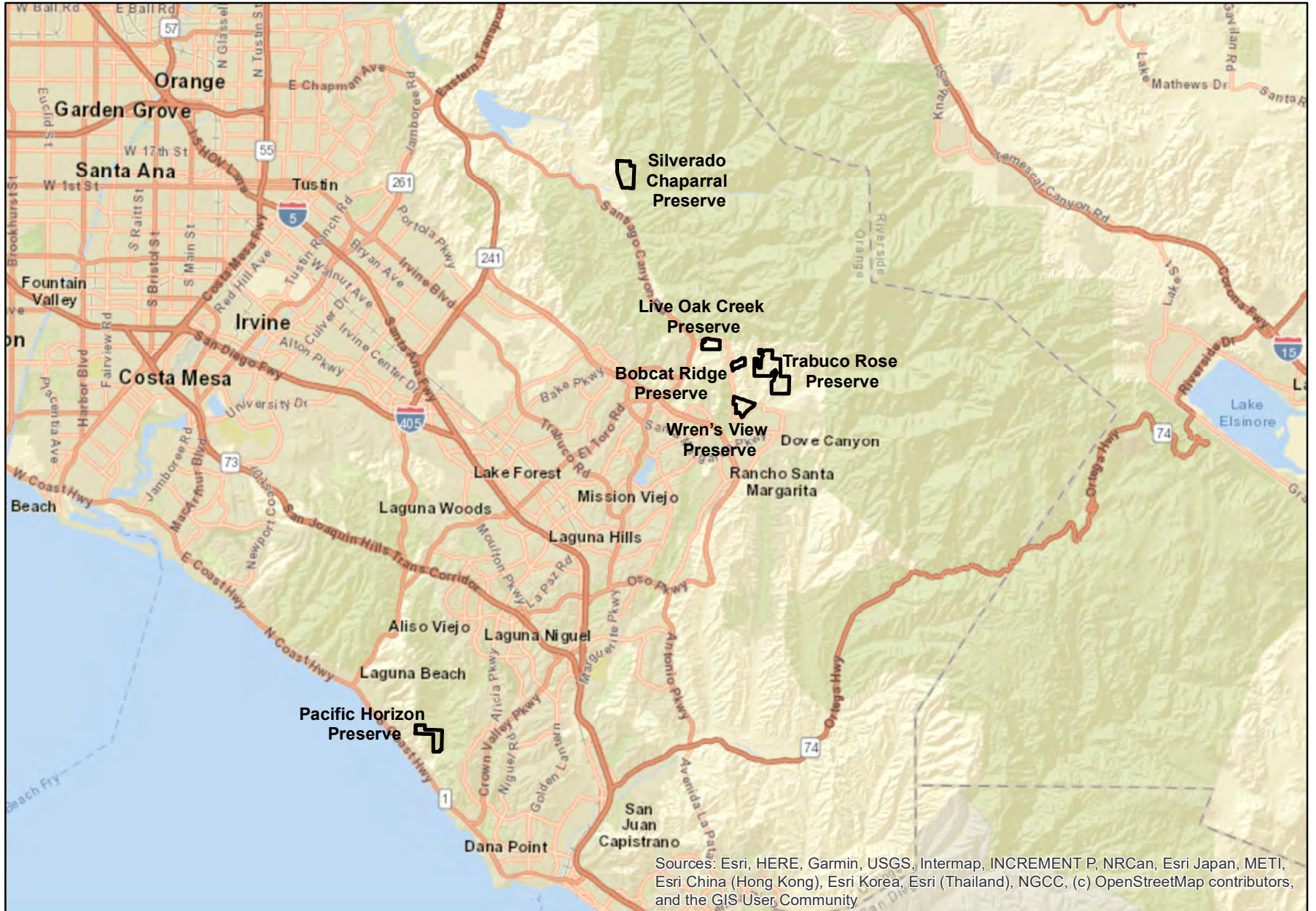
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Jeff Ahrens  
Biologist

Permit #

Date

Source: ESRI World Street Map



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# OCTA PRESERVES

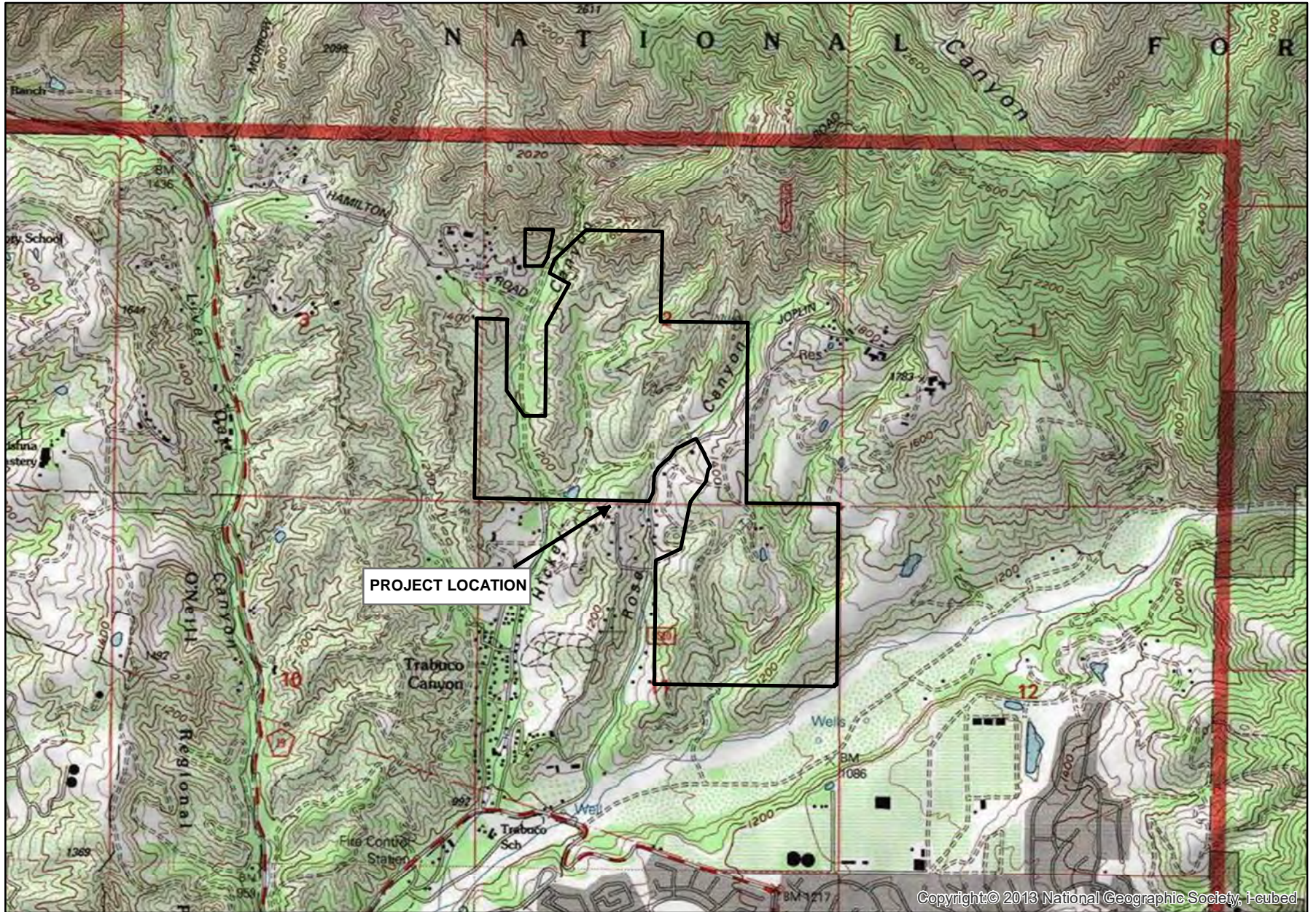
## Regional Map

# GLENN LUKOS ASSOCIATES

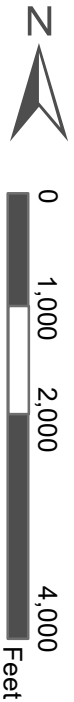


Exhibit 1

Adapted from USGS Santiago Peak, CA quadrangle



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# TRABUCO ROSE PRESERVE

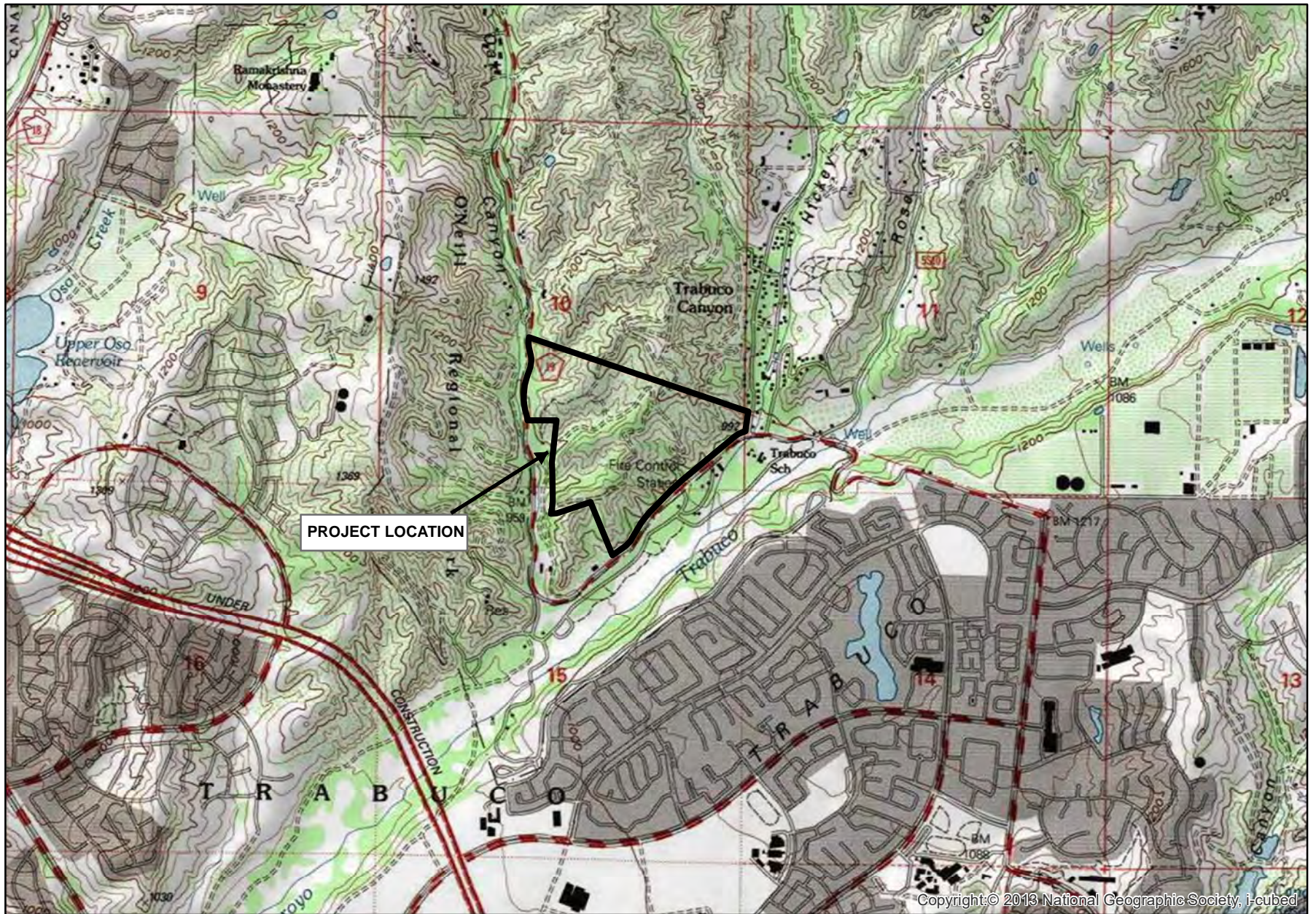
Vicinity Map

GLENN LUKOS ASSOCIATES

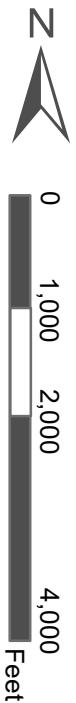


Exhibit 2A

Adapted from USGS Santiago Peak, CA quadrangle



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# WREN'S VIEW PRESERVE

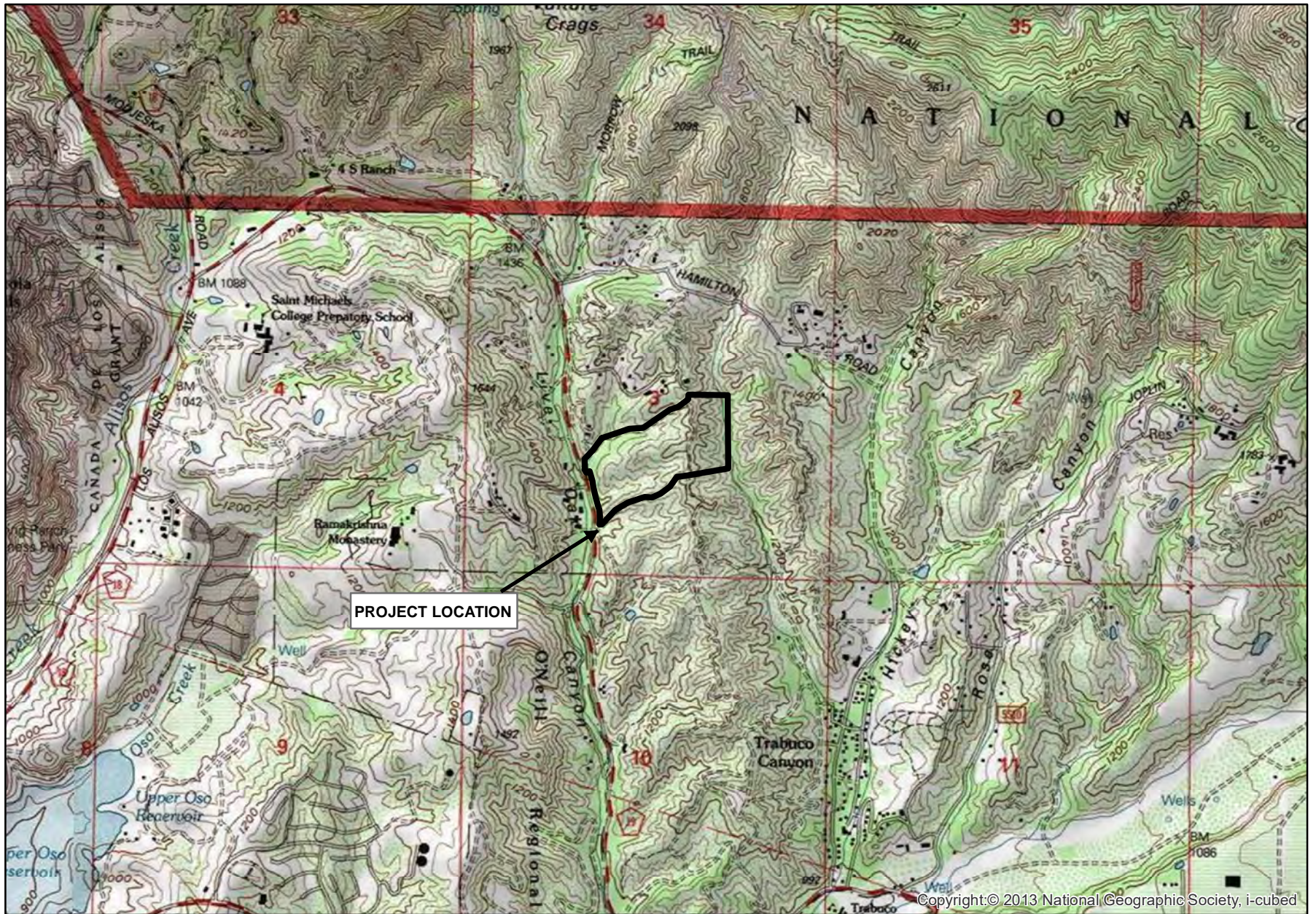
Vicinity Map

GLENN LUKOS ASSOCIATES



Exhibit 2B

Adapted from USGS Santiago Peak, CA quadrangle



# BOBCAT RIDGE PRESERVE

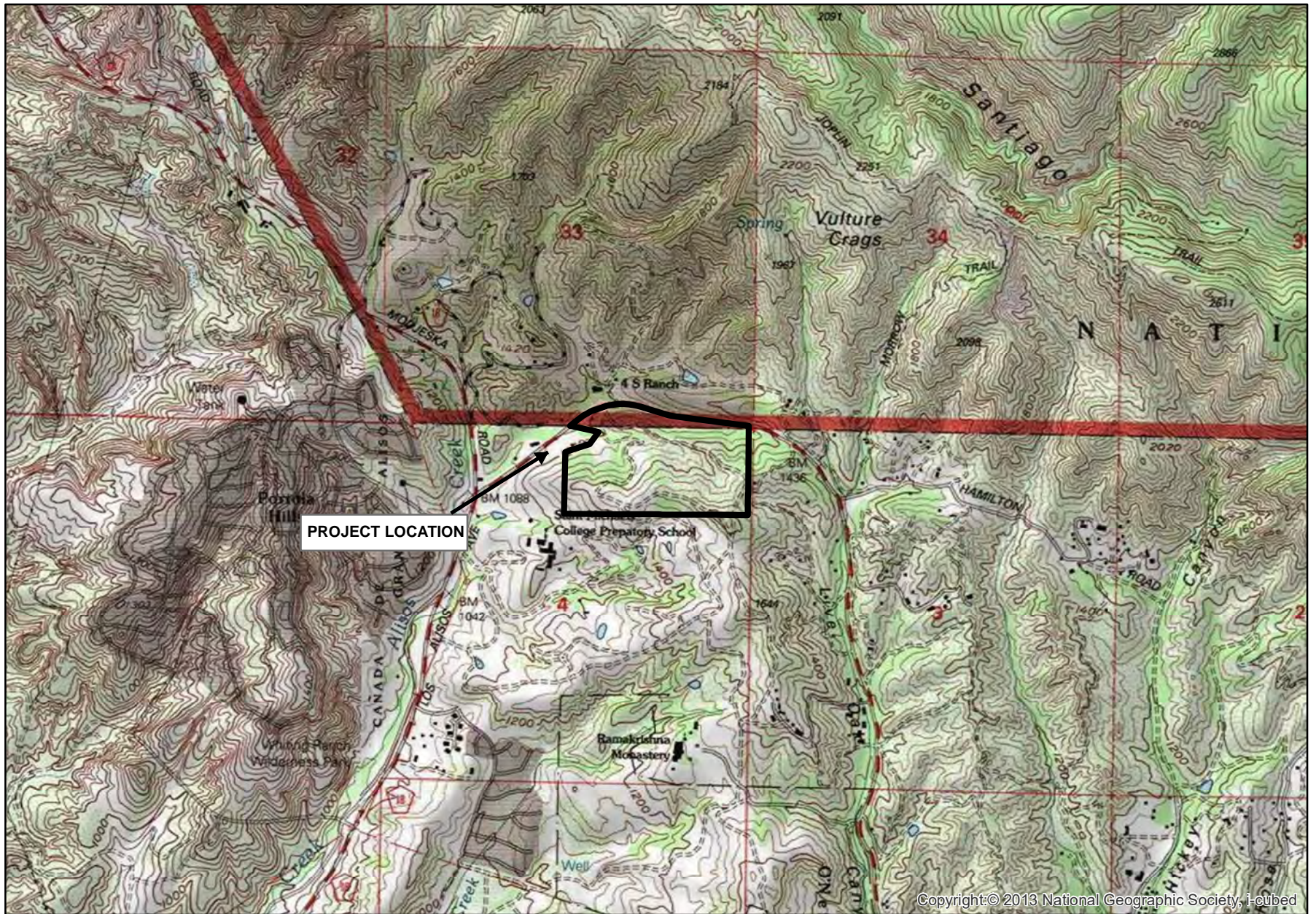
Vicinity Map

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Exhibit 2C

Adapted from USGS Santiago Peak, CA quadrangle



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# LIVE OAK CREEK PRESERVE

Vicinity Map

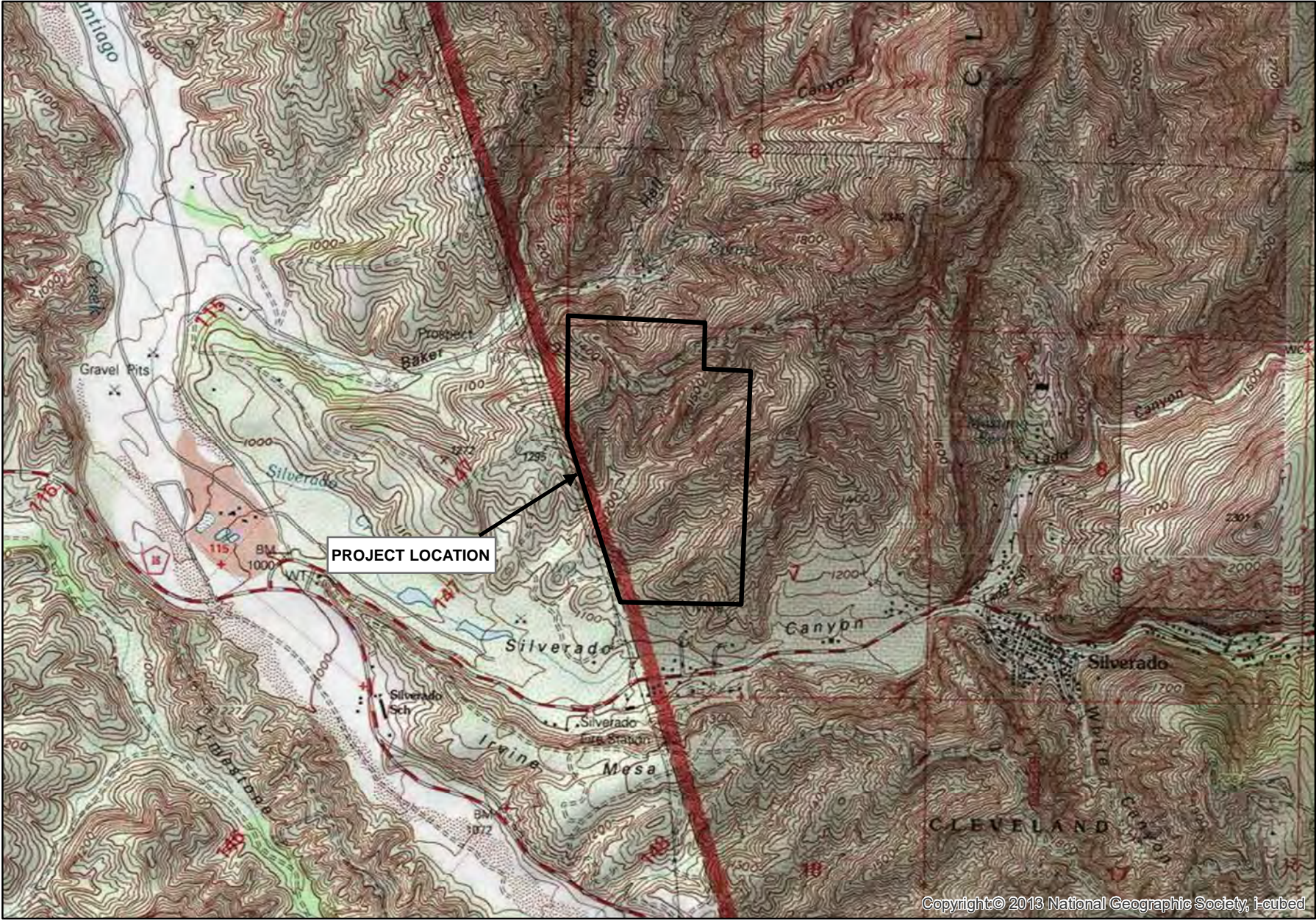
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Exhibit 2D



Adapted from USGS Black Star Canyon & El Toro, CA quadrangles



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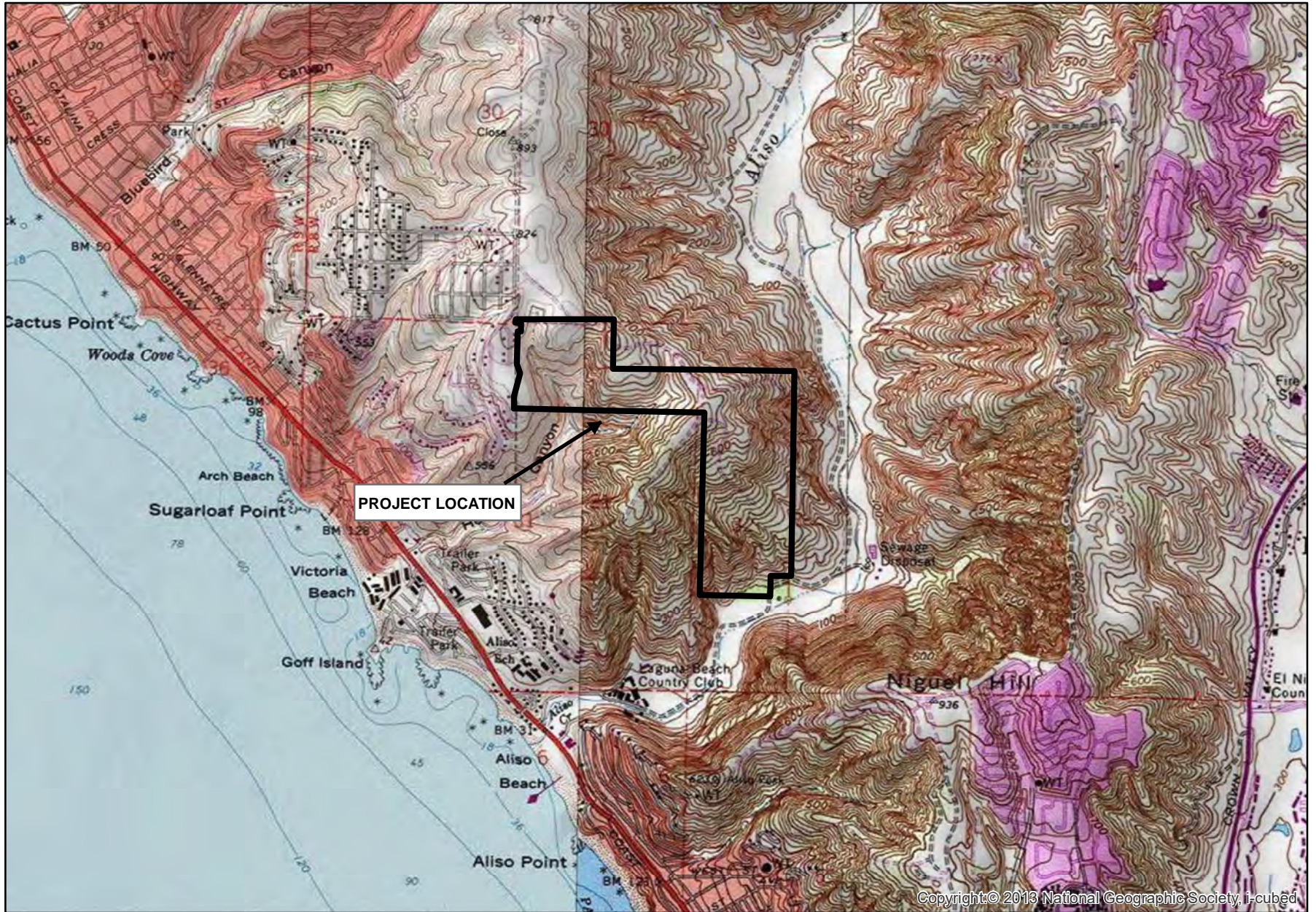
**SILVERADO CHAPARRAL PRESERVE**  
Vicinity Map

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Exhibit 2E

Adapted from USGS Laguna Beach & San Juan Capistrano, CA quadrangles



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**PACIFIC HORIZON PRESERVE**  
Vicinity Map

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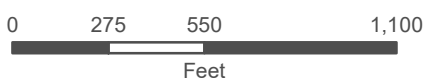


Exhibit 2F



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 Trabuco Rose Preserve Boundary



1 inch = 550 feet

## TRABUCO ROSE PRESERVE

Aerial Map

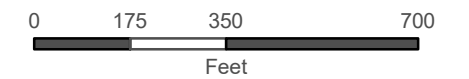
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Exhibit 3A



 Wren's View Preserve Boundary



1 inch = 350 feet

### WREN'S VIEW PRESERVE

Aerial Map

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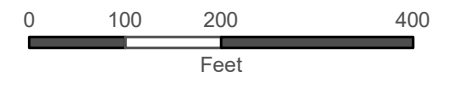


Exhibit 3B





 Bobcat Ridge Preserve Boundary



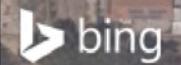
1 inch = 200 feet

**BOBCAT RIDGE PRESERVE**

Aerial Map


GLENN LUKOS ASSOCIATES 

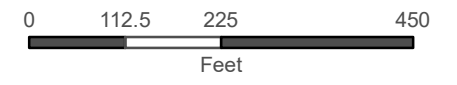
Exhibit 3C 





Live Oak Canyon Road

 Live Oak Creek Preserve Boundary



1 inch = 225 feet

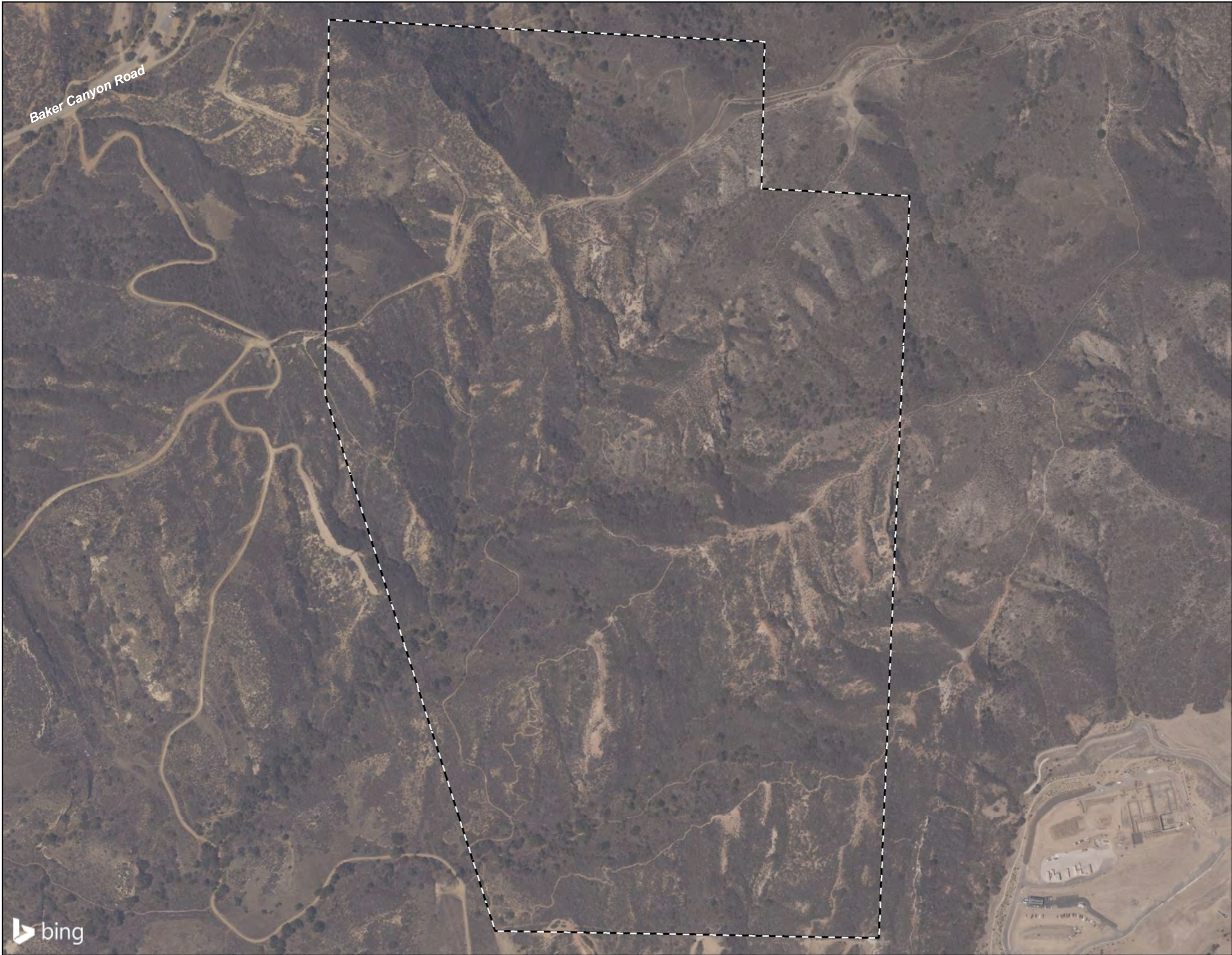
**LIVE OAK CREEK PRESERVE**

Aerial Map


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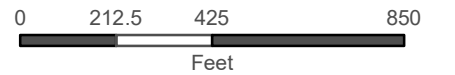
Exhibit 3D 





Baker Canyon Road

 Silverado Chaparral Preserve Boundary



1 inch = 425 feet

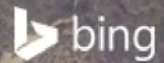
**SILVERADO CHAPARRAL  
PRESERVE**

Aerial Map

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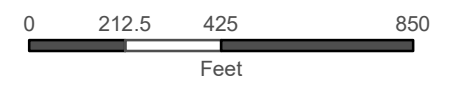


Exhibit 3E





 Pacific Horizon Preserve Boundary



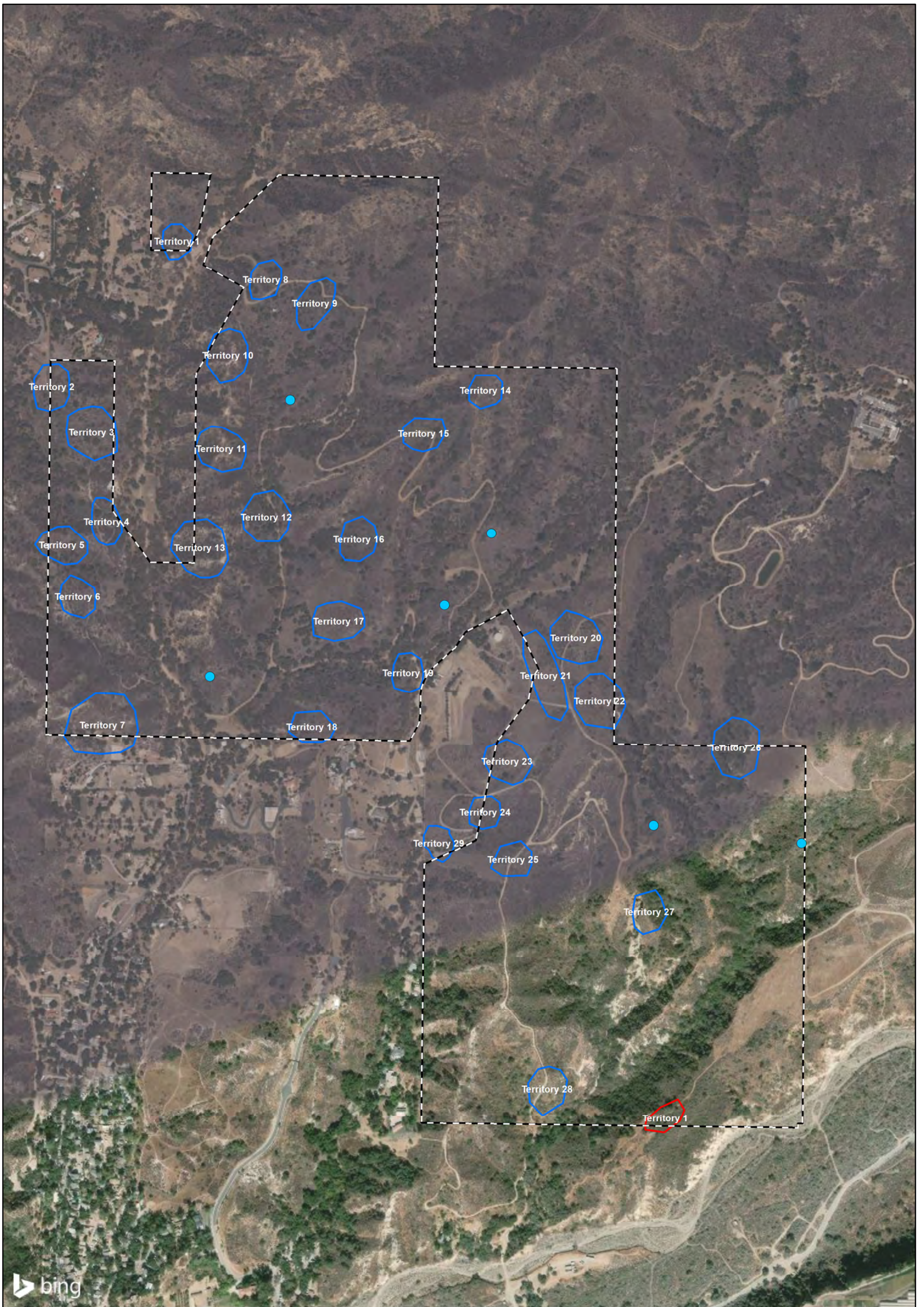
1 inch = 425 feet





**PACIFIC HORIZON PRESERVE**  
Aerial Map

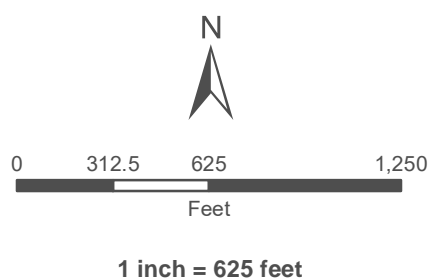
GLENN LUKOS ASSOCIATES   
Exhibit 3F







-  Trabuco Rose Preserve Boundary
-  CAGN Territory
-  CAWR Territory
-  Cactus Wren Territory not Determined







**TRABUCO ROSE PRESERVE**  
CAGN/CAWR Survey Results Map

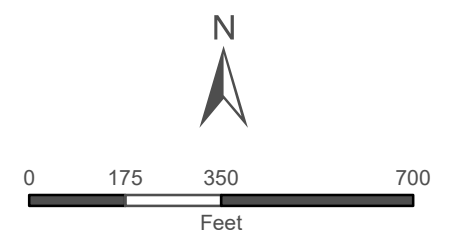
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Exhibit 4A



-  Wren's View Preserve Boundary
-  CAGN Territory
-  CAWR Territory
-  Cactus Wren Territory not Determined

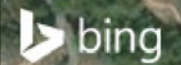


1 inch = 350 feet



**WREN'S VIEW PRESERVE**  
CAGN/CAWR Survey Results Map

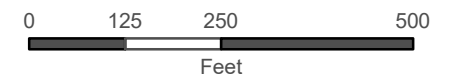
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Exhibit 4B





-  Bobcat Ridge Preserve Boundary
-  CAWR Territory



1 inch = 250 feet

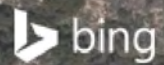
### BOBCAT RIDGE PRESERVE

CAGN/CAWR Survey Results Map


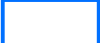
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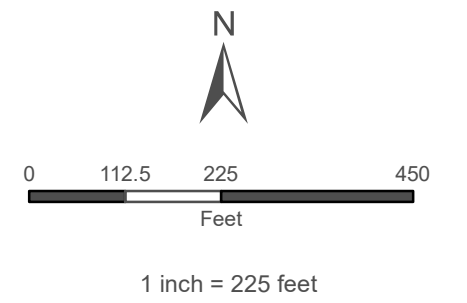


Exhibit 4C





-  Live Oak Creek Preserve Boundary
-  CAWR Territory





**LIVE OAK CREEK PRESERVE**  
CAGN/CAWR Survey Results Map

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Exhibit 4D





-  Silverado Chaparral Preserve Boundary
-  CAWR Territory



1 inch = 425 feet

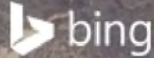
**SILVERADO CHAPARRAL  
PRESERVE**

CAGN/CAWR Survey Results Map

GLENN LUKOS ASSOCIATES

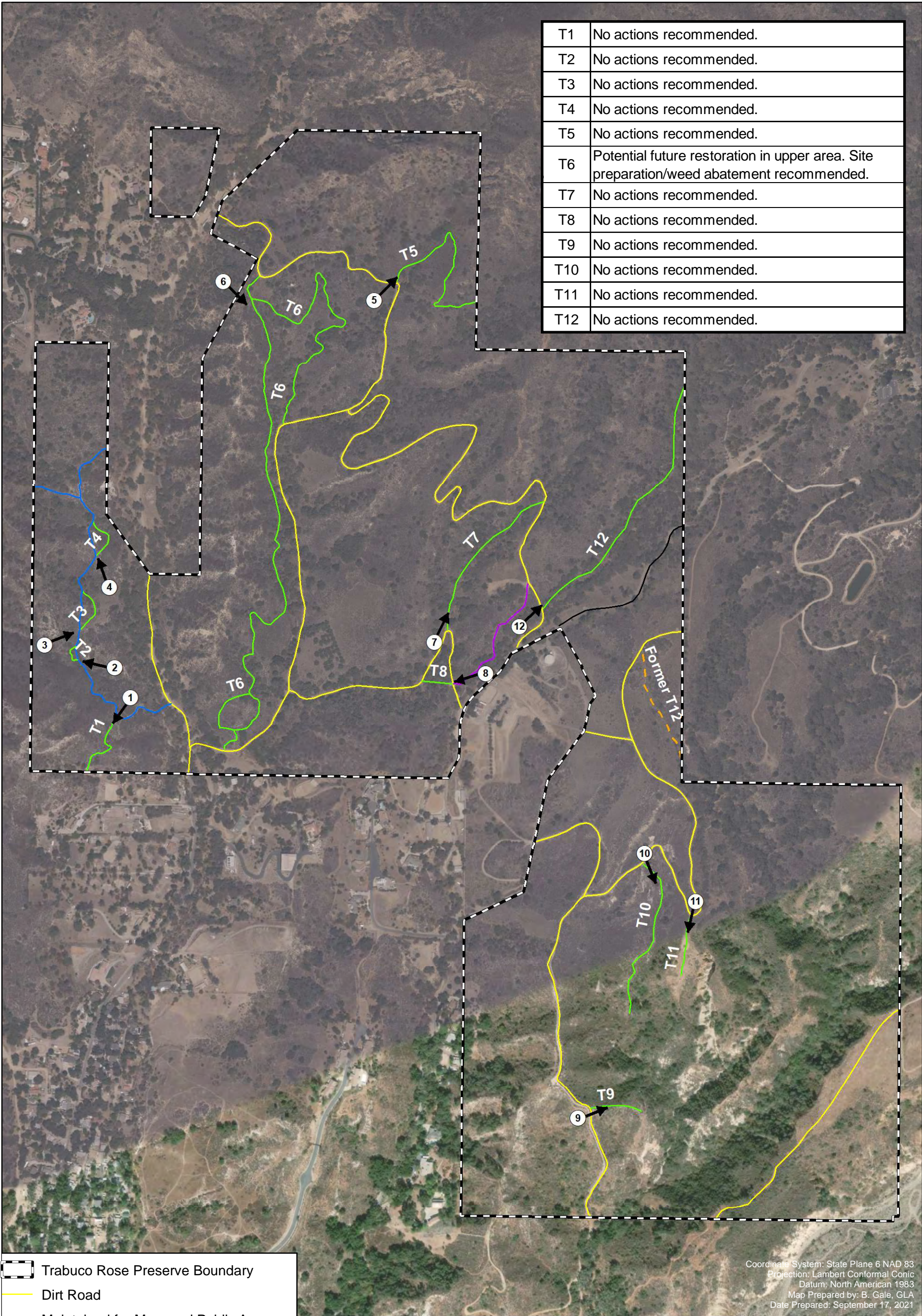


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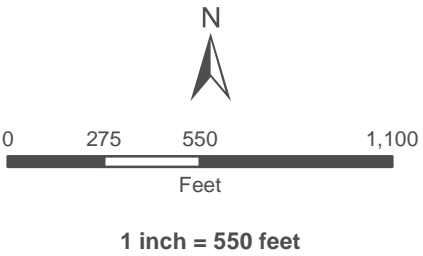
## APPENDIX D

T1	No actions recommended.
T2	No actions recommended.
T3	No actions recommended.
T4	No actions recommended.
T5	No actions recommended.
T6	Potential future restoration in upper area. Site preparation/weed abatement recommended.
T7	No actions recommended.
T8	No actions recommended.
T9	No actions recommended.
T10	No actions recommended.
T11	No actions recommended.
T12	No actions recommended.



-  Trabuco Rose Preserve Boundary
  -  Dirt Road
  -  Maintained for Managed Public Access
  -  Maintained for Preserve Management
  -  Passive Restoration
  -  Rose Canyon Road
  -  Passively Restored Trail (Formerly T12)
  -  Photo Location\*
- \*Approximate photo locations*

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: September 17, 2021



**TRABUCO ROSE PRESERVE**  
 Trail Monitoring Map - Year 2021


GLENN LUKOS ASSOCIATES 

Exhibit 1



Photograph 1: View of T1. Conditions consistent with previous years. Passively restoring with California sagebrush, black sage, and needle grass. No actions recommended at this time.



Photograph 2: View of T2. Trail is passively restoring with native shrub species including black sage and California sagebrush. No actions recommended at this time.



Photograph 3: View of T3 vegetated with non-native grasses (wild oats and red brome) mixed with needle grass. Appears to be only used by wildlife. No actions recommended at this time.



Photograph 4: View of T4. Trail is passively restoring and appears to be used by wildlife only. Annual non-native grasses and seedlings of native shrubs interspersed through the trail. Passive regeneration is slowly occurring. No actions recommended at this time.







Photograph 5: View of T5 entirely closed in with scrub. No actions are recommended.



Photograph 6: View of T6. The upper field above the trail is occupied primarily by annual non-native grasses. The trail itself is naturally filling in with native shrubs including California sagebrush, black sage, and California buckwheat. The upper field is targeted for future restoration with oak trees. Removal of annual weeds is recommended in this area to prepare the site for future restoration.



Photograph 7: View of T7. This trail has passively restored. While there are non-native grasses present, this area appears to be in natural condition consistent with other drainages onsite. No actions are recommended.



Photograph 8: View of T8. This area is passively restoring and no actions are recommended.





Photograph 9: View of Trail 9. Conditions remain consistent with previous years. No active restoration is recommended. Monitor for invasive species.



Photograph 10: View of T10. Animal trails exist through this area, with seedlings of native shrubs slowly filling in. This appears to be trafficked by wildlife on a regular basis and therefore the existing condition is expected to persist. No active restoration is recommended at this time.



Photograph 11: View of upper portion of T11. Spur trail. Vehicular access road. The lower (southern) portion of trail has closed in with native vegetation. No actions are recommended at this time. Monitor for invasive species.



Photograph 12: View of T12, which is a natural drainage course. No action is recommended.



## APPENDIX E

September 2, 2021

11788

Lesley Hill  
Project Manager, Environmental Mitigation Program  
Orange County Transportation Authority  
550 South Main Street  
Orange, California 92868

**Subject:** *Invasive Shot Hole Borer Monitoring, Emergent Pest Trapping and Goldspotted Oak Borer Surveys – OCTA Preserves, Orange County, California*

Dear Ms. Hill,

This letter report includes information from Dudek's invasive shot hole borer (*Euwallacea fornicatus*; ISHB) monitoring surveys in Wren's View and Trabuco Rose Preserves; ISHB emergent pest trapping at Wren's View, Trabuco Rose, Bobcat Ridge, and Live Oak Creek Preserves; and goldspotted oak borer (*Agrilus auroguttatus*; GSOB) extent surveys in Wren's View. All four preserves—Wren's View, Trabuco Rose, Bobcat Ridge, and Live Oak Creek—are owned and managed by the Orange County Transportation Authority (OCTA). Due to the previous on-site identification of ISHB by Dudek in 2018, 2019, and 2020 at Wren's View and Trabuco Rose, OCTA and Glenn Lukos Associates expressed concern over the level of infestation and possible spread of ISHB throughout these preserves. As such, OCTA requested that Dudek conduct ISHB monitoring and evaluation surveys to evaluate levels of ISHB infestation within these Preserves.

In addition to ISHB surveys, Dudek conducted GSOB surveys within Wren's View Preserve. GSOB was first observed within Wren's View Preserve in 2019 and the surrounding oak trees were subsequently treated by Orange County Fire Authority (OCFA) in 2020 and 2021. Due to the potential for GSOB to spread throughout the site, OCTA requested that Dudek inspect trees, over 8 inches in diameter at standard height (DSH), within 150 feet of those trees previously found to exhibit signs and/or symptoms of GSOB.

To that end, Dudek arborists certified by the International Society of Arboriculture conducted ISHB monitoring surveys within OCTA-managed Wrens View, Trabuco Rose, Live Oak Creek, and Bobcat Ridge preserves; ISHB emergent pest trapping at Wren's View, Trabuco Rose, Bobcat Ridge, and Live Oak Creek Preserves; and visual GSOB spread surveys within the Wren's View Preserve. The ISHB evaluations were limited to threaten native habitat and riparian tree species previously mapped within each preserve during the 2018, 2019, and 2020 ISHB surveys. Coast live oak (*Quercus agrifolia*) and other non-riparian species were not locally infested with ISHB and, therefore, were not evaluated for the presence of ISHB. As such, the 2021 ISHB surveys focused on collecting information for accessible riparian tree species (primarily sycamore and willow species) that could be used to estimate the level of ISHB infestation within the preserves and to provide recommendations for the short- and long-term management of the woodlands and pests.

## Assignment

Dudek's assignment included the following:

1. Evaluate previously mapped riparian tree species within threatened habitat within OCTA-managed Wrens View, Trabuco Rose, Live Oak Creek, and Bobcat Ridge preserves maintained by OCTA in Trabuco Canyon, California, for the presence of ISHB infestation.
2. Conduct emergent pest trapping at the following preserves: Bobcat Ridge, Live Oak Creek, Wren's View, and Trabuco Rose.
3. Inspect oak trees, over 8 inches in diameter at standard height (DSH), within 150 feet of those trees previously found to exhibit signs and/or symptoms of GSOB at Wren's View Preserve.
4. Develop a letter report documenting the survey observations and management recommendations.

## Methods

### **Invasive Shot Hole Borer Monitoring**

On March 22, 23, and 24, 2021, Dudek arborists certified by the International Society of Arboriculture conducted ISHB extent surveys limited to the previously mapped riparian tree species within managed Wrens View, Trabuco Rose, Live Oak Creek, and Bobcat Ridge preserves maintained by OCTA. Included in the survey was an assessment of potential infestations of invasive insects and pathogens that can threaten native habitat within 50 feet of preserved waters of the United States as shows in Attachment 1, Figure 17 USACE Preservation/Mitigation Map, prepared by Glenn Lukos Associates. The selection of riparian tree species was based on known ISHB-infested trees documented during the 2018, 2019, and 2020 ISHB presence and absence surveys conducted within OCTA Preserves. Dudek arborists evaluated approximately 161 riparian trees within the Trabuco Rose and Wren's View Preserve (134 tree in Trabuco Rose Preserve and 27 trees in Wren's View Preserve) evaluated approximately 1.61 acres of non-wetland preservation/mitigation areas, and 0.14 acres of wetland mitigation area located in Trabuco Rose (light blue drainages and yellow wetland polygon shown in Attachment 1), and conducted visual evaluations of riparian trees located within Live Oak Creek and Bobcat Ridge preserves. The locations of the individual mitigation preservation sites and individual trees are illustrated in Attachment 2, Riparian Tree Locations.

The evaluations included visiting previously mapped and evaluated trees in accessible riparian areas (primarily sycamore and willow species) and noting the presence or absence of ISHB. The surveys were conducted by Christopher LaCroix who visited each previously mapped and accessible riparian areas and trees and surveyed for potential signs and symptoms of the presence of ISHB. A tree was counted as infested (or attacked) if it had beetle holes, extrusions of sawdust plugs or frass, or gumming out of sap. The infestation level data collection is consistent with the data collection standards used by Orange County Parks for ISHB surveys. Infestation levels on select trees were categorized as none (no signs or symptoms), low (<50 entry holes), moderate (<50, <150 entry holes, no dieback), moderate II (>150 entry holes, no dieback), and heavy (>150 entry-holes, dieback). Dudek noted any additional pests or observed disease found in the observed trees. Individual evaluated tree locations are presented in Attachment 2, and details regarding each tree are presented in Attachment 3, Riparian Tree Matrices.

### **Emergent Pest Trapping**

To evaluate for the presence of ISHB in areas previously found to not be infested with ISHB, Dudek conducted emergent pest trapping over a 1-month period in March 2021 and ending in April 2021. To conduct emergent pest trapping, Dudek deployed six panel traps, with the chemical lure quercivorol (an ISHB attractant), throughout OCTA

managed lands. Specifically, panel traps were deployed at Bobcat Ridge (one trap), Live Oak Creek (one trap), Wren's View (two traps), and Trabuco Rose (two traps). The location of the six panel traps is presented in Attachment 4, Panel Trap Locations. The panel traps were deployed the last week of March and checked twice (April 7 and April 21, 2021) during the monitoring period. Panel traps found to have potential ISHB samples were submitted to the Waypoint Analytical for analysis.

### **Goldspotted Oak Borer Confirmation and Extent Mapping**

In addition to evaluating Wrens View for the continued presence of ISHB, Dudek concurrently evaluated Wrens View for the spread of GSOB. To evaluate the property for the spread of GSOB, Dudek performed an evaluation of the trees previously found to have GSOB, and inspected all coast live oak trees, over 8 inches in diameter at standard height (DSH), within 150 feet of those trees previously found to exhibit signs and/or symptoms of GSOB. Dudek evaluated the trees for additional signs of GSOB on April 14, 2021. It should be noted that this was not a comprehensive re-inventory or evaluation of the entire site. This task only evaluated those trees located within 150 feet of those previously identified to exhibit signs of GSOB. The location of the trees evaluated can be seen in Attachment 5 – GSOB Evaluation Area.

## **Findings**

### **Invasive Shot Hole Borer Monitoring**

Dudek arborists evaluated potentially threatened riparian habitat and western sycamore trees within Wren's View, Trabuco Rose, Bobcat Ridge, and Live Oak preserves. Specifically, the surveys re-evaluated 161 trees within Wren's View and Trabuco Rose Preserves; evaluated trees located within 50 feet of preserved waters of the United States for the presence of ISHB and other pests within Wren's View and Trabuco Rose Preserves; evaluated riparian trees located within a small drainage on the eastern edge of Bobcat Ridge; and performed a visual evaluation of Live Oak Creek Preserve. It should be noted that no riparian trees or western sycamores were observed at Live Oak Creek Preserve.

### **Trabuco Rose and Wren's View Preserves**

In summary, approximately 134 riparian trees were evaluated in Trabuco Rose Preserve, and 27 riparian trees were evaluated in Wren's View Preserve. Of the two preserve locations surveyed, each were found to contain riparian tree species that exhibit signs and symptoms of ISHB infestation. However, consistent with previous years, no trees located within 50 feet of preserved waters of the United States, identified in Attachment 1, were found to have invasive insects and pathogens.

Within the two preserves, 22 riparian trees (14 in Wren's View Preserve and 8 in Trabuco Rose Preserve) exhibited signs and symptoms of ISHB. The total number of riparian trees exhibiting signs of potential ISHB were consistent with previous years, and only two new trees, at Wren's View, exhibiting sign of ISHB. Signs of potential ISHB observed in these trees consisted of bore holes (perfectly round and <0.1 inches in diameter), bark staining (oily dark stain), and frass exudate (sawdust from boring). Symptoms of ISHB included discolored wood, leaf discoloration and wilting, and dieback of entire branches. Consistent with previous years, with the exception of one highly infested tree that was removed (tree 17 – Wrens View), infestation rates ranged from moderate to low. In total, 16 trees had low infestation rates (Trabuco Rose – 7 trees, Wren's View – 9 trees), and 6 trees had moderate infestation rates (Trabuco

Rose – 1 tree, Wren’s View – 5 trees), ISHB was not observed on any red willow (*Salix laevigata*), and only two newly infested trees (Tree nos. 9 and 10 – Wrens View) were observed immediately adjacent to previously identified ISHB sites. However, no trees located within 50 feet of preserved waters of the United States were found to have invasive insects and/or pathogens. Individual tree health information and infestation rates are presented in Attachment 3, and the location of the individual trees can be found in Attachment 2. No new pests and/or disease were observed on the either preserve.

### **Bobcat Ridge and Live Oak Creek**

Dudek performed visual surveys of riparian trees potentially infested with ISHB throughout Bobcat Ridge and Live Oak Creek Preserves. However, as previously stated no riparian species and/or western sycamore trees were observed at Live Oak Creek. As such, ISHB is not believed to be located within Live Oak Creek. Alternatively, Bobcat Ridge contains a small riparian area, consisting of western sycamore trees, along its eastern edge. Dudek’s arborist did not observe the presence of ISHB and/or any alternate pests within the riparian area located along the eastern edge of Bobcat Ridge. The eastern edge of Bobcat Ridge is an isolated location with few corridors for ISHB to travel into the site. Based on Dudek’s evaluation, ISHB is not located within Bobcat Ridge.

### **Emergent Pest Trapping**

Dudek monitored six panel traps located at Bobcat Ridge (one trap), Live Oak Creek (one trap), Wren’s View (two traps), and Trabuco Rose (two traps). The location of the six panel traps is presented in Attachment 4. Four panel traps, located at Trabuco Rose (two traps) and Wren’s view (two trap), were submitted to the Waypoint Analytical. No ISHB samples were collected or identified within Bobcat Ridge or Live Oak Creek. The four panel traps submitted for evaluation were found to contain several samples that were morphologically consistent with ISHB. The results of the Waypoint Analytical evaluation are presented in Attachment 6, Waypoint Analytical Results.

### **Goldspotted Oak Borer Confirmation and Extent Surveys**

Dudek arborists visited Wren’s View Preserve on April 14, 2021, to evaluate the site for the spread of GSOB. During the evaluation, Dudek inspected all coast live oak trees, over 8 inches in diameter at standard height (DSH), within 150 feet of those trees previously found to exhibit signs and/or symptoms of GSOB. In total, Dudek Arborists evaluated 297 oak trees, over 8 inches at D.S.H, for signs of GSOB. The 297 oak trees evaluated for GSOB are shown on Attachment 5 – GSOB Evaluation Area. Of the 297 evaluated for GSOB, none were found exhibit signs of GSOB at the time of the evaluation. This does not mean that these trees do not have GSOB, it only means that they did not exhibit sign of GSOB at the time of the inventory.

## **Discussion and Recommendations**

### **Invasive Shot Hole Borer Surveys, Monitoring, and Trapping**

ISHB was discovered in Los Angeles County in 2003 and has continued to spread throughout Los Angeles, Riverside, Orange, San Bernardino, Santa Barbara, Ventura, San Luis Obispo, and San Diego Counties. ISHB are two closely related beetle species, polyphagous shot hole borer (PSHB) and Kuroshio shot hole borer (KSHB). The beetles are morphologically similar and can only be distinguished using molecular techniques. For simplicity, the University of California, Riverside (UCR) refers to both species as ISHB. Additionally, ISHB is nearly identical to the tea shot hole

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Subject: Invasive Shot Hole Borer Monitoring, Emergent Pest Trapping, and Goldspotted Oak Borer Surveys – OCTA Preserves, Orange County, California

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borer (*Euwallacea fornicatus*), an exotic Asian ambrosia beetle from Sri Lanka (Center for Invasive Species Research 2014) that is less destructive and can be confused for ISHB.

ISHB forms a symbiotic relationship with *Fusarium* spp., a fungal pathogen that causes further issues for host trees. Once the fungus is inoculated into the trees, it colonizes the vascular system of the tree, which causes stress and dieback (Center for Invasive Species Research 2014). Beetle larvae feed on the fungus throughout the beetle galleries, enabling both the fungus and beetles to thrive.

As of 2021, ISHB is known to attack over 200 tree species, including, but not limited to, California sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), avocado (*Persea americana*), Chinese flame tree (*Koelreuteria bipinnata*), red willow (*Salix laevigata*), coast live oak (*Quercus agrifolia*), Chinese pistache (*Pistacia chinensis*), camphor tree (*Cinnamomum camphora*), and sweetgum (*Liquidambar styraciflua*). However, according to the University of California, 66 tree species have been confirmed as reproductive hosts, including the native riparian species coast live oak, California sycamore, black cottonwood (*Populus nigra*), arroyo willow, red willow, and white alder (University of California 2018). A detailed list of the 66 tree species confirmed as reproductive hosts can be found in Attachment 7 – GSOB Reproductive Host Species List. Due to the wide range of known native tree species susceptible to attack by ISHB and the beetle's symbiotic relationship with *Fusarium* spp., the potential for damage to the native landscape is considered substantial. Many of the tree species susceptible to attack, such as arroyo willow, western sycamore, and cottonwood commonly occur throughout the study area and are a key component of OCWR's ecosystem and overall biodiversity.

Based on the results of the 2021 surveys and supplemental emergent pest trapping, ISHB is considered active within the Wren's View and Trabuco Rose Preserves. The active presence of ISHB is confirmed by the continued observation of ISHB within the site's trees and the positive identification of ISHB within the emergent traps on Wren's View and Trabuco Rose. However, based on the findings of the previous ISHB survey (2018, 2019, 2020), ISHB continues to show no significant increase in the rate of infection throughout the two preserves and was not found in the Live Oak Creek or Bobcat Ridge Preserves. Furthermore, with the exception of three interior trees found on the Trabuco Rose Preserve and two interior trees found on the Wren's View Preserve (which have not increased in ISHB infestation severity for three years), the majority of ISHB signs and symptoms continue to be observed on the periphery of the western boundaries of the two sites. The observation of ISHB along the sites' western boundaries along Trabuco Canyon is believed to be due to high infestation levels previously observed throughout O'Neill Regional Park and ISHB's active spread throughout the region. Alternatively, the observation of ISHB sign within the interior of the two preserves continues to be considered an outlier from the observed population along the edge of the two properties. However, based on the ISHB's potential for spread, it is within the ISHB's zone of influence/impact for the area.

The observation of ISHB signs and symptoms within the interior of Wren's View and Trabuco Rose Preserves is significant due to the risk presented to the adjacent California sycamore tree population. However, it should be noted that none of the trees evaluated exhibited high levels of ISHB and only 22 trees exhibited low to moderate signs of ISHB. Furthermore, observed levels of ISHB within the two preserves were consistent with previous surveys, and only two new occurrences, immediately adjacent to two previously infested trees, of ISHB were observed. As such, the following treatment options are recommended:

- 1) ISHB Treatment – As with many insect infestations, it is at the early stages that the outbreak/infestation can be controlled. In an effort to maintain and limit the spread of ISHB throughout the remaining areas of Wren's



View and Trabuco Rose Preserves, it is recommended that the 22 trees observed to have low to moderate signs and symptoms of ISHB, within Wren’s View and Trabuco Rose, be treated by means of a trunk spray with Bifenthrin, Bacillus subtilis, and Pentra-Bark or similar. The above recommended pesticide and fungicide treatments should be conducted by a reputable licensed company that specializes in such and has a Pest Control Advisor and Applicator on staff.

- 2) Monitoring – Dudek recommends that OCTA maintain an active ISHB monitoring, treatment, and removal program that focuses on riparian tree species identified and mapped within this letter report. Specifically, it is recommended that this program focus on high-priority areas located throughout OCTA Preserves. Areas that should be considered for monitoring include but are not limited to high-use recreation areas, native oak woodlands, and riparian areas that do not contain ISHB, and those areas identified within this letter report. The frequency of ISHB monitoring within the selected areas should be conducted on a biweekly (i.e., every other week) basis during peak flight season (November through March). Active and frequent monitoring would allow OCTA land managers to identify ISHB quickly and to remove infested material before ISHB spreads into uninfested areas. This type of monitoring is currently employed in Riverside County by the U.S. Fish and Wildlife Service in conjunction with UCR. As previously stated, with many insect infestations, it is at the early stages that the outbreak/infestation can be controlled. As such, routine monitoring of the site will play an important role in managing ISHB within OCTA preserves.

### Goldspotted Oak Borer Confirmation and Extent Mapping

GSOB is an invasive pest found throughout San Diego County—and to a lesser extent in Riverside, Orange, Los Angeles, and San Bernardino Counties—that poses a significant threat to the region’s oak trees. GSOB is native to southeastern Arizona and was first identified in San Diego in 2004 (UCR 2019). According to UCR, since 2002 it has been estimated to have contributed to the death of over 80,000 oak trees. The GSOB primarily attacks three species of oaks, including, coast live oak, canyon live oak (*Quercus chrysolepis*), and California Black oak (*Quercus kelloggii*). The borer’s larvae create feeding galleries beneath the surface of the bark and can often be identified by D-shaped exit holes, blistering and oozing, crown thinning, twig and branch dieback, and premature leaf loss. The larvae damage the phloem and xylem, the nutrient and water conducting tissues of plants. The larvae damage both of these tissues as well as the cambium, a unicellular layer between the phloem and xylem that is responsible for the radial growth of the tree, which eventually leads to the death of the tree (UCR 2019). GSOB is considered to be a significant threat to the region’s oak resources.

The previous observation of GSOB within the Wren’s View Preserve was the first such recorded observation in Trabuco Canyon, California, and as such was and is still considered a threat to the canyon’s oak tree resources. The total extent of GSOB within the canyon is unknown. However, based on the 2019 and 2021 surveys conducted within Wren’s View Preserve, the infestation is suspected to be at the early stages and, as such, may be controllable. To aid in the control of the observed GSOB, OCFA treated approximately 650 trees in 2020 with carbaryl and re-treated the same 650 trees in 2021 with bifenthrin. The 650 trees treated in 2020 and 2021 were located within OCTA managed Wren’s View, Orange County Park’s O’Neill park, and on private property located between OCTA and O’Neill park. The location of the 650 trees can be found in Attachment 8 – Trabuco Canyon Treatment Area.

Based on the 2021 GSOB survey conducted by Dudek, which found no trees exhibiting sign of GSOB, the 2020 treatment conducted by OCFA appears to have been effective at minimizing the spread of GSOB (the 2021 application occurred after Dudek’s 2021 evaluation). However, based on the estimated early stages of the GSOB infestation, it is

Ms. Lesley Hill

Subject: *Invasive Shot Hole Borer Monitoring, Emergent Pest Trapping, and Goldspotted Oak Borer Surveys – OCTA Preserves, Orange County, California*

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unknown if the GSOB treatments were completely effective at eliminating the infestation. As such, continued monitoring of the site's oak tree resource (and those located on the adjacent properties) will play a critical role in the continued management of GSOB within Trabuco Canyon. As such, it is recommended that OCTA continue annual monitoring of the site for the presence/absence and spread of GSOB on site. It is recommended that the annual surveys occur during peak emergence/flight season for GSOB. This will allow surveyors to assess trees that exhibit newly emerged GSOB and recommend the appropriate treatment if needed.

## Conclusion

This letter report provides conclusions and recommendations based on the examination of trees located within Bobcat Ridge, Live Oak Creek, Wren's View, and Trabuco Rose Preserves; a visual examination of the trees and surrounding site by Dudek's International Society of Arboriculture-certified arborists; and the reasonable reliance on the completeness and accuracy of the information provided to the arborists. The examination did not include subterranean or internal examination of the trees.

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees; recommend measures to enhance the beauty and health of trees; and attempt to reduce the risk of living near them. Although trees provide many benefits to those who live near them, they also include inherent risks from breakage or failure that can be minimized but not eliminated.

Arborists cannot detect every condition that could possibly lead to the failure of a tree. Trees are living organisms subject to attack by disease, insects, fungi, weather, and other forces of nature, and conditions that lead to failure are often hidden within trees and below ground. There are some inherent risks associated with trees that cannot be predicted with any degree of certainty, even by a skilled and experienced arborist. Arborists cannot predict acts of nature, including storms of sufficient strength, which can cause even an apparently healthy tree to fail. Additionally, arborists cannot guarantee that a tree will be healthy or safe under all circumstances or for any specific period of time. A tree's condition could change over a short or long period of time due to climatic, environmental, and other conditions. Further, there is no guarantee or certainty that recommendations or efforts to correct unsafe conditions will prevent future breakage or failure of a tree.

To live or work near trees is to accept some degree of risk. Neither the author of this letter report nor Dudek assumes responsibility or liability for any claims, losses, or damages to any tree, death or injury to any person, or loss of or damage to any personal or real property.

I would be pleased to answer any questions or respond to any comments regarding this letter report. I can be contacted at 949.373.8310 or [ckallstrand@dudek.com](mailto:ckallstrand@dudek.com).

Sincerely,



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Christopher J. Kallstrand  
Certified Arborist No. WE-8208A

Ms. Lesley Hill

Subject: *Invasive Shot Hole Borer Monitoring, Emergent Pest Trapping, and Goldspotted Oak Borer Surveys – OCTA Preserves, Orange County, California*

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Att.: 1, *Figure 17 USACOE Preservation/Mitigation Map*  
2, *Riparian Tree Locations*  
3, *Riparian Tree Matrices*  
4, *Panel Trap Locations*  
5, *California Department of Food and Agriculture Results*  
6, *Goldspotted Oak Borer Distribution Overview at Wren's View Preserve*  
7, *Oak Tree Information Matrix*  
8, *Invasive Shot Hole Borer Host Tree Species*  
9, *Survey and Management of the Goldspotted Oak Borer Outbreak in Weir Canyon, Irvine Ranch Open Space 2014–2016*

## References Cited

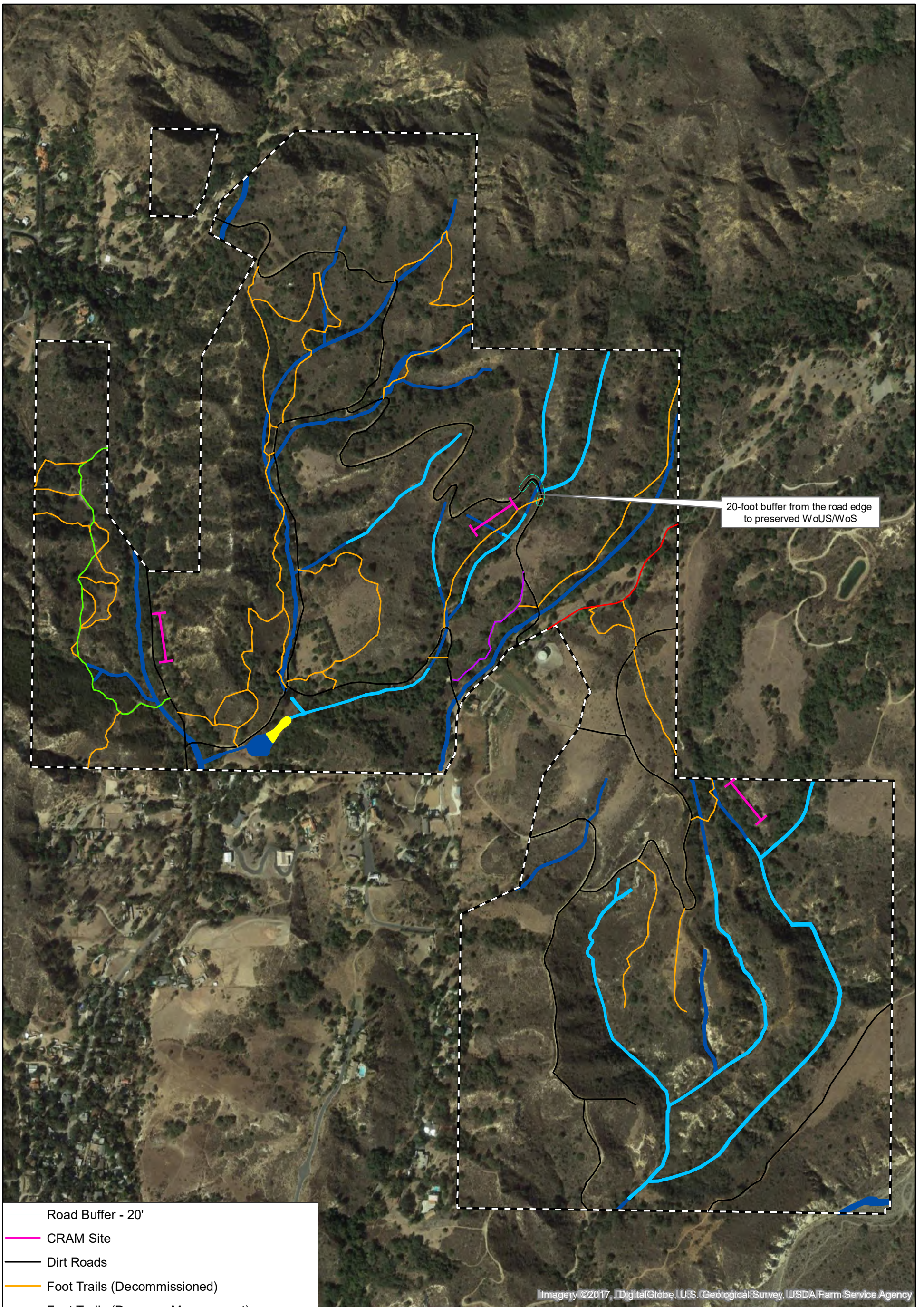
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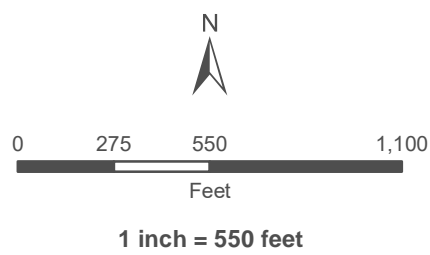
# Attachment 1

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Figure 17 USACOE Preservation/Mitigation Map



- Road Buffer - 20'
- CRAM Site
- Dirt Roads
- Foot Trails (Decommissioned)
- Foot Trails (Preserve Management)
- Foot Trails (Public Access)
- Paved Road
- Ferber Ranch Preserve Boundary
- Non-Wetland Preservation/Mitigation - 1.61 ac.
- Wetland Preservation/Mitigation - 0.14 ac.
- Non-Mitigation WoUS/WoS



**FIGURE 17**

USACOE Preservation/Mitigation Map

GLENN LUKOS ASSOCIATES

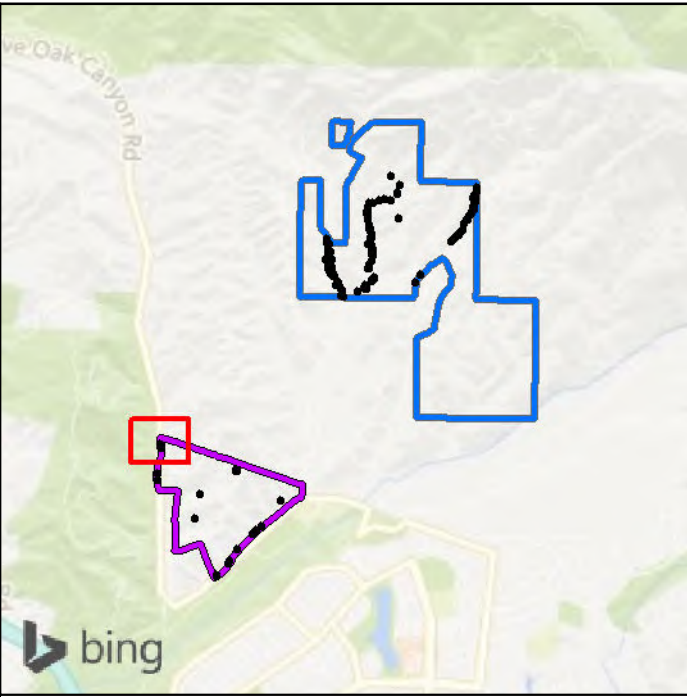




# Attachment 2

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Riparian Tree Locations

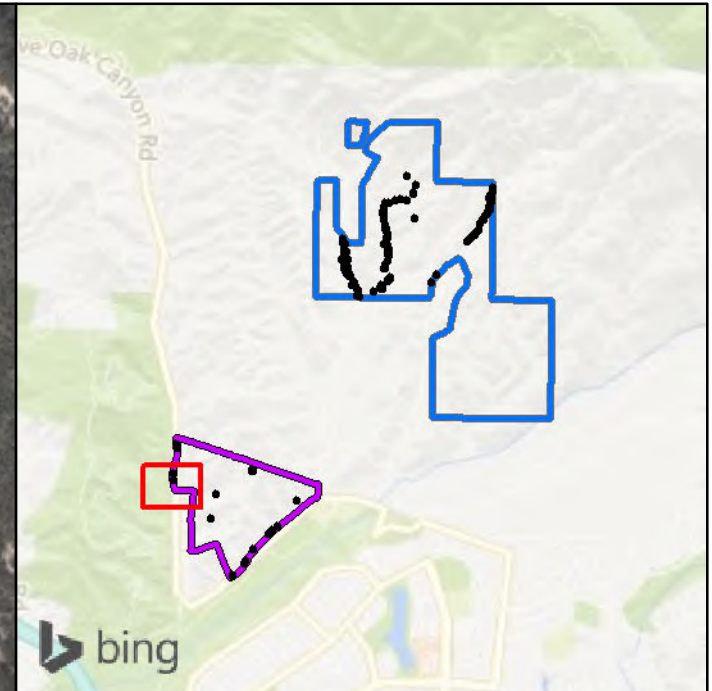


- ISHB Infestation Levels
- No ISHB Observed (3)
  - Wren's View

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SOURCE: AERIAL - BING MAPPING SERVICE 2020

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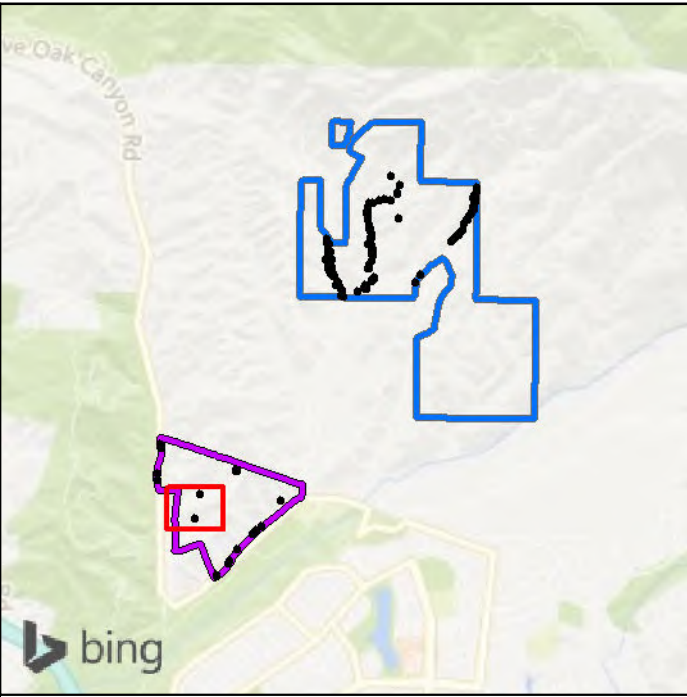
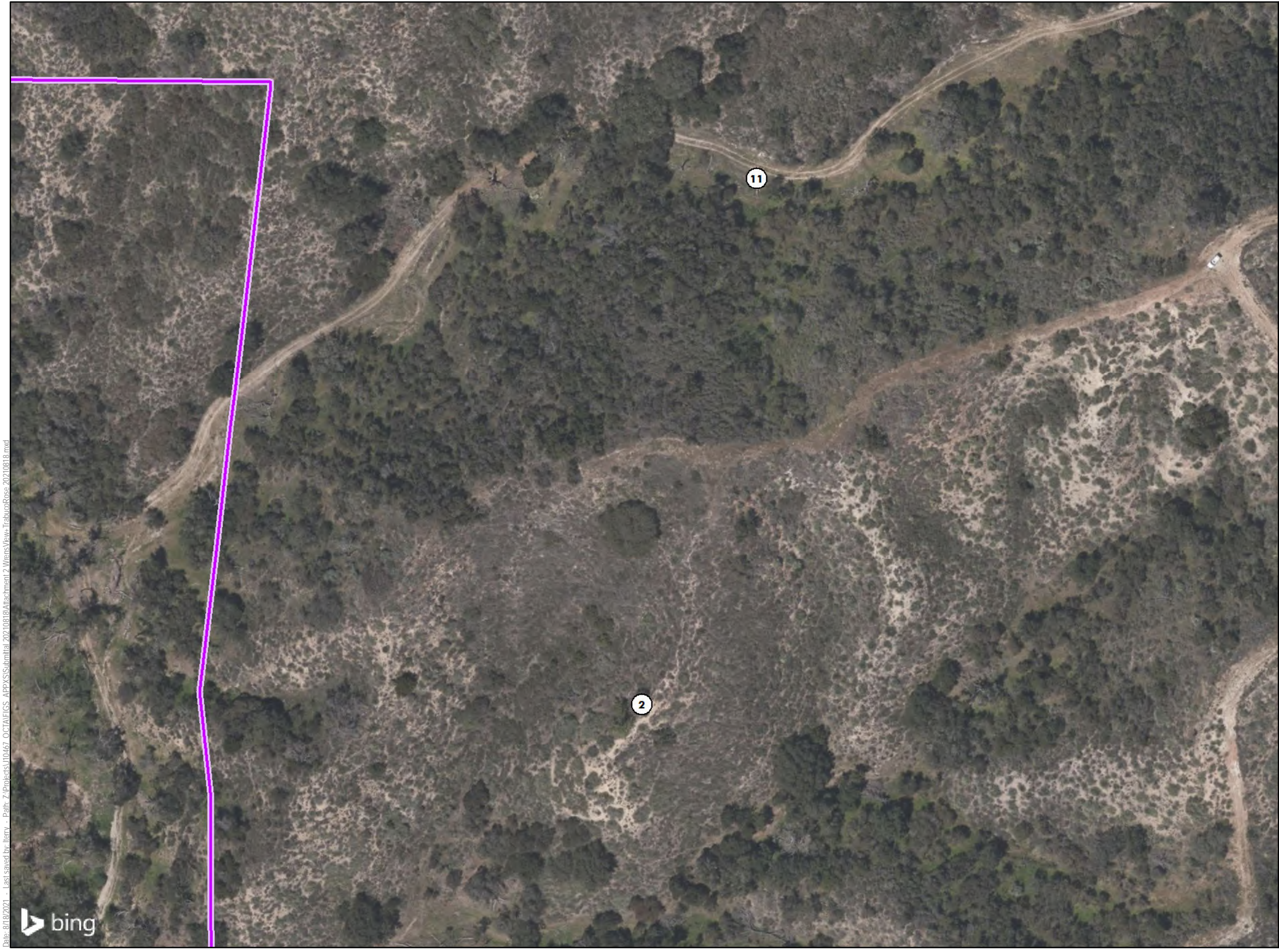


- ISHB Infestation Levels
- Low (1)
  - No ISHB Observed (1)
  - Wren's View

SOURCE: AERIAL - BING MAPPING SERVICE 2020





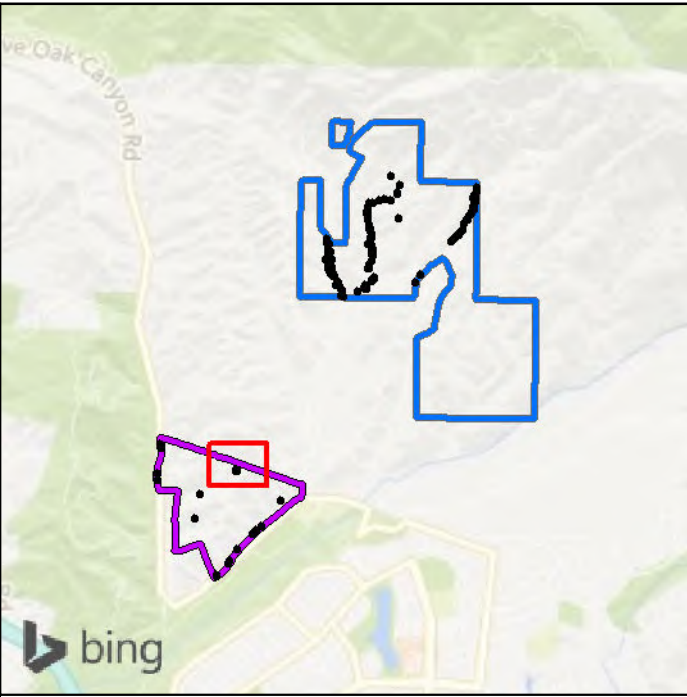
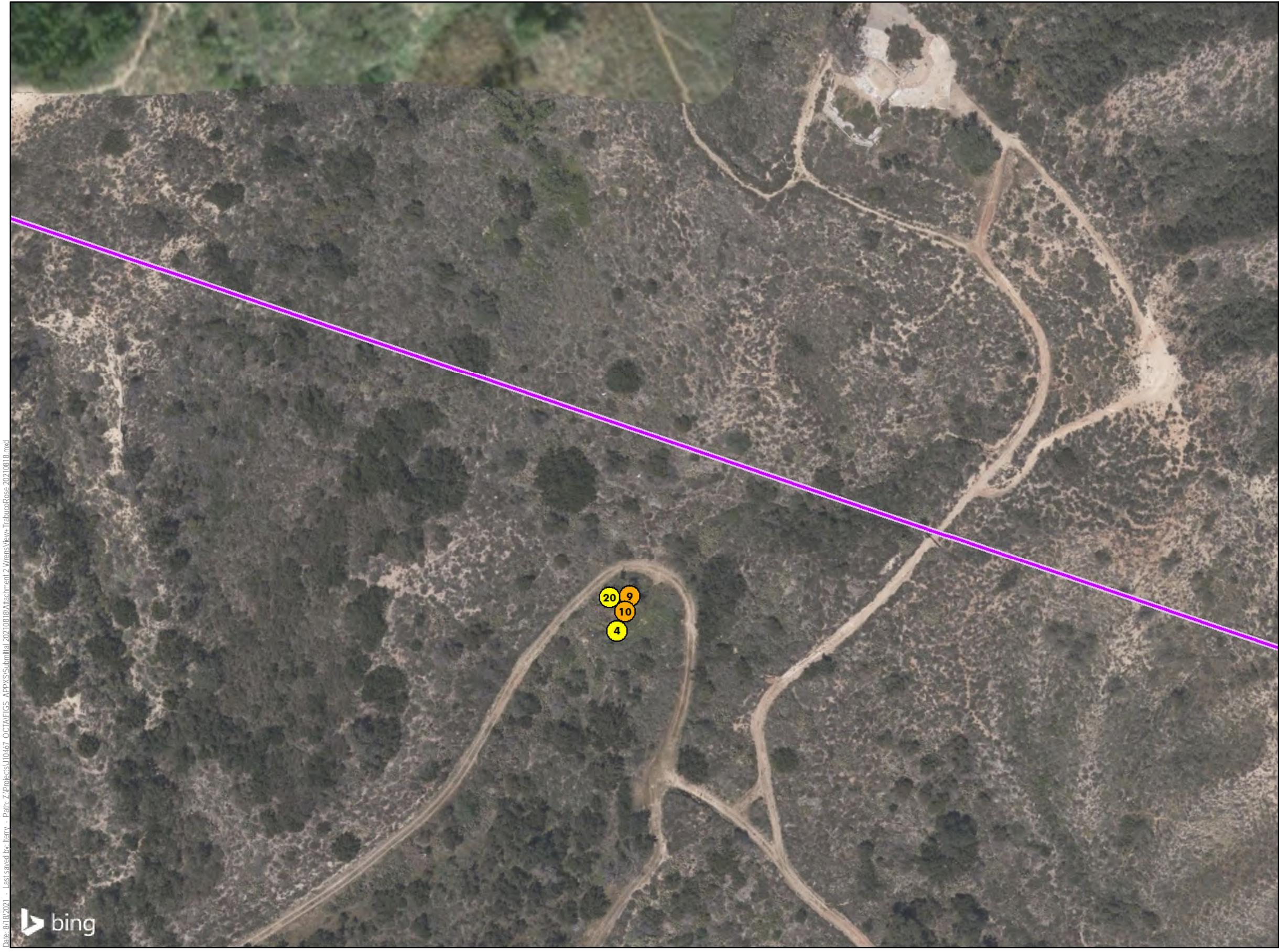


- ISHB Infestation Levels
- No ISHB Observed (2)
  - Wren's View

Date: 8/13/2021 ... Last saved by: liany ... Path: Z:\Projects\110167\_COTAFEGS\_APPXS\Submittal\_20210818\Attachment\_2\_WrensView-TabucoRose\_20210818.mxd

SOURCE: AERIAL - BING MAPPING SERVICE 2020

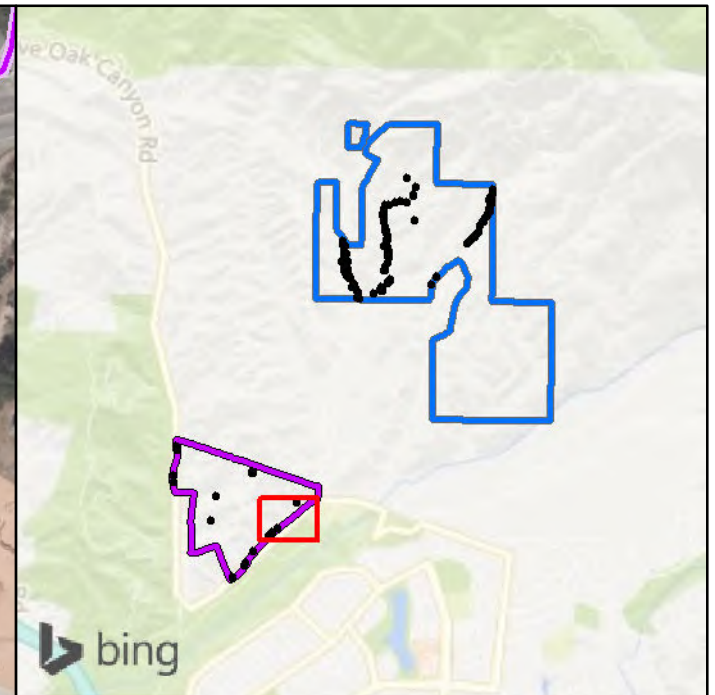




- ISHB Infestation Levels
- Low (2)
  - Moderate (2)
  - Wren's View

Date: 8/13/2021 - Last saved by: lienvy - Path: Z:\Projects\LTD\67\_OCTAIEGS\_APPXS\Submital 20210813\Attachment 2 Wrens View- Trabuco Rose 20210818.mxd

SOURCE: AERIAL - BING MAPPING SERVICE 2020

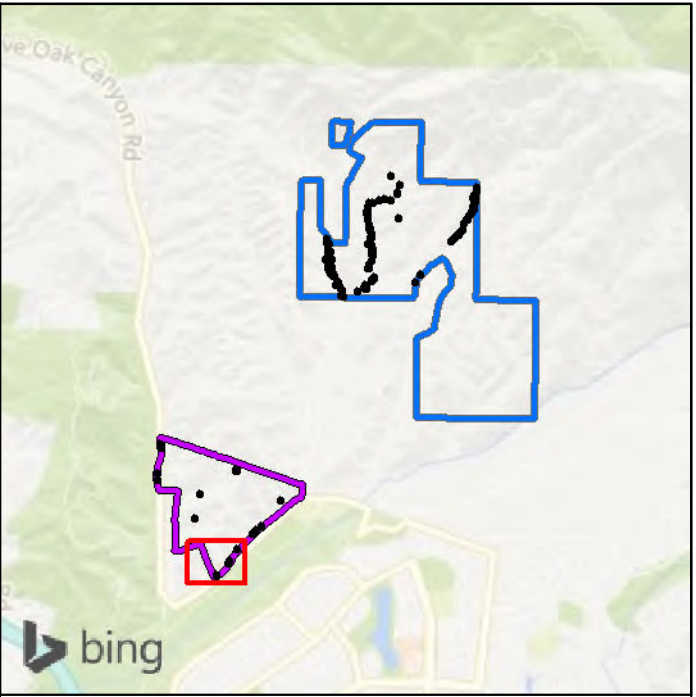


- ISHB Infestation Levels
- Low (5)
  - No ISHB Observed (4)
  - Wren's View

SEE INSET ABOVE

Date: 8/18/2021 - Last saved by: liany - Path: Z:\Projects\110467 - OCTA\FCS - APPX\S\Stimula\20210818\Attachment 2 - Wrens View - TrebucoRose\_20210818.mxd

SOURCE: AERIAL - BING MAPPING SERVICE 2020

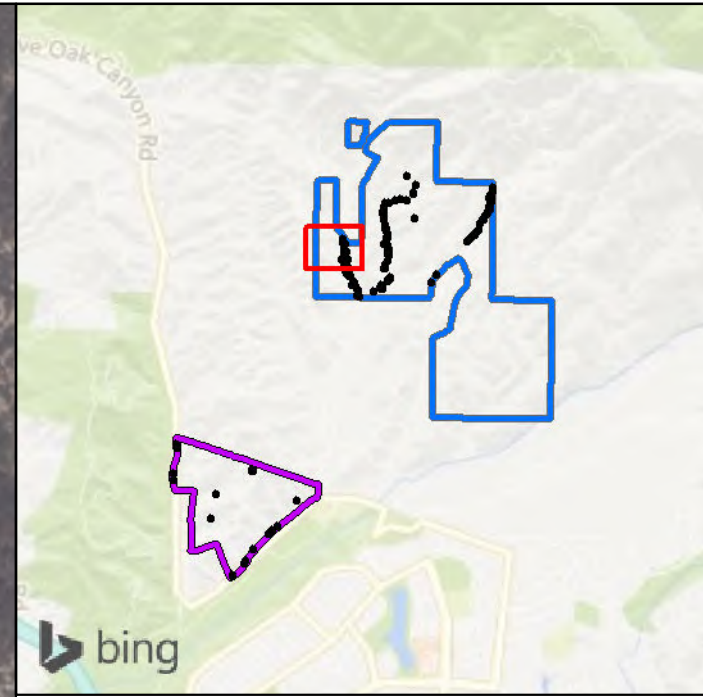


- ISHB Infestation Levels
- Low (1)
  - Moderate (3)
  - No ISHB Observed (3)
  - Wren's View

Date: 9/1/2021 - Last saved by: larry - Path: Z:\Projects\110467 - OCTAVE\GIS - APP\XS\Submittal\20210818\Attachment 2\WrensView-TribucoRoe-20210818.mxd

SOURCE: AERIAL - BING MAPPING SERVICE 2020

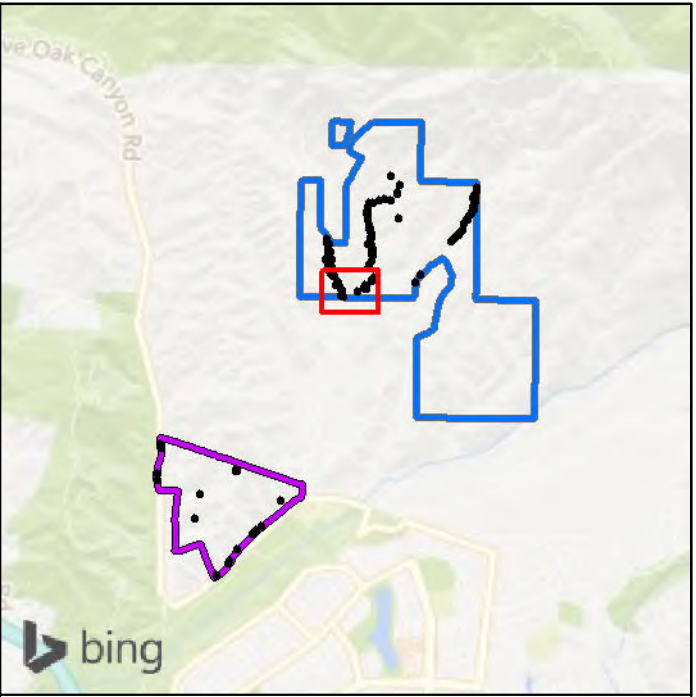




- ISHB Infestation Levels
- No ISHB Observed (17)
  - ▭ Trabuco Rose

Date: 8/18/2021 ... Last saved by: llynn ... Path: Z:\Projects\110167\_OCTAIEGS\_APPXS\Submittal\_20210818\Attachment\_2\Views\View-TrabucoRose\_20210818.mxd

SOURCE: AERIAL - BING MAPPING SERVICE 2020

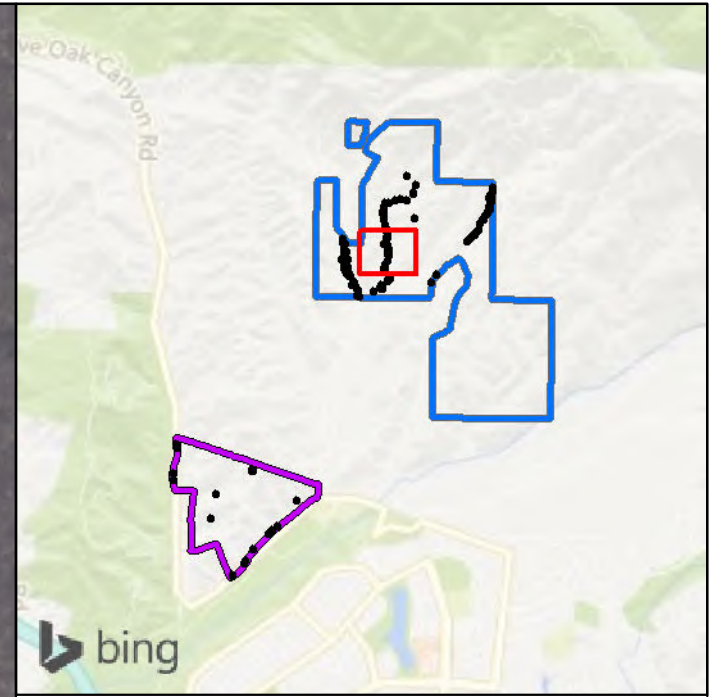


- ISHB Infestation Levels
- Low (4)
  - Moderate (1)
  - No ISHB Observed (27)
  - Trabuco Rose

Date: 8/13/2021 ... Last saved by: llynn ... Path: Z:\Projects\110467\_OCTAIEGS\_APPXS\Submittal 20210818\Attachment 2 Views\View-1\TrabucoRose\_20210818.mxd

SOURCE: AERIAL - BING MAPPING SERVICE 2020

Date: 8/18/2021 - Last saved by: liany - Path: Z:\Projects\110167\_OCTAIEGS\_APPXS\Submittal 20210818\Attachment 2 Weens\Views\TrabucoRose\_20210818.mxd

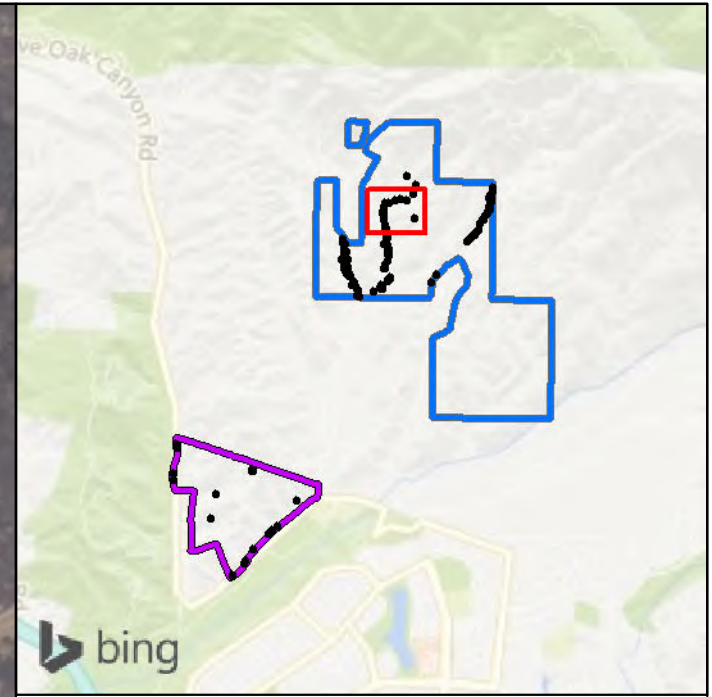


- ISHB Infestation Levels
- Low (2)
  - No ISHB Observed (18)
  - Trabuco Rose

SOURCE: AERIAL - BING MAPPING SERVICE 2020



Date: 8/13/2021 ... Last saved by: lliany ... Path: Z:\Projects\110167\_OC\TA\FIGS\_APPX\S\Summary\20210813\Attachment 2 - Views\Views- TrabucoRose\_20210818.mxd



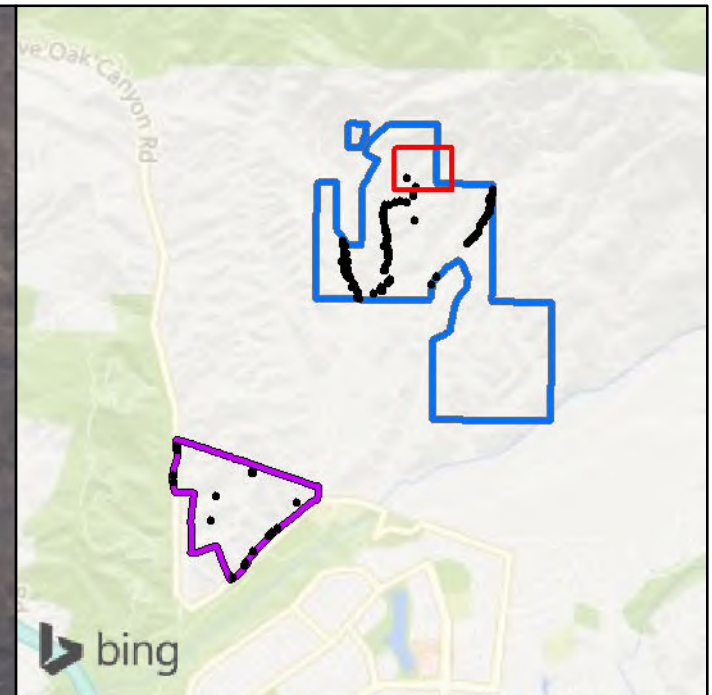
ISHB Infestation Levels

- Low (1)
- No ISHB Observed (22)
- Trabuco Rose

SOURCE: AERIAL - BING MAPPING SERVICE 2020



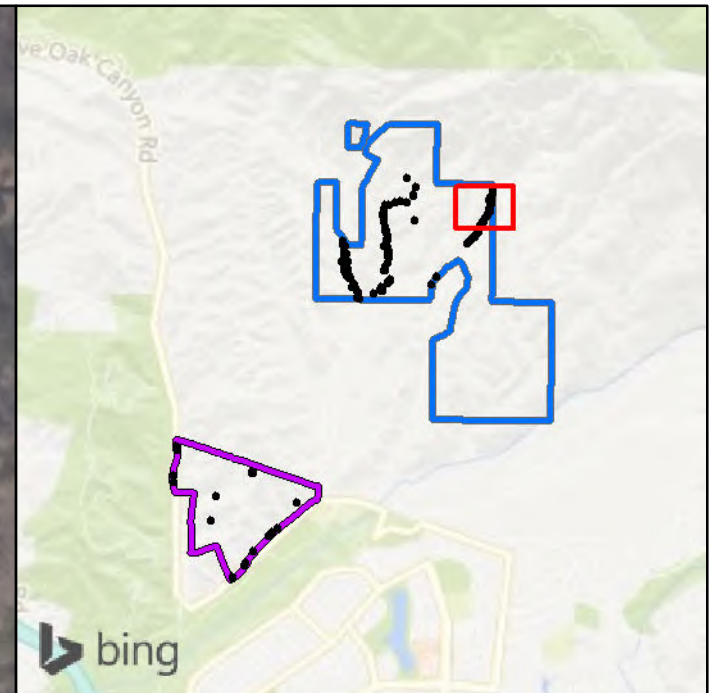
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- ISHB Infestation Levels
- No ISHB Observed (3)
  - Trabuco Rose

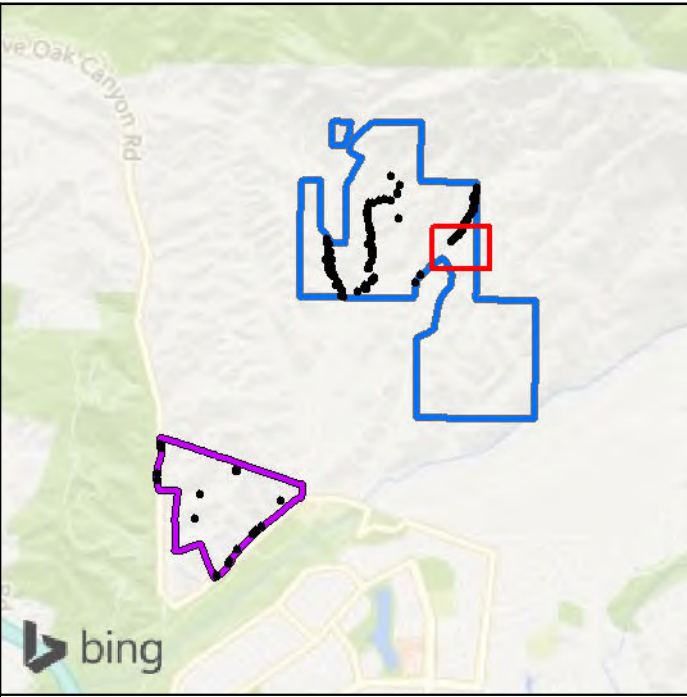
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Date: 8/18/2021 ... Last saved by: liany ... Path: Z:\Projects\110167\_OCTAIEGS\_APPXS\Submittal 20210818\Attachment 2 Views\View- TrabucoRose\_20210818.mxd



- ISHB Infestation Levels
- No ISHB Observed (29)
  - Trabuco Rose

SOURCE: AERIAL - BING MAPPING SERVICE 2020



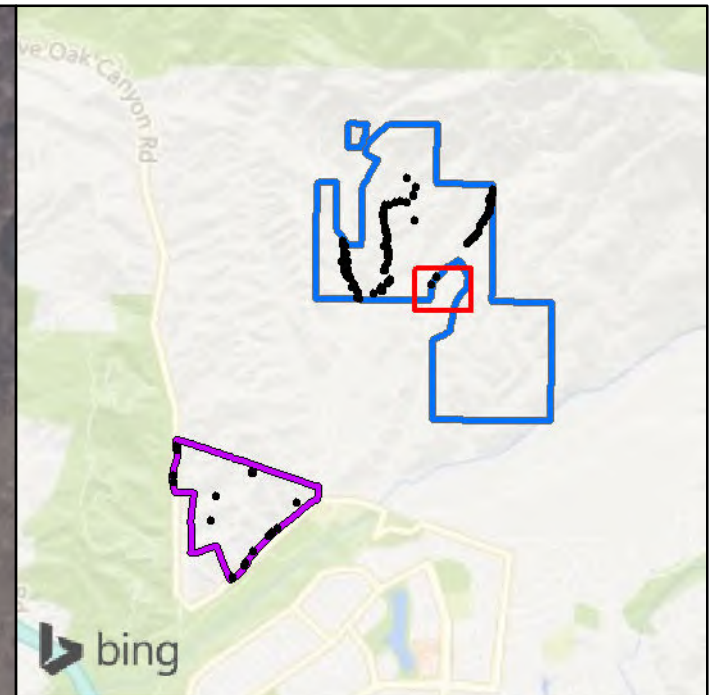
- ISHB Infestation Levels
- No ISHB Observed (10)
  - Trabuco Rose

Date: 8/13/2021 ... Last saved by: lhenry ... Path: Z:\Projects\1101467\_OC\TA\FIGS\_APPX\Schematic\20210813\Attachment 2 - Weans View - Trabuco Rose 20210818.mxd

SOURCE: AERIAL - BING MAPPING SERVICE 2020



Date: 8/18/2021 ... Last saved by: llynn ... Path: Z:\Projects\110167\_02\AFCGS\_APPX\S\Submittal\_20210818\Attachment\_2\Views\View-TabucoRose\_20210818.mxd



- ISHB Infestation Levels
- No ISHB Observed (2)
  - Tabuco Rose

SOURCE: AERIAL - BING MAPPING SERVICE 2020





# Attachment 3

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Riparian Tree Matrices

ATTACHMENT 3  
ISHB TREE INFORMATION MATRIX

Survey Location	Tree No.	Botanical Name	Common Name	Health	Structure	ISHB Status	Recommendation	Latitude	Longitude
Wren's View	1	<i>Platanus racemosa</i>	Western Sycamore	Dead	Dead	None		33.65579	-117.596
Wren's View	2	<i>Platanus racemosa</i>	Western Sycamore	Good	Good	None		33.65833	-117.598
Wren's View	3	<i>Platanus racemosa</i>	Western Sycamore	Good	Good	None		33.65766	-117.594
Wren's View	4	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Moderate	Treatment	33.6612	-117.595
Wren's View	5	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.65948	-117.592
Wren's View	6	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.65494	-117.597
Wren's View	7	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.66058	-117.601
Wren's View	8	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Moderate	Treatment	33.65563	-117.596
Wren's View	9	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.66129	-117.595
Wren's View	10	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.66125	-117.595
Wren's View	11	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.65977	-117.598
Wren's View	12	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.65764	-117.594
Wren's View	13	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.65765	-117.594
Wren's View	14	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.65487	-117.596
Wren's View	15	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.66282	-117.601
Wren's View	16	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.66097	-117.601
Wren's View	17	<i>Platanus racemosa</i>	Western Sycamore	N/A	N/A	N/A	Removed in 2020	33.65648	-117.595
Wren's View	18	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Moderate	Treatment	33.65578	-117.596
Wren's View	19	<i>Platanus racemosa</i>	Western Sycamore	Moderate	Moderate	Moderate	Treatment	33.6558	-117.596
Wren's View	20	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Moderate	Treatment	33.66129	-117.595
Wren's View	21	<i>Platanus racemosa</i>	Western Sycamore	Good	Good	None		33.65763	-117.594
Wren's View	22	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.65577	-117.596
Wren's View	23	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.65765	-117.594
Wren's View	24	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.65746	-117.594
Wren's View	25	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.65789	-117.593
Wren's View	26	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.65762	-117.594
Wren's View	27	<i>Platanus racemosa</i>	Western Sycamore	Fair	Poor	None		33.66265	-117.601
Wren's View	28	<i>Platanus racemosa</i>	Western Sycamore	Very Poor	Very Poor	None		33.66253	-117.601
Trabuco Rose	1	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67183	-117.588
Trabuco Rose	2	<i>Platanus racemosa</i>	Western Sycamore	Dead	Dead	None		33.67685	-117.586
Trabuco Rose	3	<i>Platanus racemosa</i>	Western Sycamore	Dead	Dead	None		33.67281	-117.586
Trabuco Rose	4	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	Low	Treatment	33.67689	-117.586
Trabuco Rose	5	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	Low	Treatment	33.67227	-117.588
Trabuco Rose	6	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.67252	-117.588
Trabuco Rose	7	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	Low	Treatment	33.6719	-117.588
Trabuco Rose	8	<i>Platanus racemosa</i>	Western Sycamore	Poor	Fair	Low	Treatment	33.67189	-117.588
Trabuco Rose	9	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	Low	Treatment	33.67398	-117.586
Trabuco Rose	10	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	Moderate	Treatment	33.67265	-117.588
Trabuco Rose	11	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67563	-117.579
Trabuco Rose	12	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67537	-117.58
Trabuco Rose	13	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67559	-117.579
Trabuco Rose	14	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67521	-117.58
Trabuco Rose	15	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67591	-117.579
Trabuco Rose	16	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6732	-117.588
Trabuco Rose	17	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67318	-117.589
Trabuco Rose	18	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67337	-117.588

ATTACHMENT 3  
ISHB TREE INFORMATION MATRIX

Survey Location	Tree No.	Botanical Name	Common Name	Health	Structure	ISHB Status	Recommendation	Latitude	Longitude
Trabuco Rose	19	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67336	-117.588
Trabuco Rose	20	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6734	-117.589
Trabuco Rose	21	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67343	-117.589
Trabuco Rose	22	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67358	-117.588
Trabuco Rose	23	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67356	-117.589
Trabuco Rose	24	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67365	-117.589
Trabuco Rose	25	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67381	-117.589
Trabuco Rose	26	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67637	-117.579
Trabuco Rose	27	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67404	-117.588
Trabuco Rose	28	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67405	-117.589
Trabuco Rose	29	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67428	-117.589
Trabuco Rose	30	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67433	-117.589
Trabuco Rose	31	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67455	-117.589
Trabuco Rose	32	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67461	-117.589
Trabuco Rose	33	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67473	-117.589
Trabuco Rose	34	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67478	-117.589
Trabuco Rose	35	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67482	-117.589
Trabuco Rose	36	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67502	-117.589
Trabuco Rose	37	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67654	-117.579
Trabuco Rose	38	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67509	-117.589
Trabuco Rose	39	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67507	-117.589
Trabuco Rose	40	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67531	-117.589
Trabuco Rose	41	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67303	-117.588
Trabuco Rose	42	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67278	-117.588
Trabuco Rose	43	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67303	-117.588
Trabuco Rose	44	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67248	-117.588
Trabuco Rose	45	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67232	-117.588
Trabuco Rose	46	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67661	-117.579
Trabuco Rose	47	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6722	-117.588
Trabuco Rose	48	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67685	-117.578
Trabuco Rose	49	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67693	-117.578
Trabuco Rose	50	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67699	-117.578
Trabuco Rose	51	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67706	-117.578
Trabuco Rose	52	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67711	-117.578
Trabuco Rose	53	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67521	-117.58
Trabuco Rose	54	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67715	-117.578
Trabuco Rose	55	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67718	-117.578
Trabuco Rose	56	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67738	-117.578
Trabuco Rose	57	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67742	-117.578
Trabuco Rose	58	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67759	-117.578
Trabuco Rose	59	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67765	-117.578
Trabuco Rose	60	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67772	-117.578
Trabuco Rose	61	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6777	-117.578
Trabuco Rose	62	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67789	-117.578
Trabuco Rose	63	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67791	-117.578
Trabuco Rose	64	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67791	-117.578

ATTACHMENT 3  
ISHB TREE INFORMATION MATRIX

Survey Location	Tree No.	Botanical Name	Common Name	Health	Structure	ISHB Status	Recommendation	Latitude	Longitude
Trabuco Rose	65	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67785	-117.578
Trabuco Rose	66	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67807	-117.578
Trabuco Rose	67	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67811	-117.578
Trabuco Rose	68	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67825	-117.578
Trabuco Rose	69	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67849	-117.578
Trabuco Rose	70	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67322	-117.582
Trabuco Rose	71	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67264	-117.582
Trabuco Rose	72	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67293	-117.585
Trabuco Rose	73	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67301	-117.585
Trabuco Rose	74	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67292	-117.585
Trabuco Rose	75	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67288	-117.586
Trabuco Rose	76	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67352	-117.586
Trabuco Rose	77	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67359	-117.586
Trabuco Rose	78	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67373	-117.586
Trabuco Rose	79	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67381	-117.586
Trabuco Rose	80	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67442	-117.586
Trabuco Rose	81	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67456	-117.586
Trabuco Rose	82	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6746	-117.585
Trabuco Rose	83	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67494	-117.586
Trabuco Rose	84	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67491	-117.586
Trabuco Rose	85	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67573	-117.579
Trabuco Rose	86	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67489	-117.586
Trabuco Rose	87	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6754	-117.586
Trabuco Rose	88	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67544	-117.586
Trabuco Rose	89	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67506	-117.586
Trabuco Rose	90	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67563	-117.586
Trabuco Rose	91	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6758	-117.586
Trabuco Rose	92	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67588	-117.586
Trabuco Rose	93	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67592	-117.586
Trabuco Rose	94	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67593	-117.586
Trabuco Rose	95	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67612	-117.586
Trabuco Rose	96	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67576	-117.579
Trabuco Rose	97	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67618	-117.586
Trabuco Rose	98	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67649	-117.586
Trabuco Rose	99	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67669	-117.586
Trabuco Rose	100	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67694	-117.586
Trabuco Rose	101	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67699	-117.586
Trabuco Rose	102	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6773	-117.586
Trabuco Rose	103	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6775	-117.586
Trabuco Rose	104	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67753	-117.586
Trabuco Rose	105	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67578	-117.579
Trabuco Rose	106	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67752	-117.585
Trabuco Rose	107	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67765	-117.585
Trabuco Rose	108	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67773	-117.585
Trabuco Rose	109	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67772	-117.585
Trabuco Rose	110	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67771	-117.584



ATTACHMENT 3  
ISHB TREE INFORMATION MATRIX

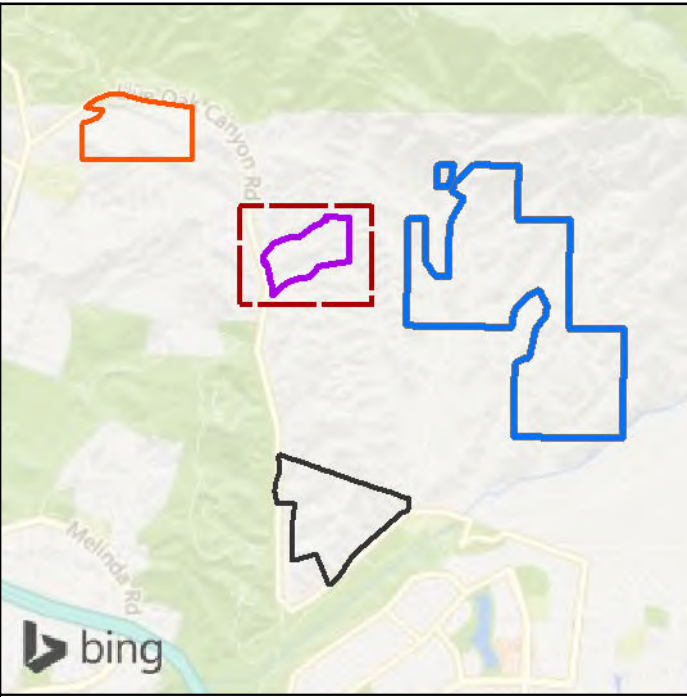
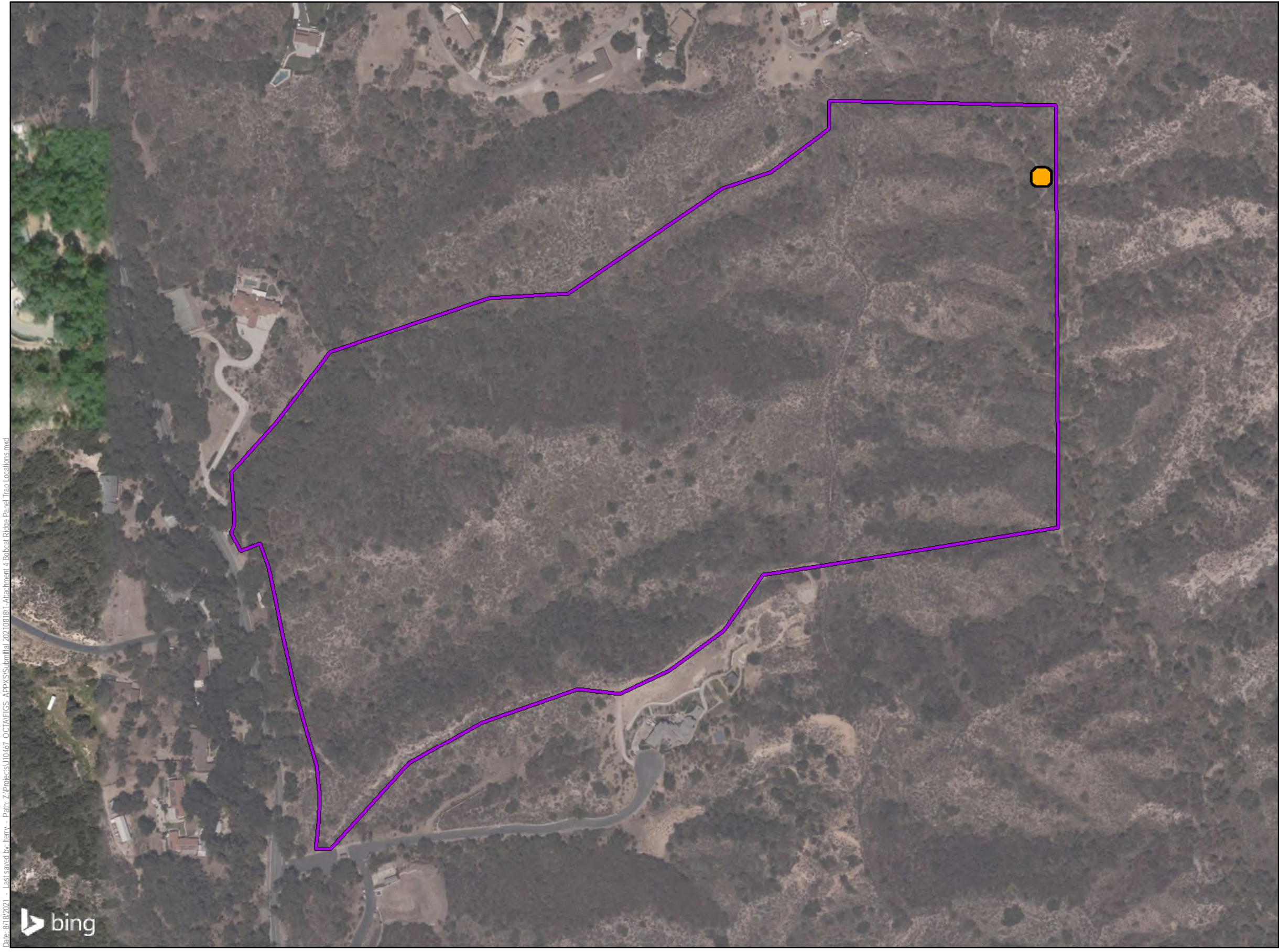
Survey Location	Tree No.	Botanical Name	Common Name	Health	Structure	ISHB Status	Recommendation	Latitude	Longitude
Trabuco Rose	111	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67807	-117.584
Trabuco Rose	112	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67814	-117.584
Trabuco Rose	113	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67661	-117.584
Trabuco Rose	114	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67913	-117.584
Trabuco Rose	115	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.67584	-117.579
Trabuco Rose	116	<i>Platanus racemosa</i>	Western Sycamore	Fair	Fair	None		33.6732	-117.588
Trabuco Rose	117	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.67723	-117.578
Trabuco Rose	118	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.67727	-117.578
Trabuco Rose	119	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.6773	-117.578
Trabuco Rose	120	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.6773	-117.578
Trabuco Rose	121	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.67474	-117.585
Trabuco Rose	122	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.67471	-117.585
Trabuco Rose	123	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.67858	-117.584
Trabuco Rose	124	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.67864	-117.584
Trabuco Rose	125	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	None		33.67677	-117.579
Trabuco Rose	126	<i>Platanus racemosa</i>	Western Sycamore	Poor	Poor	Low	Treatment	33.67436	-117.585
Trabuco Rose	127	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67236	-117.586
Trabuco Rose	128	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67237	-117.586
Trabuco Rose	129	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67239	-117.586
Trabuco Rose	130	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67256	-117.586
Trabuco Rose	131	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67233	-117.586
Trabuco Rose	132	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67237	-117.586
Trabuco Rose	133	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67215	-117.587
Trabuco Rose	134	<i>Salix laevigata</i>	Red Willow	Poor	Poor	None		33.67233	-117.586








# Attachment 4

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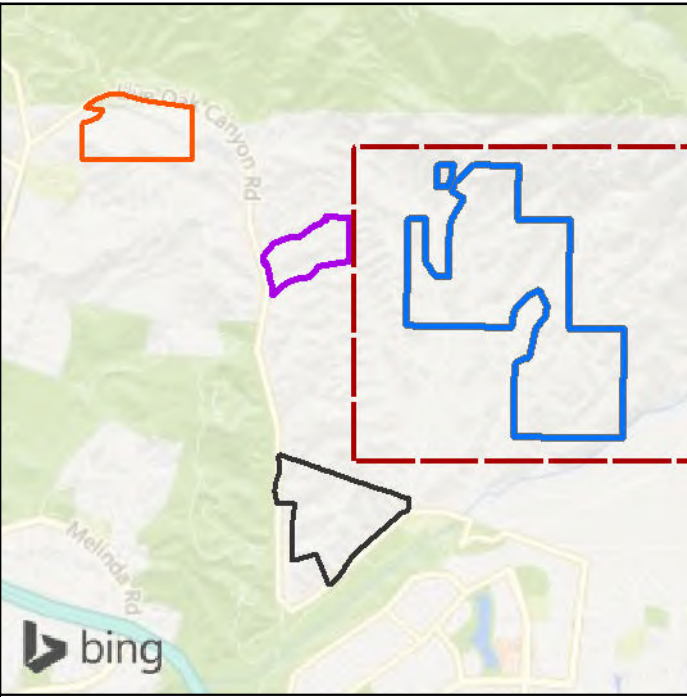
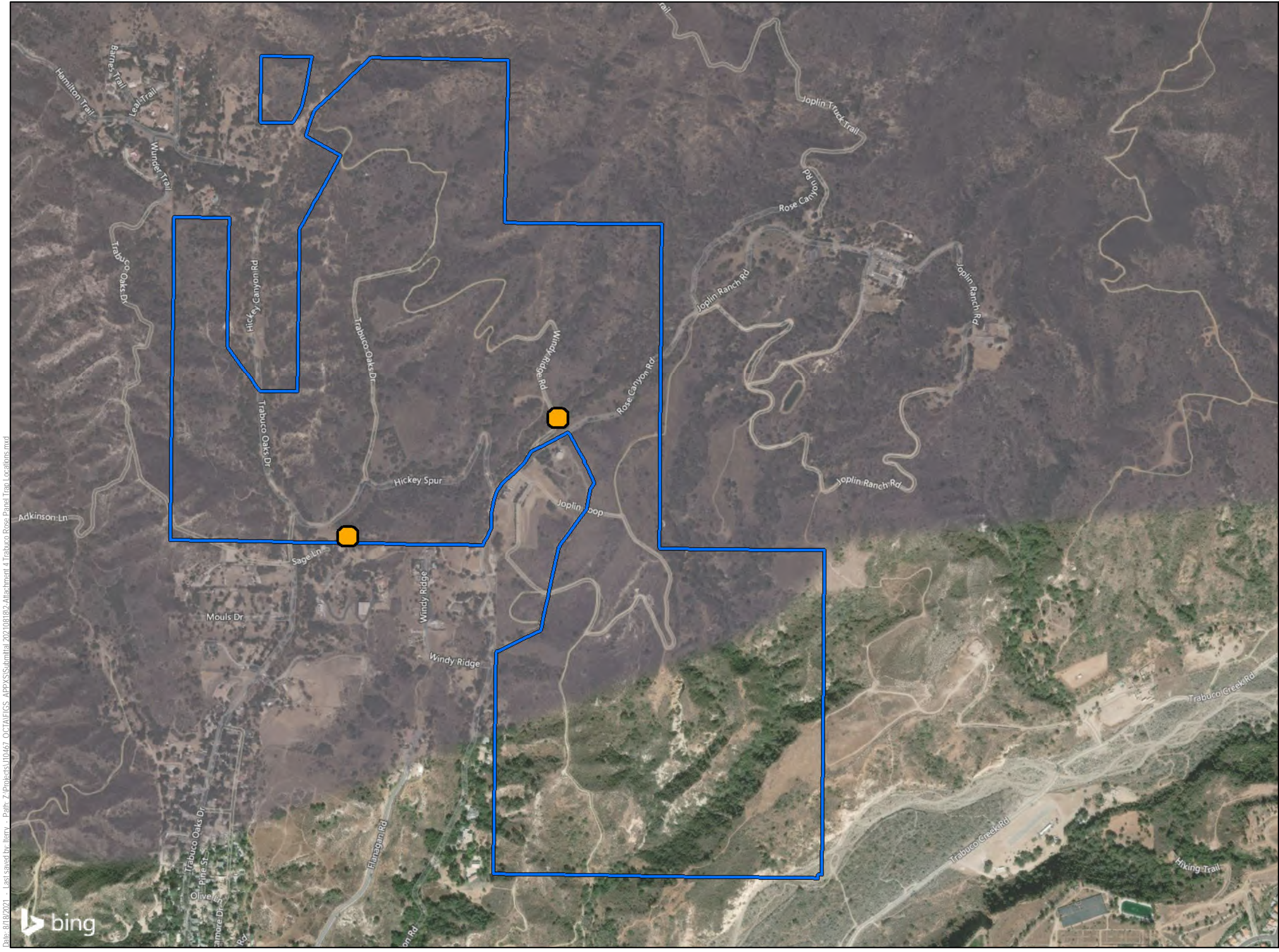
Panel Trap Locations



-  Panel Trap Location
-  Bobcat Ridge Preserve
-  Wrensview Preserve
-  Saddlecrest South Preserve
-  Trabuco Rose Preserve

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SOURCE: AERIAL - BING MAPPING SERVICE 2020

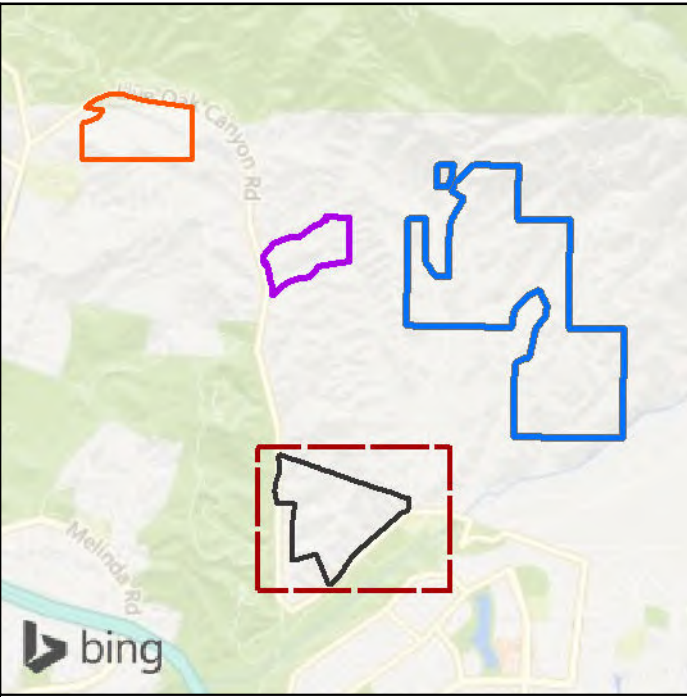







-  Panel Trap Location
-  Trabuco Rose Preserve
-  Bobcat Ridge Preserve
-  Saddlecrest South Preserve
-  Wrensview Preserve

Date: 8/18/2021 1:51:00 PM Path: Z:\Projects\1101671 OCTAIEGS APPX\S\1101671-Attachment 4 Trabuco Rose Panel Trap Locations.mxd

SOURCE: AERIAL- BING MAPPING SERVICE 2020



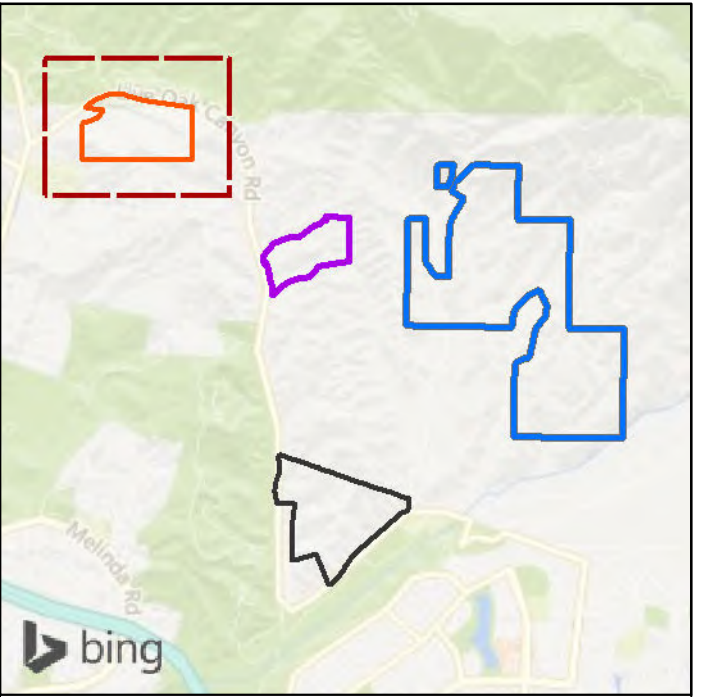







-  Panel Trap Location
-  Wrenview Preserve
-  Bobcat Ridge Preserve
-  Saddlecrest South Preserve
-  Trabuco Rose Preserve

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SOURCE: AERIAL - BING MAPPING SERVICE 2020





-  Panel Trap Location
-  Saddlecrest South Preserve
-  Wrensvew Preserve
-  Bobcat Ridge Preserve
-  Trabuco Rose Preserve

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SOURCE: AERIAL- BING MAPPING SERVICE 2020



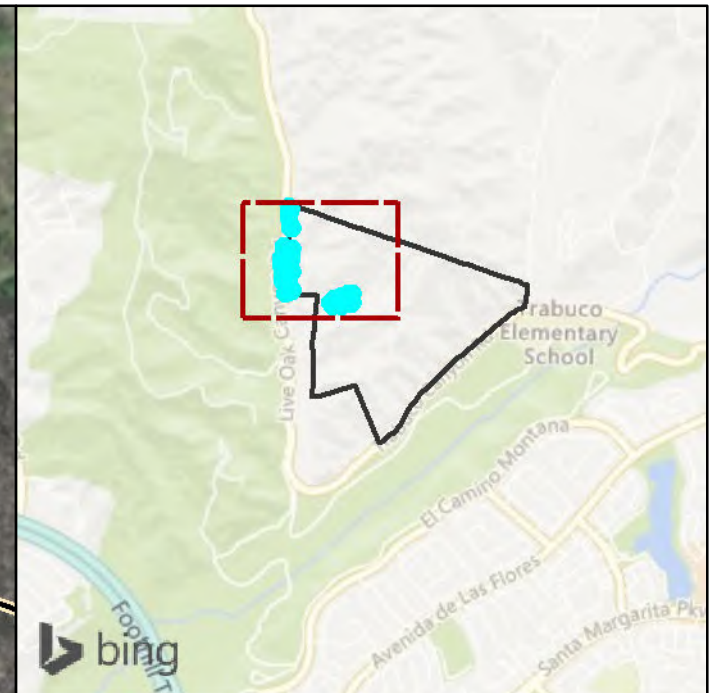
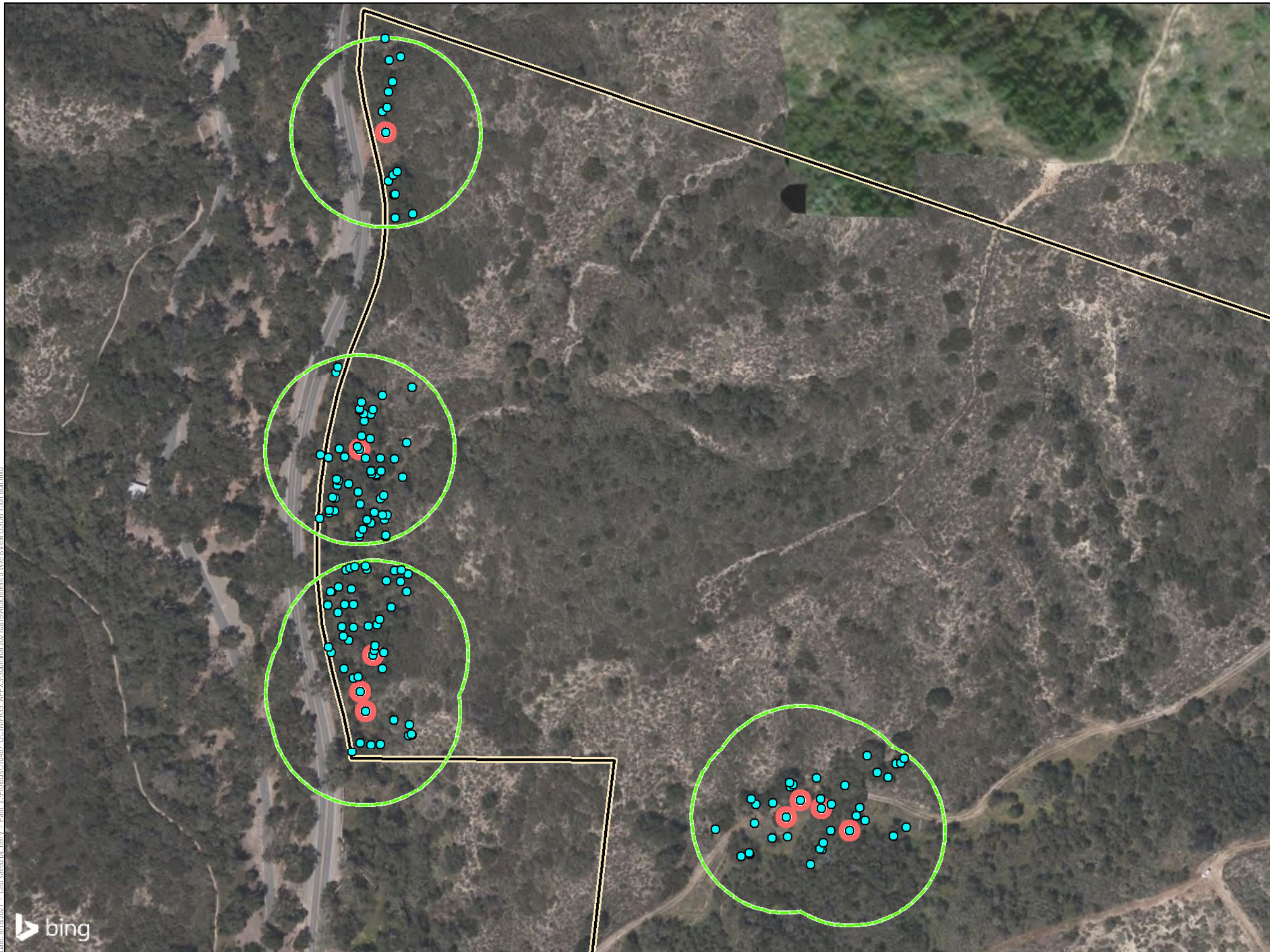






# Attachment 5

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GSOB Evaluation Area

Date: 8/18/2021 ... Last saved by: liany ... Path: Z:\Projects\110167\_02\AFCGS\_APP\GIS\Submittal\_20210818\Attachment\_5\_WrensView\_GSOB\_150ft\_Buffer.mxd



-  Wrensview Preserve
-  150-Ft Survey Buffer
-  Coast live Oak (GSOB Evaluation 2021)
-  QUAG-GSOB

SOURCE: AERIAL- BING MAPPING SERVICE 2020





# Attachment 6

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Waypoint Analytical Results

Anaheim Office  
Lab No. 21-116-0366  
Path No. 439  
May 21, 2021

Dudek Environmental Consultants  
31878 Camino Capistrano  
San Juan Capistrano, CA 92675

Attn: Chris Lacroix

## **PATHOLOGY RESULTS: INSECT ID – OCTA PROJECT**

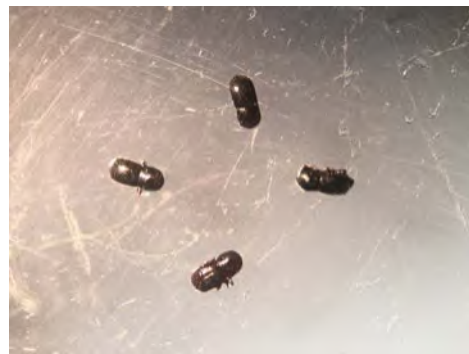
A total of 4 sample bags containing beetles recovered beetle from field traps placed to monitor populations of Invasive Shot Hole Borer (ISHB) were dropped off at our laboratory on April 21, 2021. Sample bags were labeled as follows:

- 1) Trabuco Rose, Trap 1 (5 beetles)
- 2) Trabuco Rose, Trap 2 (4 beetles)
- 3) Wrens, Trap 1 (5 beetles)
- 4) Wrens, Trap 2 (11 beetles)

At the time of sample drop off a request was made to determine whether the submitted insects are adult ISHB.



Trabuco Rose – Trap 1



Trabuco Rose – Trap 2



Wrens – Trap 1



Wrens – Trap 2



Page 2  
Dudek Environmental Consultants  
May 21, 2021

Performed microscopy work indicates that the dropped off insect present in each of the 4 traps are morphologically consistent with ISHB. Thorough species verification, of course, can only be achieved through molecular analysis.

Please call if you have any questions.

A handwritten signature in black ink, appearing to read "Paul Santos", with a long horizontal flourish extending to the right.

Paul F. Santos, M.S.  
Plant Pathologist



# Attachment 7

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ISHB Host Species List

## ATTACHMENT 7

### Reproductive Host Species for ISHB

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Susceptible to Invasive Shothole Borer-Fusarium dieback (ISHB-FD) disease complex (may cause tree death).

1. *Acer buergerianum* - Trident maple
2. *Acer macrophyllum* - Big leaf maple\*
3. *Acer negundo* - Box elder\*
4. *Parkinsonia aculeata* - Palo verde
5. *Platanus racemosa* - California sycamore\*
6. *Platanus x hispanica* - London plane
7. *Populus fremontii* - Fremont cottonwood\*
8. *Populus nigra* - Black poplar\*
9. *Populus trichocarpa* - Black cottonwood\*
10. *Quercus lobata* - Valley oak\*
11. *Quercus robur* - English oak
12. *Ricinus communis* - Castorbean
13. *Salix gooddingii* - Black willow\*
14. *Salix laevigata* - Red willow\*
15. *Salix lasiolepis* - Arroyo willow\*

Less susceptible to ISHB-FD (causes branch dieback), and/or the beetle commonly colonizes at the margin of canker diseases.

1. *Acacia melanoxylon* - Australian blackwood
2. *Acacia spp.* - Acacia
3. *Acer paxii* - Evergreen maple
4. *Acer saccharinum* - Silver leaf maple
5. *Aesculus californica* - California buckeye\*
6. *Ailanthus altissima* - Tree of heaven
7. *Albizia julibrissin* - Mimosa
8. *Alectryon excelsus* - Titoki
9. *Alnus rhombifolia* - White alder\*
10. *Archontophoenix cunninghamiana* - King palm
11. *Baccharis salicifolia* - Mule fat\*
12. *Bauhinia variegata* - Purple orchid tree
13. *Brachychiton populneus* - Kurrajong
14. *Camellia semiserrata* - Camellia
15. *Castanospermum australe* - Moreton Bay chestnut
16. *Casuarina equisetifolia* - Australian pine tree
17. *Parkinsonia florida* - Blue palo verde\*
18. *Parkinsonia x sonorae* - Sonoran palo verde

## ATTACHMENT 7

### Reproductive Host Species for ISHB

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19. *Cocculus laurifolius* - Laurel leaf snailseed tree
20. *Cupaniopsis anacardioides* - Carrotwood
21. *Dombeya cacuminum* - Strawberry tree
22. *Erythrina caffra* - Coast coral tree
23. *Erythrina coralloides* - Coral tree
24. *Erythrina falcata* - Brazilian coral tree
25. *Corymbia ficifolia* - Red flowering gum
26. *Fagus crenata* - Japanese beech
27. *Ficus altissima* - Council tree
28. *Ficus carica* - Black mission fig
29. *Gleditsia triacanthos* - Honey locust
30. *Harpullia pendula* - Tulip wood
31. *Howea forsteriana* - Kentia palm
32. *Ilex cornuta* - Chinese holly
33. *Jacaranda mimosifolia* - Jacaranda
34. *Acer palmatum* - Japanese maple
35. *Koelreuteria bipinnata* - Chinese flame tree
36. *Liquidambar styraciflua* - American sweet gum
37. *Magnolia grandiflora* - Southern magnolia
38. *Magnolia virginiana* - Sweet bay
39. *Persea americana* - Avocado
40. *Platanus mexicana* - Mexican sycamore
41. *Prosopis articulata* - Mesquite\*
42. *Pterocarya stenoptera* - Chinese wingnut
43. *Quercus agrifolia* - Coast live oak\*
44. *Quercus chrysolepis* - Canyon live oak\*
45. *Quercus engelmannii* - Englemann oak\*
46. *Quercus suber* - Cork oak
47. *Salix babylonica* - Weeping willow
48. *Spathodea campanulata* - African tulip tree
49. *Tamarix ramosissima* - Tamarisk
50. *Wisteria floribunda* - Japanese wisteria
51. *Xylosma congesta* - Dense logwood / Shiny *Xylosma*

\*California Native

### References

Eskalen, A., R. Stouthamer, S. Lynch, P. F. Rugman-Jones, M. Twizeyimana, A. Gonzalez, and T. Thibault. 2013. Host Range of *Fusarium* Dieback and Its Ambrosia Beetle: (Coleoptera: Scolytinae) Vector in Southern California. *Plant Disease* 97:938-951.

University of California Invasive Shothole Borers Program. n.d. "ISHB Reproductive Hosts."

## **ATTACHMENT 7**

### **Reproductive Host Species for ISHB**

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<https://ucanr.edu/sites/pshb/pest-overview/ishb-reproductive-hosts/>. Accessed on June 3, 2021.



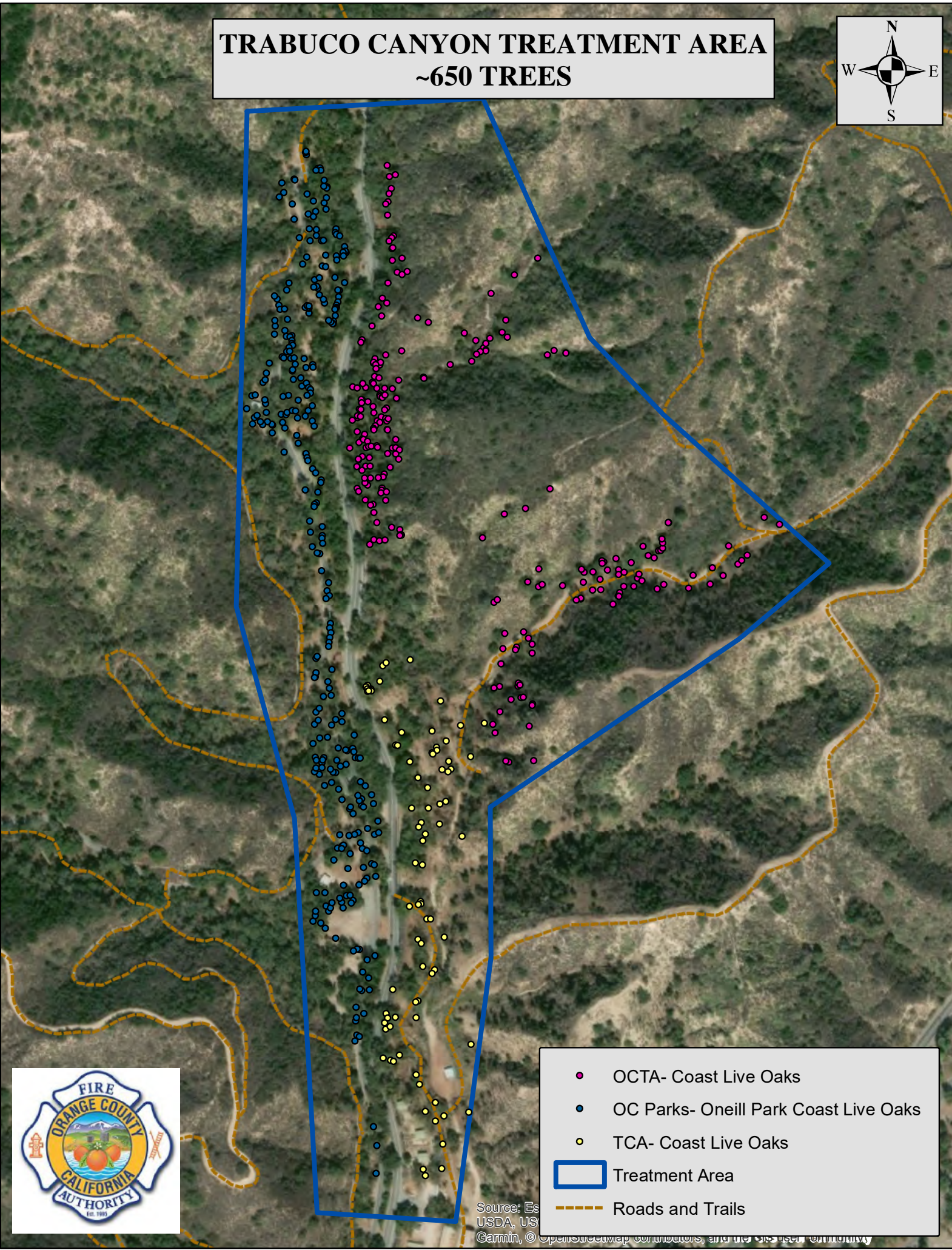
# Attachment 8

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OCFA Treatment Area



# TRABUCO CANYON TREATMENT AREA ~650 TREES



- OCTA- Coast Live Oaks
- OC Parks- Oneill Park Coast Live Oaks
- TCA- Coast Live Oaks
- ▭ Treatment Area
- Roads and Trails

Source: Esri, USDA, USGS, Garmin, © OpenStreetMap contributors, and the GIS user community

## APPENDIX F

**FIRST ANNUAL MONITORING REPORT**  
**FOR**  
**DISTURBED LANDS WITHIN PACIFIC HORIZON PRESERVE RESTORATION**  
**PACIFIC HORIZON PRESERVE AT LAGUNA BEACH**  
**CITY OF LAGUNA BEACH, ORANGE COUNTY, CALIFORNIA**

**February 1, 2022**

**Prepared for:**

**Orange County Transportation Authority (OCTA)**  
**550 South Main Street**  
**Orange, California 92868**  
**Contact: Lesley L. Hill**  
**Telephone: (714) 560-5759**

**Prepared by:**

**Glenn Lukos Associates, Inc.**  
**1940 E Deere Avenue, Suite 250**  
**Santa Ana, California 92705**  
**Contact: Lexi Kessans/Sheri Asgari**  
**Telephone: (949) 837-0404**  
**Fax (949) 837-5834**

**California Coastal Commission Coastal Development Permit No. 5-19-0580**

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## EXHIBITS

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## APPENDICES

- A. Persons Responsible Conducting First-Year Monitoring and Reporting

# **PACIFIC HORIZON PRESERVE DISTURBED LANDS RESTORATION FIRST ANNUAL MONITORING REPORT**

## **I. PROJECT INFORMATION**

### **A. Project Name**

Disturbed Lands within Pacific Horizon Preserve Restoration

### **B. Applicant**

Orange County Transportation Authority  
550 South Main Street  
Orange, California 92868  
Contact: Lesley L. Hill  
Telephone: (914) 560-5759

### **C. Project Consultant**

Glenn Lukos Associates, Inc.  
1940 E. Deere Avenue, Suite 250  
Contacts: Lexi Kessans/Sheri Asgari  
Telephone: (949) 837-0404

### **D. Permit File Number**

Coastal Development Permit (CDP) No. 5-19-0580

## **II. RESTORATION SITE INFORMATION**

### **A. Restoration Site Location**

Pacific Horizon Preserve is a 150-acre preserve located east of Pacific Coast Highway in the City of Laguna Beach in Orange County. The Preserve is situated between Aliso and Wood Canyons Wilderness Park (County Parks/Parks) along the northern and eastern boundaries, City of Laguna Beach (City) open space and Hobo Ridge conservation lands to the south/southwest, The Ranch at Laguna Beach (The Ranch) to the south, and residential development along the northwest boundary. A network of existing trails extends from Moulton Meadows Park and the Aliso Woods Canyon Wilderness Parks "Moulton Meadows Linkage Trail" converging together near the northern boundary of the Preserve before continuing back on to the Aliso Woods Canyon property [Exhibit 1].

## **B. Restoration Goals and Objectives**

The goal of restoration within the Pacific Horizon Preserve is to decommission an unauthorized hiking trail that is threatening a population of many-stemmed dudleya (*Dudleya multicaulis*), passively restoring other disturbed areas in the vicinity of the trail which support intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) and coastal sage scrub (CSS) habitat, and the initiation of invasive plant species removal in accordance with the *Restoration Plan for Disturbed Lands within Pacific Horizon Preserve* (Restoration Plan) dated August 2019, *Invasive Species Management Plan for OCTA M2 Preserves – Pacific Horizon Preserve* (ISMP) dated December 2018, and Special Condition 2 of the CDP.

The decommissioned trail has been subject to ongoing disturbance, mainly through unauthorized trail modifications that have been created by individuals for popular mountain bike use. These modifications include establishment of trails through native and/or sensitive habitat, and the movement and piling of soil to create berms and mounds for bicycle jumps. As such, the targeted areas for restoration include the unauthorized trails, bicycle jumps, soil mounds, and erosional cuts. Along with these targeted areas, the restoration will concurrently focus on removing high priority invasive plant species found along the northern boundary of the site on both the Preserve and County Parks side. Target invasive plant species include artichoke thistle (*Cynara carunculus*), fountain grass (*Pennisetum setceum*), iceplant (*Carpobrotus edulis*), Pampas grass (*Cortaderia selloana*), and sweet fennel (*Foeniculum vulgare*). The location of restoration areas and mapped invasive species is depicted on Exhibit 2.

## **C. Restoration Implementation**

Activities required to implement restoration include fence repair, installation of signage and camera locations, trail contouring/hand-repair of bike jumps, erosion control, soil decompaction, invasive species removal, regular maintenance (weed abatement, fence/sign repair, follow-up herbicide treatment, etc.), and monitoring.

The initial implementation of restoration occurred on February 2, 2021 and included treatment of artichoke thistle using a Glyphosate-based herbicide; treatment of iceplant on OCTA property using a Glyphosate-based herbicide; fence line repairs along the northern boundary of the Preserve; signage installation; covering decommissioned trail with cut vegetation/debris; and salvage of coastal prickly pear cactus (*Opuntia littoralis*) from adjacent onsite sources to be planted in the restored trail areas [Exhibit 2]. Initial treatment of iceplant on County Parks property occurred on March 2, 2021.

## **III. MAINTENANCE**

Maintenance consisted primarily of weed abatement via manual methods or targeted herbicide application, maintaining erosion control materials such as straw wattles, and repairing fencing and signage, as needed. Herbicide use occurred only in areas where native species would not be affected. All maintenance is carried out under the Project Biologist's guidance and supervision.

Following the initial treatments in February 2021 as described above, follow up treatment of artichoke thistle seedlings occurred on March 4 and June 7, 2021. Treatment of Pampas grass occurred on March 5, March 8, and March 9, 2021 with follow-up treatments on April 19 through April 21, 2021.

Cuttings of prickly pear cactus were planted in the trail disturbance restoration area on March 4, 2021.

The table below provides the dates of all restoration activities in 2021.

Pacific Horizon Restoration Activity Log	
Date	Activity
1/19/2021	On-site meeting with OCTA, GLA, and RECON
2/2-2/4/2021	RECON field crew performed <sup>1</sup> : (1) herbicide treated artichoke thistle plants; (2) herbicide treated iceplant on OCTA property; (3) repaired damage that had been done to the fenceline along the northern boundary of the Preserve; (4) added three restoration signs to fenceline; (5) removed all unauthorized branches and debris that had been thrown on to live vegetation and staged them along the decommissioned trail to prevent further access; and (6) salvaged <i>Opuntia littoralis</i> from cactus collection areas and left on-site to callous.
3/2/2021	RECON field crew performed: (1) herbicide treated iceplant on County Parks property, and (2) herbicide treated germinating artichoke thistle plants.
3/4/2021	RECON field crew performed: (1) continued the spot-spraying of artichoke thistle plants; and (2) planted the salvaged <i>Opuntia littoralis</i> cuttings along the decommissioned trail and in areas where iceplant had died back and created open spaces for native plant establishment.
3/5, 3/8, 3/9/2021	RECON field crew herbicide treated Pampas grass in the Pampas grass removal area.
3/18/2021	RECON field crew installed additional restoration signs along fenceline to inform public of the sensitive resources found on the Preserve (i.e., many-stemmed dudleya)
4/19-4/21/2021	RECON field crew treated Pampas grass in the Pampas grass removal area.
5/12/2021	GLA conducted monitoring of the treated Pampas grass and artichoke thistle, and trail restoration areas.
6/7/2021	RECON field crew treated artichoke thistle regrowth in the artichoke thistle removal area.

#### IV. MONITORING RESULTS

The goal of the monitoring is to assess the effectiveness of the recommended restoration actions in trail disturbance areas and invasive species treatment areas, as well as allow for adaptive management strategies (such as active restoration) to be implemented in the future, if necessary. Per the Restoration Plan, all monitoring methods are potential tools to be selected by the best judgement of the Preserve Biologist and Preserve Manager.

Qualitative monitoring was conducted on a quarterly basis during the first year following initiation of restoration in the trail disturbance areas and initial invasive species removals. Qualitative monitoring comprised visual assessment of the treatment areas to observe signs of regrowth, new disturbance, natural recruitment of native species, plant health, and any potential stressors to the areas under restoration. Site photographs taken one year post initial treatment are presented as Exhibit 3.

<sup>1</sup> All RECON field crew days were under the supervision of a qualified biologist.

## **A. Trail Disturbance Restoration Areas**

Qualitative observations indicate that the treatment of the iceplant on OCTA and County Parks property has been successful, effectively killing the treated iceplant. Within the trail restoration areas, treated Pampas grass, fountain grass, and sweet fennel have also been effectively eradicated. Little or no infill of native species has been observed in the first year of monitoring.

The trail decompaction areas show less unauthorized entry, but bicycle tracks were occasionally noted. Cactus pad plantings are surviving but due to very little rain, do not show signs of new growth. Monitoring will continue to check for new growth of cactus and natural recruitment of coastal sage scrub from adjacent areas.

Installed fencing along the northern boundary is generally intact and is being routinely monitored for tampering.

## **B. Invasive Species Removal Areas**

Qualitative observations indicate that the targeted treatment of artichoke thistle and Pampas grass using a Glyphosate-based herbicide is effective. Natural recruitment of native species including coyote brush (*Baccharis pilularis*), sticky monkey flower (*Mimulus aurantiacus*), California sagebrush (*Artemisia californica*), and purple needlegrass (*Stipa pulchra*) was noted in the artichoke thistle removal area. New seedlings of artichoke thistle were also noted and will be targeted in the winter and spring months of 2022.

The Pampas grass removal area will also require follow-up treatment, but the targeted herbicide application was successful in killing approximately 90-percent of the Pampas grass.

## **V. RECOMMENDATIONS**

Per the RMP and ISMP, monitoring is ongoing in perpetuity, therefore maintenance during the next year will continue to focus on routine weed abatement, fence/sign repair, and monitoring the status of the invasive plant species. Along with this, site monitors will take note on the establishment of the native plant communities within the restoration areas.

Second-year monitoring will continue on a quarterly basis, and a corresponding annual report will be submitted to the CCC by December 31, 2022.

## **A. Trail Disturbance Restoration Areas**

Recommended maintenance actions in the next year include routine maintenance of the fence line and follow-up targeted spray of any invasive species regrowth or new occurrences upon detection. Due to expected drought conditions in the 2022 growing season, no active restoration including planting or seeding is recommended at this time.



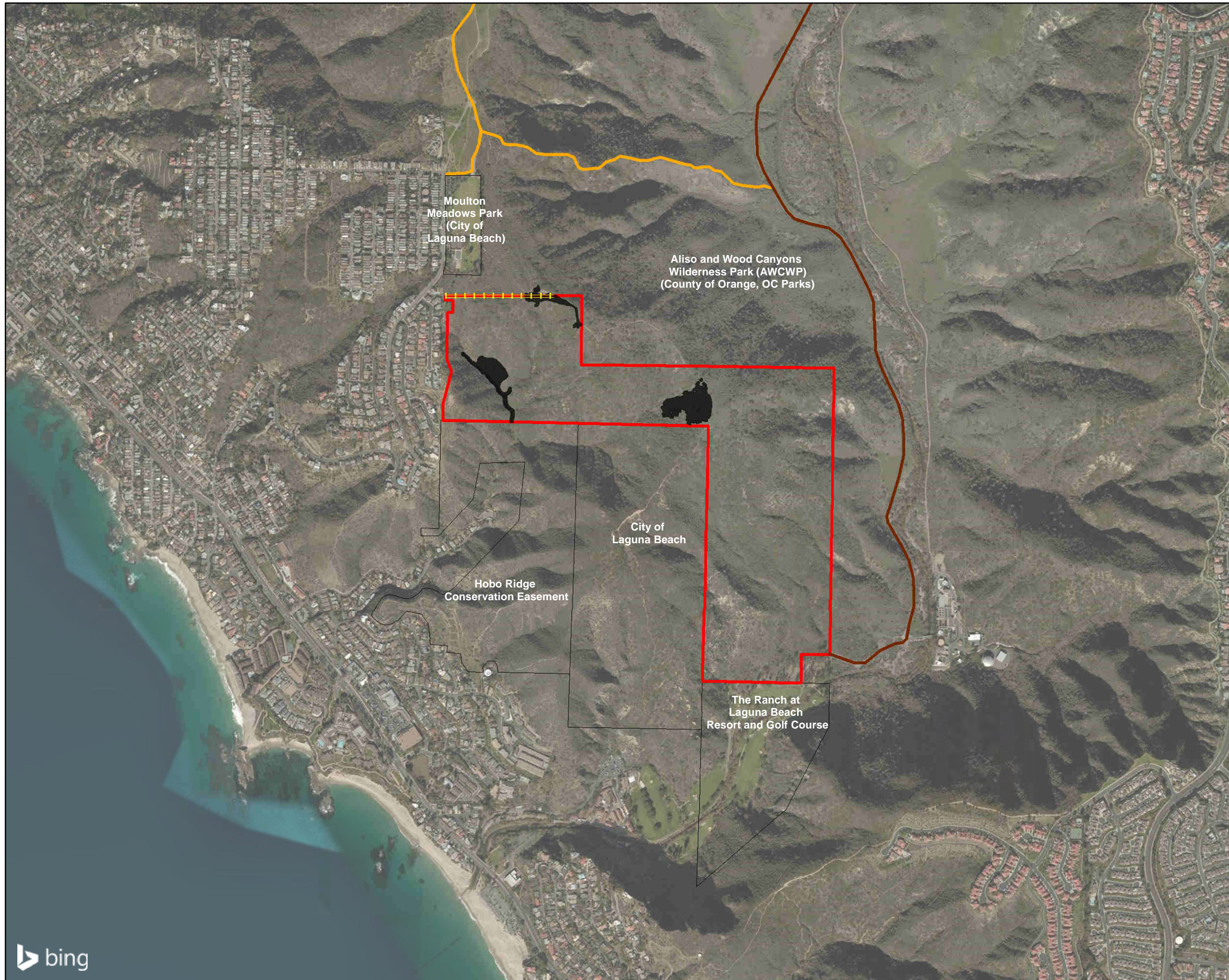
## **B. Invasive Species Removal Areas**

Recommended maintenance actions in the next year include routine follow-up targeted spray of any regrowth of treated artichoke thistle and Pampas grass, new seedlings, and new occurrences of any invasive species during the winter and spring months. Due to expected drought conditions in the 2022 growing season, no active restoration including planting or seeding is recommended at this time.

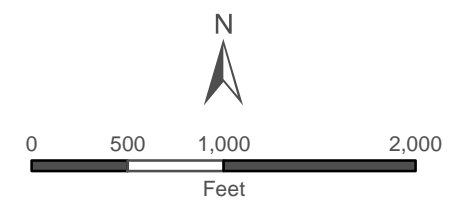
## APPENDIX A

### Persons Responsible for Conducting First-Year Monitoring and Reporting

<b>Name</b>	<b>Title</b>	<b>Company</b>
Sheri Asgari	Senior Restoration Ecologist	Glenn Lukos Associates, Inc.
Lexi Kessans	Senior Regulatory Specialist	Glenn Lukos Associates, Inc.
Jillian Stephens	Botanist	Glenn Lukos Associates, Inc.
Wanisa Jaikwang	Restoration Ecologist	Glenn Lukos Associates, Inc.



- Pacific Horizon Preserve
- Restoration Areas
- Existing Fence Repair
- AWCWP - Authorized Trails: Open Access
- AWCWP - SOCWA CTP Access Road/  
Aliso Creek Trail: Managed Access



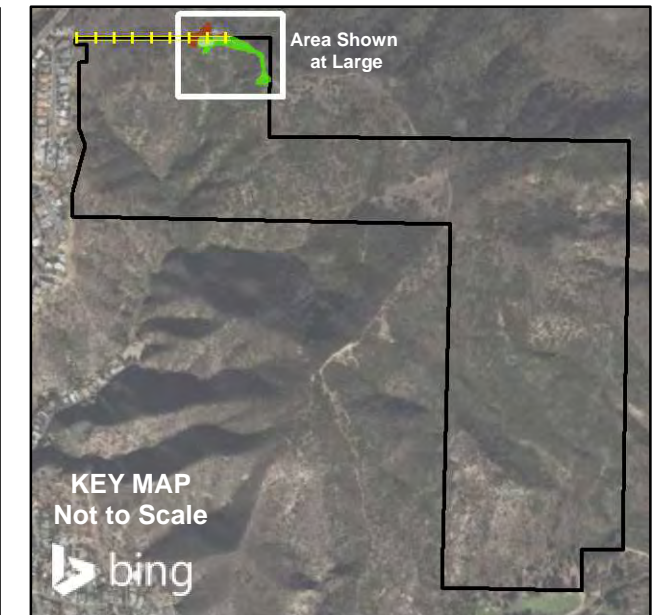
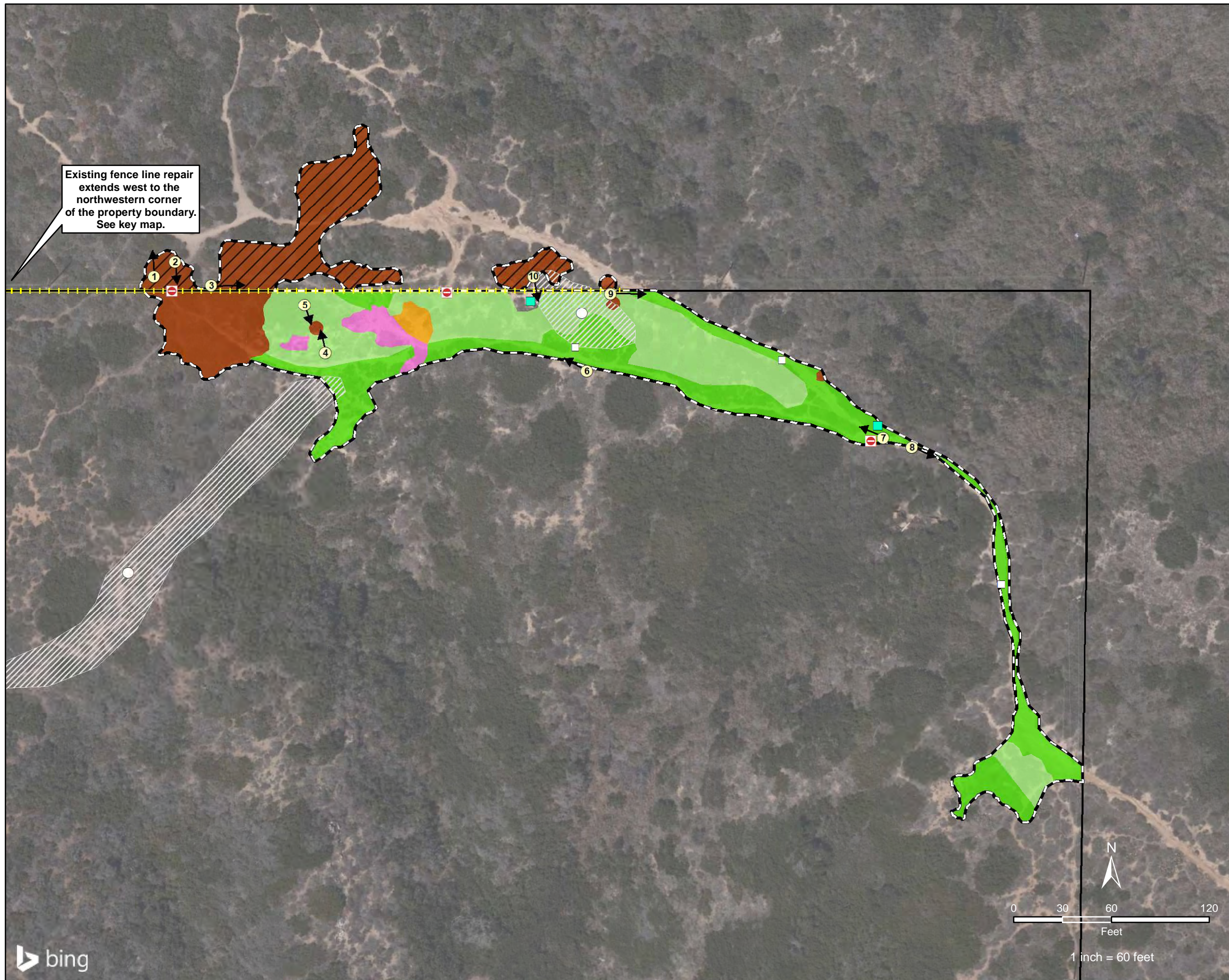
1 inch = 1,000 feet

**PACIFIC HORIZON PRESERVE**  
Vicinity Map



Exhibit 1





- Pacific Horizon Preserve
- Disturbed Lands Restoration Work Area
- Existing Fence Repair
- Iceplant Removal Areas (County Property) - 0.13 ac.
- Iceplant Removal Areas - 0.07 ac.
- Fountain Grass Removal Areas - 0.02 ac.
- Pampas Grass Removal Areas - 0.01 ac.
- Passive Restoration - 0.22 ac.
- Active Restoration - 0.23 ac.
- "Do Not Enter/Restoration in Progress" Sign
- Approximate Location of Approved Camera Station
- Photo Location

**Covered Species**

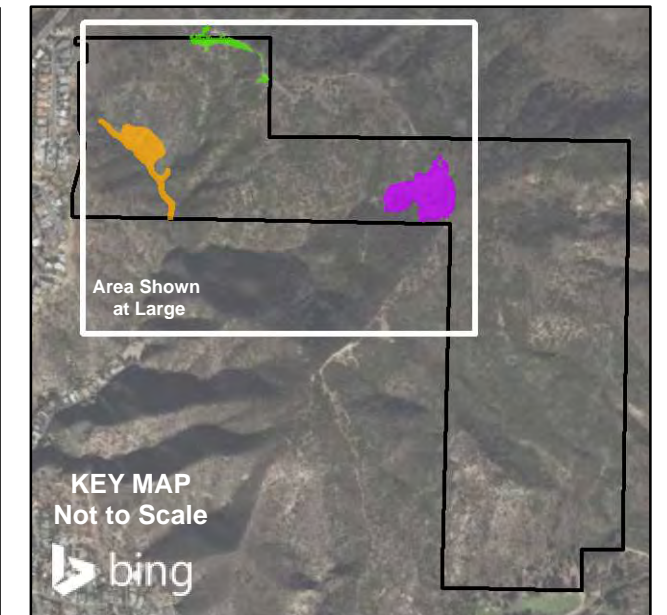
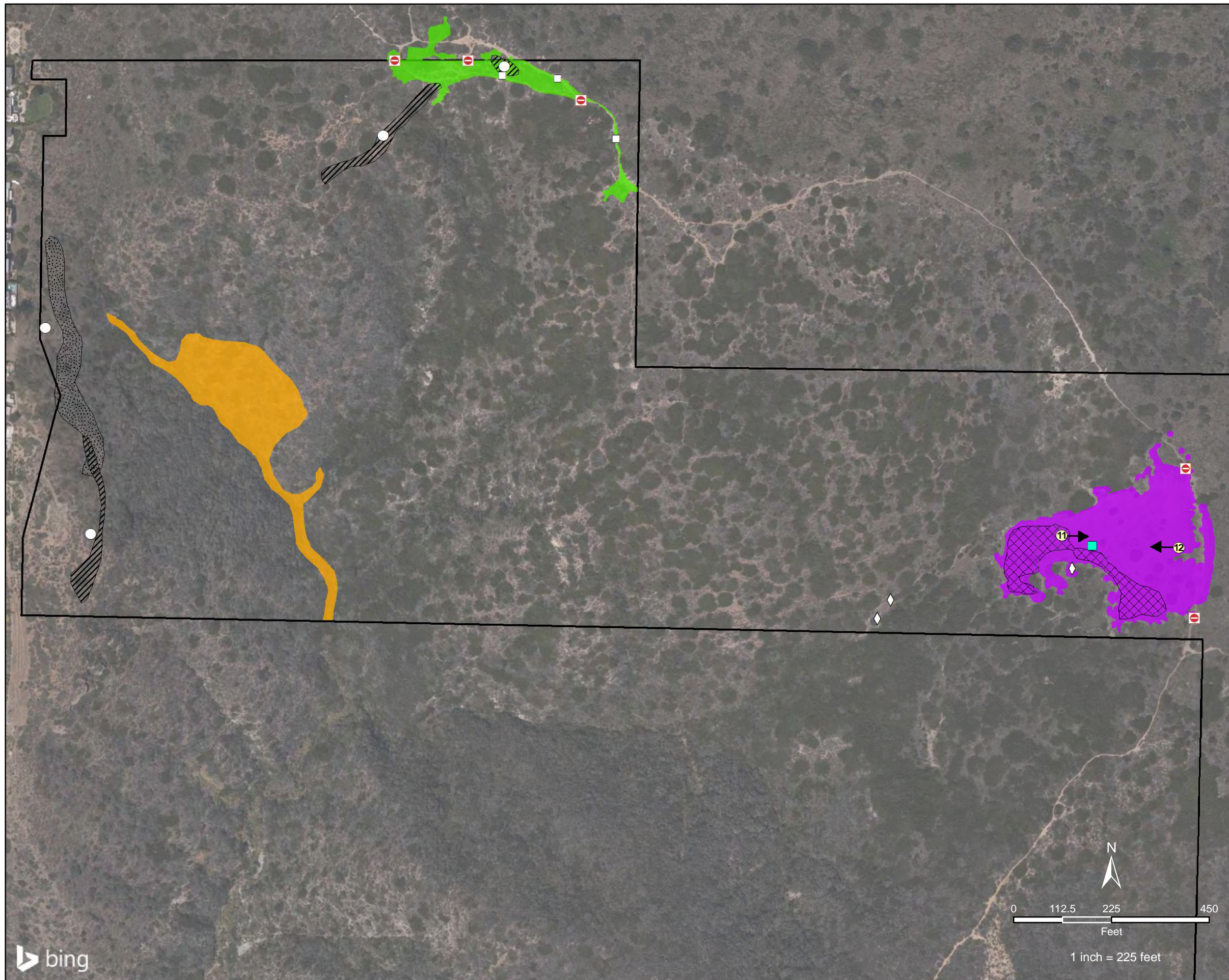
- Intermediate Mariposa Lily
- Intermediate Mariposa Lily
- Many-stemmed Dudleya
















**PACIFIC HORIZON PRESERVE**

Restoration and Photo Location Map

GLENN LUKOS ASSOCIATES





-  Pacific Horizon Preserve
  -  Artichoke Thistle Removal Area - 2.34 ac.
  -  Pampas Grass Removal Area - 1.42 ac.
  -  Disturbed Lands Restoration Area
  -  "Do Not Enter/Restoration in Progress" Sign
  -  Approximate Location of Approved Camera Station
  -  Photo Location
- Covered Species**
-  Intermediate Mariposa Lily
  -  Intermediate Mariposa Lily
  -  Many-stemmed Dudleya
- Non-Covered Sensitive Species**
-  Catalina Mariposa Lily
  -  Crownbeard
  -  Catalina Mariposa Lily
  -  Crownbeard
  -  Western Dichondra

**PACIFIC HORIZON PRESERVE**

Restoration and Photo Location Map

GLENN LUKOS ASSOCIATES





Photograph 1: View of treated iceplant located on County of Orange property. Lemonadeberry and California buckwheat observed to be growing on the County side. Photo dated January 26, 2022



Photograph 2: View of decommissioned trail and new fencing and signage. Lower left-hand side views treated iceplant. Photo dated January 26, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 1

**PACIFIC HORIZON PRESERVE**  
Year 1 Monitoring Site Photographs



Photograph 3: View of treated iceplant located on County property (left side) and treated iceplant on Preserve property (right side). Photo also depicts the repaired fenceline and added signage. Photo dated January 26, 2022.



Photograph 4: View of decompacted area. Area previously used as a bike jump. Photo dated January 26, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 2

**PACIFIC HORIZON PRESERVE**

Year 1 Monitoring Site Photographs



Photograph 5: View of bare areas previously used as bike jump. Treated fountain grass (right of photo) and iceplant (center of photo) depicted. Blue dick bulbs observed within the vicinity. Photo dated January 26, 2022.



Photograph 6: View of removed and recontoured bike berm. California sagebrush observed to be growing in. Photo dated January 26, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 3

**PACIFIC HORIZON PRESERVE**

Year 1 Monitoring Site Photographs





Photograph 7: View of decommissioned trail (left side) and open recontoured trail (right side). Further contouring may be necessary. Photo dated January 26, 2022.



Photograph 8: View of area that may need additional recontouring. Photo dated January 26, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 4

**PACIFIC HORIZON PRESERVE**  
Year 1 Monitoring Site Photographs



Photograph 9: View of empty fence posts. Barbed wire removed during this past year. Photo dated January 26, 2022.



Photograph 10: View of area approved for camera placement. Photo dated January 26, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 5

PACIFIC HORIZON PRESERVE

Year 1 Monitoring Site Photographs



Photograph 11: View of treated artichoke thistle. Blue dick bulbs observed. Photo dated January 26, 2022.



Photograph 12: View of treated artichoke thistle. Blue dick bulbs observed. Photo dated January 26, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 6

**PACIFIC HORIZON PRESERVE**

Year 1 Monitoring Site Photographs

## APPENDIX G

**Memorandum**

To	Setal Prabhu, SCE	Page	1
CC	Michelle Fehrensen, AECOM		
Subject	Herbicide Treatment Plan Memorandum		
From	Chris Hargreaves, AECOM Restoration Ecologist, Gary Omori, Pest Control Advisor (CA DPR PCA #72314)		
Date	March 19, 2021		

A site visit was conducted on behalf of Southern California Edison (SCE) within the Pacific Horizon Preserve (Preserve) on February 26, 2021 by AECOM restoration ecologist Chris Hargreaves and ACS Habitat Management Pest Control Advisor Gary Omori (CA DPR PCA #72314). The site visit was conducted to assess the extent and growth stages of non-native, invasive weed species to be targeted for control. Based on this site visit, AECOM and ACS have developed the enclosed general herbicide treatment plan for the target weeds that will be chemically removed during weed control efforts, as previously described in the Pacific Horizon Preserve Weed Control Memorandum (Weed Control Memo) (Attachment A). The Weed Control Memo was developed to further detail weed control efforts initially presented in the Biological Resources Survey Report for the Pacific Horizon Preserve Restoration Project (Bio Resources Survey Report) (AECOM 2020). The Bio Resources Survey Report documents temporary impacts associated with SCE’s Pole Replacement and Vegetation Management Activities on their Acres 12kV/Agate 12kV Distribution Lines as well as project background and description, regulatory requirements for the work conducted, and summarizes the survey methodology, habitat impacts, and completed and planned restoration activities to address after-the-fact impacts.

The Weed Control Memo states that SCE will conduct four weed removal events over the course of a year. These weed removal events were tentatively set for September 2020, February 2021, April 2021, and July 2021 per the “Timing” column in Table 1, and ultimately based on climate and growth stage of the target weed species.

The first of the four weed removal events occurred September 28 through October 1, 2020. Target species that were manually removed included scarlet pimpernel (*Lysimachia arvensis*), fennel (*Foeniculum vulgare*), horehound, milk thistle (*Silybum marianum*) heads, artichoke thistle heads and iceplant (*Carpobrotus edulis*). No herbicide was applied during the first weed removal event. The second weed removal event is scheduled to occur on Monday March 22 and Wednesday through Friday March 24 through March 26, 2021; it will consist of manual as well as chemical removal methods which is the purpose of this memorandum as required by the Invasive Species Management Plan for the Pacific Horizon Preserve (ISPM) (Glen Lukos Associates, 2018).

During this site visit AECOM and ACS walked approximately 80% of the work area within the Preserve, staying on existing paths. Target weed species observed, as well as their growth stages include wild artichoke (*Cynara cardunculus*) 4-10 inches in vegetative stage, horehound (*Marrubium*

*vulgare*) 2-3 inches in vegetative stage, black mustard (*Brassica nigra*) 1-2 inches in vegetative basal stage, poison hemlock (*Conium maculatum*) 1-2 inches in vegetative stage, tree tobacco (*Nicotiana glauca*) resprouting from previously, manually cut stems, as well as wild oats (*Avena sp.*) and bromes (*Bromus sp.*) that were too early in their growth stage to identify at the species level. Table 1 (from the Weed Control Memo) is a cumulative list of the non-native weed species that were previously observed adjacent to and within the work area; one weed species, black mustard, observed during this site visit was added to the list.

**Table 1. Target Non-Native Weed Species (Table 1 from the Weed Control Memo)**

Scientific Name	Common Name	Cal-IPC Rating	Bloom Period	Timing for Control
<i>Avena barbata</i>	slender wild oat	Moderate	March-June	Feb and April 2021
<i>Brassica nigra</i>	black mustard	Moderate	April-July	April-July 2021
<i>Bromus hordeaceus</i>	soft chess	Limited	April-May	April-July 2021
<i>Bromus madritensis</i> spp. <i>Rubens</i>	red brome	High	February-March	Feb and April 2021
<i>Carduus pycnocephalus</i>	Italian thistle	Moderate	February-July	Sept 2020, Feb-July 2021
<i>Carpobrotus edulis</i>	freeway iceplant	High	February-October	Sept 2020, Feb-July 2021
<i>Centaurea melitensis</i>	toocalote	Moderate	April-August	Sept 2020, April-July 2021
<i>Cynara cardunculus</i>	artichoke thistle	Moderate	April-July	Sept 2020, April-July 2021
<i>Cortaderia selloana</i>	Selloa pampas grass	High	September-March	Sept 2020, Feb-April 2021
<i>Foeniculum vulgare</i>	sweet fennel	Moderate	March-September	Sept 2020, April-July 2021
<i>Lysimachia arvensis</i>	scarlet pimpernel	NA	March-September	Feb-July 2021
<i>Marrubium vulgare</i>	horehound	Limited	March-August	Sept 2020, April-July 2021
<i>Nicotiana glauca</i>	tree tobacco	Moderate	March-September	Sept 2020, April-July 2021
<i>Salsola tragus</i>	Russian thistle	Limited	July-October	Sept 2020, July 2021
<i>Schinus mole</i>	Peruvian pepper tree	Limited	March-July	Sept 2020, April-July 2021
<i>Silybum marianum</i>	milk thistle	Limited	April-July	Sept 2020, April-July 2021
<i>Sonchus asper</i>	prickly sow thistle	NA	February-October	Sept 2020, Feb-July 2021

California Invasive Plant Council (Cal-IPC) Invasive Plant Inventory Database

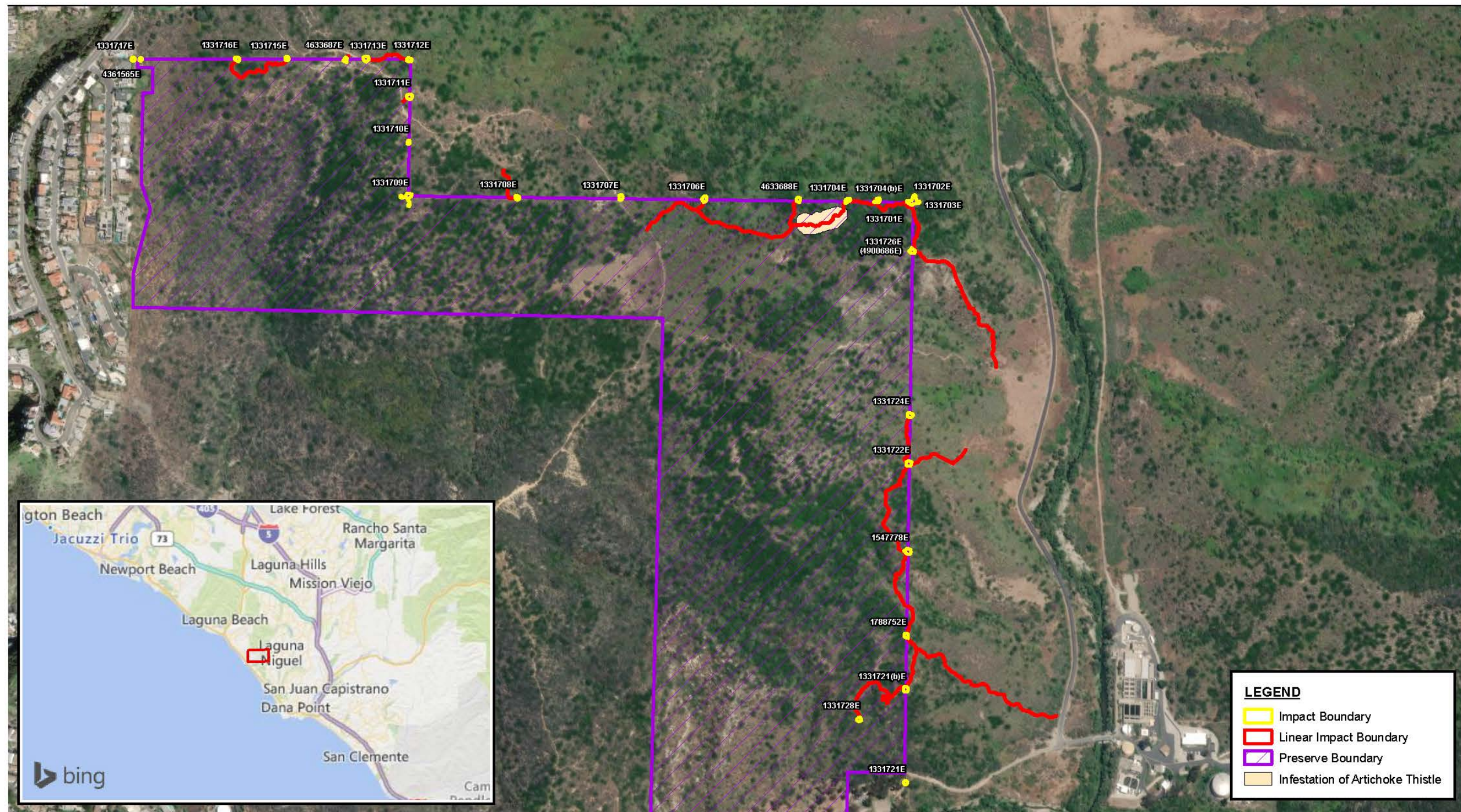
The Cal-IPC rating listed in Table 1 will dictate the priority for removal of the target species, however it is intended that all non-native species observed within the impact boundaries (Figure 1) will be treated. Although artichoke thistle is rated moderate, it will be treated with high priority due to its aggressiveness and ability to spread within in the Preserve as well as an existing infestation (see Figure 1) that a linear impact bisects. Beyond the infestation, artichoke thistle as well as the abovementioned target species are generally sparse in distribution particularly in the lower half of the Preserve (poles 1331706E to 1331728E). It was observed that weed control, particularly herbicide applied to iceplant (*Carpobrotus edulis*), was conducted by others throughout the upper half of the Preserve (poles 1331717E to 1331707E).

Subject: Pacific Horizons Preserve Herbicide Treatment Plan  
March 17, 2021  
Page 3

Artichoke thistle will be sprayed with a mixture of Milestone herbicide at a rate of 7 ounces per acre, and Garlon 4 herbicide at a rate of 1 pint per acre, per the manufacturers' product labels. Horehound, black mustard, poison, hemlock, tree tobacco, wild oats and bromes will be sprayed with Roundup Custom (Glyphosate) at a rate not to exceed 5% solution per the manufacturer's product label. Brandt Bigfoot blue indicator dye will be mixed with both herbicide solutions at a rate of half (0.33 oz or 2 teaspoons) of what is specified on the product label (0.66 oz) per 3-gallon backpack sprayer, as specified in the ISMP (OCTA 2018). Product Use Recommendations for the each of the products that will be used are included as Attachment B. A four-person crew will carry half-full (1.5 gallon, to limit the weight) backpack sprayers, two with the Milestone and Garlon 4 mixture, and two with Roundup Custom solution, and foliar treat the target weeds. Special care will be taken to ensure health and safety of crew while navigating the terrain within the Preserve, especially the steep portions of the lower half of the work area. Precise rates and quantities of herbicide applied will be recorded and made available to all involved parties. All herbicide applied within OC Parks property, which is the area beyond the "Preserve Boundary" on Figure 1, will be documented in the OC Parks NPDES Tracking Application. Per the ISPM (OCTA 2018), herbicide application will be conducted only when weather conditions are conducive to effective uptake of the herbicide by the target species. Treatment will be discontinued for the day in the event of rainfall or temporarily discontinued if sustained wind exceeds 5 mph until wind subsides. Every effort will be made to avoid herbicide contact with existing native vegetation. All weed control efforts will be monitored by a designated restoration ecologist and overseen by the designated PCA.

**References:**

- AECOM. 2020. Biological Resources Survey Report for the Pacific Horizon Preserve Restoration Project. September. San Diego, CA. Prepared for Southern California Edison.
- Glenn Lukos Associates, 2018. Invasive Specie Management Plan for the OCTA M2 Preserves-Pacific Horizon Preserve. December. Orange, CA. Prepared for Southern California Edison.



Source: Vivid Maxar 2018; SCE 2019; AECOM 2020.



**Figure 1**  
**Weed Control Areas in Pacific Horizon Preserve**  
**and Aliso & Wood Canyons Wilderness Park**

Southern California Edison Pacific Horizons CCC

Path: \\sca-aec.com\net.com\6844\MEP\SanDiego-USSD\GIS\Projects\6059\6059\XXXX\_SCE\_MAPS\60631855\_CWA\009PacHor\900-CAD-GIS\920\GIS\map\_docs\mxd\SCE\_PacificHorizons\_CCC\_WeedControl.mxd, 8/26/2020, dansel.orellano



Attachment A  
Pacific Horizon Preserve Weed Control Memorandum

**Memorandum**

To Setal Prabhu, SCE Page 1

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CC Paul Yamazaki, SCE  
Michelle Fehrensens, AECOM

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Subject Pacific Horizon Preserve Weed Control

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From Chris Hargreaves, AECOM Restoration Ecologist

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Date August 26, 2020

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Southern California Edison (SCE) is requesting authorization to conduct weed control within and adjacent to the Pacific Horizon Preserve (Preserve), as further described in the Biological Resources Survey Report for the Pacific Horizon Preserve Restoration Project (Bio Resources Survey Report) (SCE 2020). The Bio Resources Survey Report documents temporary impacts associated with SCE’s Pole Replacement and Vegetation Management Activities on their Acres 12kV/Agate 12kV Distribution Lines as well as project background and description, regulatory requirements for the work conducted, and summarizes the survey methodology, habitat impacts, and completed and planned restoration activities to address after-the-fact impacts.

Weed control within the temporary impact areas will be initiated upon California Coastal Commission (CCC) approval. Table 1 lists the non-native weed species observed within SCE’s impact areas, as provided in the Bio Resources Survey Report, that will be targeted for removal. Also included in Table 1 are the California Invasive Plant Council ratings, blooming periods and timing to conduct removal/treatment for each of the species

**Table 1. Target Non-Native Weed Species**

Scientific Name	Common Name	Cal-IPC Rating	Bloom Period	Timing
<i>Avena barbata</i>	slender wild oat	Moderate	March-June	Feb and April 2021
<i>Bromus madritensis</i> spp. <i>Rubens</i>	red brome	High	February-March	Feb and April 2021
<i>Carduus pycnocephalus</i>	Italian thistle	Moderate	February-July	Sept 2020, Feb-July 2021
<i>Carpobrotus edulis</i>	freeway iceplant	High	February-October	Sept 2020, Feb-July 2021
<i>Centaurea melitensis</i>	toçalote	Moderate	April-August	Sept 2020, April-July 2021
<i>Cynara cardunculus</i>	artichoke thistle	Moderate	April-July	Sept 2020, April-July 2021
<i>Cortaderia selloana</i>	Selloa pampas grass	High	September-March	Sept 2020, Feb-April 2021
<i>Foeniculum vulgare</i>	sweet fennel	Moderate	March-September	Sept 2020, April-July 2021
<i>Lysimachia arvensis</i>	scarlet pimpernel	NA	March-September	Feb-July 2021
<i>Marrubium vulgare</i>	horehound	Limited	March-August	Sept 2020, April-July 2021

<i>Nicotiana glauca</i>	tree tobacco	Moderate	March-September	Sept 2020, April-July 2021
<i>Salsola tragus</i>	Russian thistle	Limited	July-October	Sept 2020, July 2021
<i>Schinus mole</i>	Peruvian pepper tree	Limited	March-July	Sept 2020, April-July 2021
<i>Silybum marianum</i>	milk thistle	Limited	April-July	Sept 2020, April-July 2021
<i>Sonchus asper</i>	prickly sow thistle	NA	February-October	Sept 2020, Feb-July 2021

California Invasive Plant Council (Cal-IPC) Invasive Plant Inventory Database

SCE will conduct four weed control visits over the course of a year. Each visit will be appropriately timed to maximize efficacy for the target weed species. Weed control will be conducted by methods provided in the Pacific Horizon Preserve’s Invasive Species Management Plan (ISMP, 2018), and are anticipated to include hand pulling, cutting, seed removal, and use of chemical herbicide (growth inhibitors). Herbicide application will be conducted only when weather conditions are conducive to effective uptake of the herbicide by the target species (e.g., sunny, dry with moderate temperatures, and when plants are at the peak growing stage), and when wind conditions are such that herbicide drift is minimized (five mph or less). All non-native weeds and their associated debris will be removed and properly disposed of offsite. A designated restoration ecologist will observe and direct all weed removal efforts to ensure only the target species are removed/treated and that no native vegetation is affected, with extra care to be taken around rare and sensitive species where no chemical herbicide will be used.

With CCC approval, SCE will conduct weed removal in September 2020, February 2021, April 2021, and July 2021 as shown in the “Timing” column in Table 1. September 2020 is not the most ideal time to conduct weed removal, however it will be the first opportunity to conduct weed removal following SCE’s impacts and receiving approval from CCC. The September weed removal visit will still provide benefit by removing the late-season weed species as well as to capture any remaining seed heads of the early and mid-season perennials such as milk thistle and Italian thistle. Artichoke thistle is also a mid-season perennial that will still have seed heads intact in September. In addition to removal of the seed, the artichoke thistle that is dense in the area between poles 4633688E and 1331704E (see Figure 1) will also be cut in September and then treated in April (when in the rosette stage), as per the ISMP.

Attachment B  
Product Use Recommendations

# Product Use Recommendation

64374 - 6494856 (Rec No. 6494856)

<b>Agri Chemical &amp; Supply</b> 7100 Estrella De Mar Rd Carlsbad, CA 92009 Phone: 831-229-7744			Proposed Date / Timing <b>2021-03-22</b>	Expire Date <b>2021-03-29</b>	PCA & License <b>Gary Omori 72314</b>				
			Applicator <b>ACS Habitat</b>  <b>4011 Avenida De La Plata Suite 301</b> <b>Carlsbad, CA 92056</b> <b>Phone: 760-757-1840</b>		Grower & Permit Number <b>Pacific Horizon Preserve</b> <b>9992021</b>  <b>county park, CA</b> <b>Phone:</b>				
County <b>Orange</b>	Site Commodity <b>RECREATION AREA</b>	Preplant <b>No</b>	Method <b>Ground</b>	Proposed <b>1 Acres</b>	Treated <b>1 Acres</b>	Tank Vol <b>1.5 Ga</b>	No. Tanks <b>20</b>	Spray Vol <b>30 Ga</b>	
Site ID / STR		Location			Planted Area	Proposed Area	Treated Area	Row	Band
Pacific Horizon Preserve - 210001 1,7S,8W BM		Pls refer to AECOM map			25 Acres	1 Acres	1 Acres		

**\*\*\* ALWAYS READ AND FOLLOW LABEL DIRECTIONS \*\*\***

**\*\* In addition, adhere to all State and local regulations governing the use of these products \*\***

I certify that alternative and mitigation measures that would substantially lessen any significant adverse impact on the environment have been considered and, if feasible, adopted.

Product Name	Signal Word	Labeled Commodity	Pest	Rate	Per Full Tank	Mat. Req.
Roundup Custom for Aquatic & Terrestrial Use (524-343-ZG) <small>(53.80% - Glyphosate*, N-(phosphonomethyl)gly)</small>	Caution	Recreational Area	Tree Tobacco	5 Ga / 100ga		1.5 Ga
Brandt Brandt Big Foot <small>(17.50% - Acid Blue 9)</small>		Park	Na	16 Floz / 100ga		0.04 Ga

Pre-Harvest Interval : 0 Days

Re-Entry Interval : 4 Hours

**Restrictions:** Avoid Drift --

California Code of Regulations 6690-6692 go into effect starting January 2018. In summary these codes state pesticide use within a quarter mile of a school site or day care facility is prohibited between the hours of 6 AM to 6 PM on days when school is in session. For details or exceptions to this general summary please reference the code or speak to your County Ag Commissioner for clarification.

**Species Toxic To:**
**Criteria Used For Determining Recommendation:** Field Observation -- Pest is Present

**Advisor Comments:** Apply to targeted weeds, including tree tobacco. Avoid drift. Please follow label instructions and regulations. Please call Gary if you have any questions. 831-229-7744

THE MATERIAL AND CONTENT CONTAINED IN THE AGRIAN DATABASE AND ON THIS DOCUMENT ARE FOR INFORMATION ONLY AND NOT INTENDED TO BE A SUBSTITUTE FOR THE ACTUAL EPA AND/OR STATE APPROVED PRODUCT LABEL. USERS OF THIS DATABASE MUST READ AND FOLLOW THE APPROVED PRODUCT LABEL AFFIXED TO THE PRODUCT CONTAINER AND/OR APPLICABLE SUPPLEMENTAL LABELING BEFORE USE OF THE PRODUCT. RECIPIENT OF THIS DOCUMENT MUST HAVE THE PROPER KNOWLEDGE AND/OR LICENSING TO USE THIS DOCUMENT. USE SHALL BE DEEMED ACCEPTANCE OF, AND USE IS ONLY AUTHORIZED BY AGRIAN TO USERS WHO AGREE TO BE BOUND BY, THE TERMS OF USE PUBLISHED AT AGRIAN.COM.

I certify that the product recommendations in this document are consistent with my review of the product notices beginning on the following page and the product(s) label.

Signature : \_\_\_\_\_

**Gary Omori PCA Lic. #72314**
Date : 2021-03-18
**Rec No. 6494856**

**Notice 1 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** Complete Directions for Use A broad-spectrum postemergence herbicide for aquatic and industrial, turf, ornamental, forestry, roadside, utility rights-of-way, select crop, and other listed terrestrial weed control. (For a complete list of aquatic and terrestrial use sites, see the Directions for Use section of this label.)

**Notice 2 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** Read the entire label before using this product. Use only according to label directions. AVOID CONTACT OF THIS HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, AS SEVERE PLANT INJURY OR DESTRUCTION COULD RESULT. THIS IS AN END-USE PRODUCT. MONSANTO COMPANY DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION. SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS. Read the "LIMIT OF WARRANTY AND LIABILITY" statement at the end of this labeling before buying or using. If terms are not acceptable, return at once unopened. Not all products listed on this label are registered for use in California. Check the registration status of each product in California before using.

**Notice 3 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 3.0 PRECAUTIONARY STATEMENTS 3.1 Hazards to Humans and Domestic Animals Keep out of reach of children CAUTION DOMESTIC ANIMALS: This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation could result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

**Notice 4 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** User Safety Recommendations: Users should: - Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. - Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

**Notice 5 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 3.2 Environmental Hazards Killing aquatic weeds can result in depletion or loss of oxygen in the water due to decomposition of dead plant material. This oxygen loss can cause fish suffocation. Consult with your State agency with primary responsibility for regulating pesticides before applying to public waters to determine if a permit is required. For terrestrial uses, do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high-water mark, except if applying aerially over the forest canopy. Do not contaminate water when cleaning equipment or disposing of equipment wash waters and rinsate.

**Notice 6 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 3.3 Physical or Chemical Hazards Spray solutions of this product may be mixed, stored and applied using stainless steel, fiberglass, plastic or plastic-lined steel containers. DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas, which can form a highly combustible gas mixture. This gas mixture could flash or explode if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source and cause serious personal injury.

**Notice 7 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** DIRECTIONS FOR USE It is a violation of Federal law to use this product in any manner inconsistent with its labeling. This product may only be used in accordance with the Directions for Use on this label or on separately published supplemental labeling. Supplemental labeling for this product can be obtained from your Authorized Monsanto Retailer or Monsanto Company Representative. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

**Notice 8 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** ATTENTION: This specimen label is provided for general information only. - This pesticide product may not yet be available or approved for sale or use in your area. - It is your responsibility to follow all Federal, state and local laws and regulations regarding the use of pesticides. - Before using any pesticide, be sure the intended use is approved in your state or locality. - Your state or locality may require additional precautions and instructions for use of this product that are not included here. - Monsanto does not guarantee the completeness or accuracy of this specimen label. The information found in this label may differ from the information found on the product label. You must have the EPA approved labeling with you at the time of use and must read and follow all label directions. - You should not base any use of a similar product on the precautions, instructions for use or other information you find here. - Always follow the precautions and instructions for use on the label of the pesticide you are using.

**Notice 9 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** Agricultural Use Requirements Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours. PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls, shoes plus socks, and chemical-resistant gloves made of any waterproof material.

**Notice 10 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** Non-Agricultural Use Requirements The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses. Keep people and pets off treated areas until spray solution has dried.

**Notice 11 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 4.0 STORAGE AND DISPOSAL Proper pesticide storage and disposal are essential to protect against exposure to people and the environment due to leaks and spills, excess product or waste, and vandalism. Do not allow this product to contaminate water, foodstuffs, feed or seed by storage and disposal. PESTICIDE STORAGE: STORE ABOVE 5 degrees F (-15 degrees C) TO KEEP PRODUCT FROM CRYSTALLIZING. Crystals will settle to the bottom. If allowed to crystallize, warm to 68 degrees F (20 degrees C) to redissolve and roll or shake container or recirculate contents of larger containers to mix well before using. Store pesticides away from food, pet food, feed, seed, fertilizers, and veterinary supplies. Keep container closed to prevent spills and contamination. See individual container label for additional storage conditions, if any. PESTICIDE DISPOSAL: To avoid wastes, use all material in the container, including rinsate, by application

according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program. Such programs are often run by state or local governments or by industry. All disposal must be in accordance with applicable federal, state and local regulations and procedures. CONTAINER HANDLING AND DISPOSAL: See base label attached to the container for container handling and disposal instructions and refilling limitations.

**Notice 12 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 5.0 PRODUCT INFORMATION Product Description: This product is a postemergence, systemic herbicide that, when mixed in the spray tank with a surfactant that is approved for aquatic use, may be used for both aquatic and terrestrial weed control. This product provides broad-spectrum control of many annual and perennial weeds, woody brush, trees and vines. This product does not control submerged weeds or provide residual weed control in soil. It is formulated as a water-soluble liquid that, unless otherwise directed, requires dilution with water or another carrier and the addition of a surfactant according to label directions and intended use site before application using standard and specialized pesticide application equipment. Mechanism of Action: The active ingredient in this product inhibits an enzyme found only in plants and microorganisms that is essential to the formation of specific amino acids. No Soil Activity: This product binds tightly to soil particles and does not provide residual weed control. Weeds must be emerged at the time of application to be controlled by foliar application of this product. Weed seeds in the soil will not be affected by this product and will continue to germinate. Unattached plant rhizomes and rootstocks beneath the soil surface will also not be affected by this product. Biological Degradation: Degradation of this product is primarily a biological process carried out by soil microbes. Stage of Weeds: Aquatic weeds must have foliage above the water surface in order to be controlled by this product. On terrestrial sites, annual and perennial weeds are easiest to control when they are small. See the "WEEDS CONTROLLED" section of this label for more information on the control of specific weeds. Cultural Considerations: Reduced weed control could result when this product is applied to annual or perennial weeds that have been mowed, grazed or cut, and have not been allowed to re-grow prior to application. Always use the highest application rate of this product within the given range when weed growth is heavy or dense, or when weeds are growing in an undisturbed (non-cultivated) area. Reduced weed control could result when this product is applied to weeds that show signs of disease or insect damage, are covered with dust, or are surviving under poor growing conditions. Spray Coverage: For enhanced results, spray coverage must be uniform and complete. Do not spray foliage to the point of runoff. Rainfastness: Rainfall or submersion of aquatic weeds by wave action within 4 hours of application could wash this product off of the foliage and a second application might be needed for acceptable weed control. Refer to specific use sections of this label for additional information on minimum intervals required before re-application of this product. Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system. Visible effects are a gradual wilting and yellowing of the plant that advances to complete browning of aboveground growth and deterioration of underground plant parts. Effects are visible on most annual weeds within 2 to 4 days, but on most perennial weeds, effects might not be visible for 7 or more days after application. Extremely cool or cloudy weather following application could slow activity of this product and delay development of visual symptoms. Maximum Application Rates: The maximum application or use rates stated throughout this label are given in units of volume (fluid ounces or quarts) of this product per acre. However, the maximum allowable application rates apply to this product combined with the use of any and all other herbicides containing the active ingredient glyphosate, whether applied separately or in a tank mixture, on a basis of total pounds of glyphosate (acid equivalents) per acre. If more than one glyphosate-containing product is applied to the same site within the same year, you must ensure that the total use of glyphosate (pounds acid equivalents) does not exceed the maximum allowed. See the "INGREDIENTS" section of this label for necessary product information. Unless otherwise specified on this label, the combined total of all applications of this product on a site must not exceed 8 quarts (8 pounds of glyphosate acid) per acre per year. NOTE: Use of this product in any manner not consistent with this label could result in injury to persons, animals, crops or other desirable vegetation, or have other unintended consequences.

**Notice 13 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 6.0 WEED RESISTANCE MANAGEMENT Glyphosate, the active ingredient in this product, is a Group 9 herbicide based on the mechanism of action classification system of the Weed Science Society of America. Any weed population can contain plants that are naturally resistant to Group 9 herbicides. Weeds resistant to Group 9 herbicides can be effectively managed by using another herbicide from a different Group (either alone or in a mixture according to label directions), by using other cultural or mechanical methods of weed control, or a combination of the two. Consult your local company representative, state cooperative extension agent, professional consultant or other qualified authority to determine appropriate actions for controlling specific resistant weeds. 6.1 Weed Management Practices Resistant populations arise when rare individual plants are uncontrolled by a normal dose of a given herbicide under normal environmental conditions. In the absence of other control measures these individuals survive, produce seed, and eventually become the dominant biotype in the field through continuous selection. The best means of reducing this selection is to use diverse weed control practices such as multiple herbicides with different mechanisms of action, and often in combination with various mechanical and cultural practices. To minimize the occurrence of herbicide-resistant biotypes, including those resistant to glyphosate, implement the following weed management practice options that are practical to your situation. These management practices are applicable to reduce the spread of confirmed resistant biotypes (managing existing resistant biotypes) and to reduce the potential for selecting for resistance in new species (proactive resistance management). - Use a diversified approach toward weed management focused on preventing weed seed production and reducing the number of weed seeds in the soil. - Plant crops into fields that are as weed-free as possible and then keep them as weed-free as possible. - Plant seed that is as weed-free as possible. - Scout fields and application sites routinely, before and after herbicide application. - Use multiple herbicide mechanisms of action that are effective against the most troublesome weeds at your application site and against those with known resistance. - Apply herbicides at application rates listed on the label when weeds are within the size range indicated on the label. - Emphasize cultural practices that suppress weeds by using crop competitiveness. - Use mechanical and biological weed management practices, where appropriate. - Prevent field-to-field and within-field movement of weed seed or vegetative propagules. - Manage weed seed at harvest and after harvest to prevent a buildup of the weed seedbank.

**Notice 14 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 6.2 Management of Glyphosate-Resistant Biotypes Appropriate testing is needed to determine if a weed is resistant to glyphosate. Call 1-800-ROUNDUP (1-800-768-6387) or contact your Monsanto Company representative to determine if resistance in any particular weed biotype has been confirmed in your area, or visit on the Internet at [www.weedresistancemanagement.com](http://www.weedresistancemanagement.com) or [www.weedscience.org](http://www.weedscience.org). Glyphosate-resistant weeds can be controlled or managed by applying this product in combination with residual preemergence herbicides and/or other postemergence herbicides labeled for control of the targeted weed in the crop being grown or on the site of application. For more information, see the "WEEDS CONTROLLED" section of this label. Since the occurrence of resistant weeds is difficult to detect prior to use, Monsanto Company accepts no liability for any losses that result from the failure of this product to control resistant weeds.

**Notice 15 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 7.0 MIXING Spray solutions of this product may be mixed, stored and applied using clean stainless steel, fiberglass, plastic or plastic-lined steel containers. DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. Eliminate any risk of siphoning the contents of the tank back into the carrier source while mixing. Use approved anti-back-siphoning devices where required by state or local regulations. A 50-mesh nozzle screen or line strainer on the spray equipment is adequate. Clean sprayer parts promptly after using this product by thoroughly flushing with water.

**Notice 16 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 7.1 Mixing with Water PERFORMANCE OF THIS PRODUCT CAN BE SIGNIFICANTLY REDUCED IF WATER CONTAINING SOIL SEDIMENT IS USED AS CARRIER. DO NOT MIX THIS PRODUCT WITH WATER FROM PONDS OR DITCHES THAT IS VISIBLY MUDDY OR MURKY. This product mixes readily with water. Mix spray solutions of this product as follows. Begin filling the mixing tank or spray tank with clean water. Add the required amount of this product near the end of the filling process and mix gently. Foaming of the spray solution can occur during mixing. To prevent or minimize foaming, mix gently, terminate by-pass and return lines at the bottom of the tank and, if necessary, add an appropriate anti-foam or defoaming agent to the spray solution.

**Notice 17 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 7.2 Surfactant Unless otherwise directed, this product requires the addition of 2 or more quarts of a nonionic surfactant that is labeled for use with herbicides per 100 gallons of spray solution (0.5% or more by volume). Unless otherwise directed, use a higher concentration of surfactant when any of the following conditions apply to the use of this product: - Adding surfactants that contain less than 70 percent active ingredient - Making a broadcast application using a high carrier volume or using handheld spray equipment - Applying under adverse growing conditions or anytime weeds are under stress - Applying as a tank-mix with other products - Applying to hard-to-control weeds, woody brush, trees and vines NOTE: For direct application of spray solutions of this product on emerged aquatic weeds or for use in intertidal areas below the mean high-water mark, or in application areas where a buffer that will ensure no overspray of an adjacent body of water cannot be maintained, a surfactant that is also approved for aquatic use must be used. For terrestrial applications, surfactant is also needed in the spray solution, but does not have to be approved for aquatic use. RESTRICTION: If a surfactant that is NOT approved for aquatic use is added to the spray solution, DO NOT apply directly to or over water or use in intertidal areas below the mean high-water mark. Check with your local State agency with primary responsibility for regulating pesticides for additional information about surfactants that are approved for aquatic use. Read and follow all precautionary statements and directions for use on the surfactant label. All reference throughout this label to concentration of surfactant in the spray solution is on a percentage-of-volume basis. Refer to the table below to achieve the appropriate concentration of surfactant in the spray solution. Please see the Table located on the page 3 of Master label.

**Notice 18 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 7.3 Tank Mixtures This product does not provide residual weed control. This product may be tank-mixed with other herbicides to provide residual weed control in the soil, a broader weed control spectrum or an alternative mechanism of action. NOT ALL TANK-MIX PRODUCTS LISTED ON THIS LABEL ARE APPROVED FOR USE ON AQUATIC SITES. Refer to each individual label for all products in the tank mixture for approved use sites and application rates. When a tank-mix with a generic active ingredient, such as 2,4-D or dicamba, or any other product or material, is listed on this label, the user is responsible for ensuring that the specific application being made and the use site is included on the label of the product used in the mix. Monsanto Company has not tested all tank-mix product formulations for compatibility, antagonism or reduction in product performance. Mixing this product with herbicides or other materials not specified on this label could result in reduced performance of this product. To the extent consistent with applicable law, buyer and all users are responsible for any loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly specified on this label, or on separate supplemental labeling or Fact Sheets published for this product. Refer to all individual product labels, supplemental labeling and Fact Sheets for all products in the tank mixture, and observe all precautions and limitations on the label, including any application timing restrictions, soil restrictions, minimum re-cropping intervals and/or crop rotation restrictions. Use according to the most restrictive precautionary statements for each product in the tank mixture. This product may be applied at any rate listed on this label in a tank mixture with the following products to provide preemergence and/or improved postemergence control of weeds listed on the individual product labels. Arsenal; Arsenal Herbicide Applicators Concentrate; Banvel; Banvel 480; Barricade 4L; Barricade 65WG; Certainty(R) Turf; Chopper Gen2; Crossbow; Endurance; Escort XP; Forestry Garlon 4 Specialty; Forestry Garlon XLT Specialty; Gallery SC; Gallery 75 Dry Flowable Specialty; Garlon 3A Specialty; Garlon 4 Specialty; Garlon 4 Ultra Specialty; Goal 2XL; GoalTender; Habitat; Hyvar X; Hyvar X-L; Karmex DF; Krenite S Brush Control Agent; Krovar I DF; Landmark; Landmark XP; Oust Extra; Oust XP; Outrider(R); Plateau; Poast; Poast Plus; Ronstar 50 WSP; Ronstar Flo; Ronstar G; Sahara DG; Spike 20P Specialty; Spike 80 DF Specialty; Stalker; Surflan AS Specialty; Surflan Flex; Surflan Flex T&O; Surflan XL 2G; Surflan Pro; Telar XP; Tordon 101 Mixture Specialty; Tordon 22K Specialty; Tordon K Herbicide Specialty; Transline Specialty; Vanquish; Velpar DF CU; Velpar DF VU; Velpar L CU; Velpar L; Velpar L VU; 2,4-D; atrazine; dicamba; bromacil; diuron; imazapyr; metsulfuron methyl; oryzalin; pendimethalin, prodimamine; simazine; sulfosulfuron; trichlopyr When used in combination as described on this label and to the extent consistent with applicable law, the liability of Monsanto shall in no manner extend to any damage, loss or injury not solely and directly caused by the inclusion of the Monsanto product in such combination use.

**Notice 19 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 7.4 Tank-Mixing Procedure Always predetermine the compatibility of all tank-mix products in the carrier by mixing small proportional quantities in advance. Add individual tank-mix components to the tank as follows: wettable powders; flowables; emulsifiable concentrates; drift reduction additives; water soluble liquids (this product); nonionic surfactants. Ensure that the tank-mix products are well mixed in the spray solution before adding this product. Mix only the quantity of spray solution that will be applied that day. Application of tank-mix solutions that are allowed to stand overnight could result in reduced weed control. Maintain gentle agitation at all times until the contents of the tank are sprayed out. If the spray mixture is allowed to settle, agitate thoroughly to resuspend the mixture before resuming application. Keep by-pass line on or near the bottom of the tank to minimize foaming. A 50-mesh nozzle screen or line strainer on the spray equipment is adequate.

**Notice 20 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 7.5 Mixing Spray Solution Concentrations All reference throughout this label to concentration of this product in a spray solution is on a percentage-of-volume basis. Prepare the desired volume of spray solution at a given concentration by mixing the amount of this product indicated in the following table with water. For filling backpack and pump-up sprayers, consider mixing the appropriate amount of this product with water in a larger container and then filling the sprayer from the larger container. Please see the Table for "Amount of Roundup Custom for Aquatic and Terrestrial Use" located on the page 3 of Master label.



**Notice 21 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 7.6 Colorants and Dyes Colorants and marking dyes may be added to spray solutions of this product; however, they could reduce the performance of this product. Use colorants and dyes according to the manufacturer's directions. 7.7 Drift Reduction Additives Drift reduction additives may be used with all application equipment types, except wiper applicators, sponge bars and controlled droplet applicators (CDA). When a drift reduction additive is used, read and carefully follow all precautions, limitations and all other information appearing on the product label. The use of drift reduction additives can affect spray coverage, which could result in reduced performance of this product.

**Notice 22 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 8.0 APPLICATION EQUIPMENT AND TECHNIQUES This product may be applied using the following equipment: Aerial Application Equipment-fixed-wing and helicopter Ground Application Equipment-boom or boomless systems, pull-type sprayers, floaters, pick-up sprayers, spray coupes and other ground broadcast application equipment Handheld Sprayers-backpack sprayers, pump-up pressure sprayers, handguns, handwands, mistblowers\*, lances and other handheld and motorized spray equipment used to direct the spray onto weed foliage. \*This product is not registered in California or Arizona for use in mistblowers. Selective Application Equipment-recirculating sprayer, shielded and hooded sprayers, wiper applicator, sponge bar, single or hollow stem injectors, tree injector, spray bottle Injection Systems-aerial or ground injection sprayers Controlled Droplet Applicator (CDA)-handheld or boom-mounted applicators that produce a spray consisting of a narrow range of droplet sizes APPLY THIS PRODUCT USING PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF ACCURATELY DELIVERING DESIRED VOLUMES. Do not apply this product through any type of irrigation system.

**Notice 23 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** Personal Protective Equipment (PPE) Applicators and other handlers must wear: long-sleeved shirt and long pants, socks and shoes. Follow manufacturer's instructions for cleaning/maintaining PPE (Personal Protective Equipment). If there are no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**Notice 24 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 8.1 Spray Drift Management AVOID CONTACT OF THIS HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, AS SEVERE PLANT INJURY OR DESTRUCTION COULD RESULT. Do not allow the herbicide solution to mist, drip, drift, or splash onto desirable vegetation, as even small quantities of this product can cause severe damage or destruction to the crop, plants or other vegetation on which application was not intended. AVOID DRIFT. USE EXTREME CARE TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHEN APPLYING THIS PRODUCT. Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions regarding the application of this product. The likelihood of injury occurring as the result of spray drift while applying this product increases when winds are gusty, as wind velocity increases, when wind direction is constantly changing or when there are other meteorological conditions that favor spray drift. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or generation of fine particles (mist) that are likely to drift. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFERS MUST BE MAINTAINED. AVOID APPLYING THIS PRODUCT AT EXCESSIVE SPEED OR SPRAYER PRESSURE.

**Notice 25 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 8.3 Ground Application Equipment Apply this product at the appropriate rate as specified on this label in 3 to 40 gallons of water per acre when making a broadcast application using ground application equipment, unless otherwise directed on this label or on separate supplemental labeling or Fact Sheets published for this product. As the weed density increases, increase the spray volume toward the upper end of this range to ensure complete coverage. Use nozzles that will avoid generating a fine mist. For enhanced results with ground application equipment, use flat-fan nozzles. Check spray pattern for uniform distribution of spray droplets.

**Notice 26 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 8.4 Handheld Sprayers When using a handheld sprayer, apply spray solutions of this product uniformly and completely to the foliage of target weeds using a coarse droplet spectrum and a spray-to-wet technique; do not spray to the point of runoff. For the appropriate concentration of this product in the spray solution and timing of application to control specific weeds, woody brush, trees and vines, refer to the "WEEDS CONTROLLED" section of this label. For control of annual weeds, make application when weeds are small and prior to seedhead or bud formation. For control of perennial weeds, woody brush, trees and vines, make application after flowering and before fall color and leaf drop. When making a low-volume directed spray application to annual and perennial weeds, woody brush, trees and vines using a handheld sprayer, ensure that at least 50 to 75 percent of the foliage or the top one-half of each unwanted plant is sprayed. If a straight stream nozzle is used, start the application at the top of the targeted plant and spray from top to bottom in a lateral zig-zag motion. To ensure uniform and complete coverage, spray both sides of large or tall woody brush, trees and vines, or when foliage is thick and dense, or where there are multiple sprouts. For enhanced results on woody brush, trees and vines, apply to actively growing vegetation after full leaf expansion and flowering, prior to fall color and leaf drop. The following table summarizes various methods of foliar application using a backpack sprayer with a spray-to-wet or low-volume directed spray technique and high-volume sprayer application using handheld application equipment for control or partial control of herbaceous weeds, woody brush, trees and vines listed in the "WEEDS CONTROLLED" section of this label. Low-volume directed spray application with a backpack sprayer works best when applying to weeds and brush less than 10 feet tall. For taller weeds and brush, a high-volume handgun can be modified by reducing the nozzle size and spray pressure to produce a modified high-volume directed spray application. Please see the Table for "Method of Application and Spray Solution Concentration" located on the page 5 of Master label.

**Notice 27 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 8.5 Selective Application Equipment Selective application equipment allows this product to be applied to weeds growing near a crop or other desirable vegetation without killing the desirable vegetation. Selective application equipment must be capable of preventing all contact of the herbicide solution with the desirable vegetation and operated without spray mist escape, leakage or dripping of the herbicide solution. AVOID CONTACT OF THIS HERBICIDE WITH DESIRABLE VEGETATION. Contact of this product with desirable vegetation could result in unwanted plant damage or destruction. To the extent consistent with applicable law, such damage shall be the sole responsibility of the applicator. This product may be diluted with water and applied using a recirculating sprayer, shielded sprayer, hooded sprayer, wiper applicator or sponge bar to weeds listed on this label growing in any aquatic or on any terrestrial non-food or non-feed crop site listed on this label, where feasible. This product may also be used with sprayers equipped with optical weed sensor technology. Other selective equipment that may be used to deliver or apply this product are single and hollow stem injectors, tree injectors, wiper applicators for cut stem and cut stump applications, and spray or squirt bottles for cut stem, cut stump and frill applications to control large stem weeds, brush, trees and vines listed on this label. Recirculating Sprayer A recirculating sprayer directs the spray solution onto weeds growing above desirable vegetation, while spray solution that is not intercepted by weeds is collected and returned to the spray tank for reapplication. A recirculating sprayer may be used to apply spray solutions of this product to weeds listed on this

label in any aquatic or on any terrestrial non-crop site described on this label. Shielded and Hooded Sprayers A shielded sprayer directs the herbicide solution to the target weeds while protecting desirable vegetation from coming into contact with the herbicide spray with an impervious material or shield. Use nozzles that provide uniform coverage within the application area. Keep shields properly adjusted to protect desirable vegetation. A hooded sprayer is a type of shielded sprayer where the spray pattern is fully enclosed, including the top, sides, front and back, thereby shielding desirable vegetation from the spray solution. This product may be diluted with water and, unless otherwise directed, mixed with a surfactant and applied using a shielded or hooded sprayer to weeds listed on this label growing in any aquatic or on any terrestrial non-crop site listed on this label, where feasible, and between rows of plants (row middles) in any cropping system listed on this label. Properly adjust the hood to protect desirable vegetation. Ensure that the hood is capable of completely enclosing the spray pattern. If necessary when applying around crops grown on raised beds, extend the front and rear flaps of the hooded sprayer downward to reach the ground in deep furrows. A hooded sprayer must be configured and operated in a manner that minimizes bouncing and avoids raising the hood up off the ground surface at any time. If the hood is raised, spray particles can escape and come into contact with the crop or other desirable vegetation, causing damage to or destruction of the desirable vegetation. Avoid operating this equipment on rough or sloping terrain where the spray hood is likely to rise up off the ground surface. Use hoods designed to minimize excessive dripping or runoff down the inside of the hood, such as a single, low pressure, low drift, flat-fan nozzle with an 80- to 95-degree spray angle positioned at the top center of the hood, with a spray volume of 20 to 30 gallons per acre. The following procedures will help reduce the potential for injury to desirable vegetation when using a hooded sprayer: - Operate the sprayer with the hood on the ground or skimming across the ground surface. - Leave at least an 8-inch untreated strip over the drill row. (For example, if a crop row width is 38 inches, use a sprayer hood with a maximum width of 30 inches.) - Operate at a ground speed no greater than 5 miles per hour to minimize bouncing of the hooded sprayer. - Apply when wind speed is 10 miles per hour or less. - Use low-drift nozzles that provide uniform coverage within the application area. Injury to a crop or other desirable vegetation can occur when application is made to foliage of weeds that come into direct contact with the desirable vegetation. Do not apply this product when leaves of desirable vegetation are growing in direct contact with weeds. Droplets, mist, foam or splatter of the herbicide solution settling onto desirable vegetation can result in discoloration, stunting or destruction. Wiper Applicator A wiper applicator is a device that physically wipes this product or solutions of this product directly onto the weed or cut stump. Any handheld device that is capable of physically wiping this product or solutions of this product directly onto the target weed or stump, such as a paint brush, may be used. A mechanical wiper applicator, such as a rope wick or sponge bar that can be driven through a field over the top of a crop or other desirable vegetation to control weeds that are taller than the desirable vegetation, must be designed, maintained and operated to prevent the herbicide solution from coming into contact with desirable vegetation. Wiper applicators may be used over the top of food or feed crops ONLY if specifically permitted for use over that crop by this label or by separately published supplemental labeling for this product. When using a mechanical wiper applicator, adjust the height of the applicator to ensure adequate contact with the weeds and so that the wiper contact point is at least 2 inches above the crop or desirable vegetation. Enhanced results can be obtained when more of the weed is exposed to the herbicide solution and weeds are a minimum of 6 inches above the desirable vegetation. Weeds that do not come into contact with the herbicide solution will not be affected. Poor contact can occur when weeds are growing in dense clumps, when operating in areas of severe weed infestation, or when weed height varies dramatically. In these situations, more than one application of this product might be necessary. Operate wiper applicators at a ground speed of no greater than 5 miles per hour. Performance in areas of heavy weed infestation can be improved by reducing speed, which will provide more time for re-saturation of the wiper with the herbicide solution and more contact time of the wiper with the weed. Enhanced results with a wiper applicator can be obtained when two applications are made traveling in opposite directions in the field. Keep wiper surfaces clean. Droplets, mist, foam or splatter of the herbicide solution settling onto desirable vegetation can result in discoloration, stunting or destruction. Avoid leakage or dripping onto desirable vegetation. Be aware that on sloping ground the herbicide solution can migrate to one side, causing dripping on the lower end and drying of the wiper on the upper end of the applicator. Do not apply this product using a wiper applicator when weeds are wet. Add a nonionic surfactant to a concentration of 10 percent by volume of the total applicator solution (one gallon of surfactant for every 10 gallons of solution) for use in a wiper applicator. See the "MIXING" section of this label for more information on the use of surfactants. For Rope Wick and Sponge Bar Applicators-apply solutions ranging from 33 to 75 percent of this product by volume in water. For Panel Applicators-apply solutions ranging from 33 to 90 percent of this product by volume in water. Mix only the amount of this product that will be used during a 1-day period, as reduced product performance can result from the use of solutions held in storage. Clean wiper parts promptly after using this product by thoroughly flushing with water. Single and Hollow Stem Injectors Control of certain weeds listed in the "WEEDS CONTROLLED" section can be obtained by injecting this concentrated product or solutions of this product directly in or onto the target weed. Ensure that the handheld injector being used for this application is capable of accurately delivering the volume specified on the label. When making stem injections, the combined total use of this product must not exceed 8 quarts per acre per year. At 5 milliliters of concentrated (undiluted) product per stem, 8 quarts will treat approximately 1500 stems per acre per year. The number of stems that can be treated per acre will vary depending on the injection volume and the concentration of this product in the application solution.

**Notice 28 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 8.6 Injection Systems This product may be used in aerial and ground injection spray systems as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this concentrated product with the undiluted concentrate of other products when using injection systems, unless otherwise directed. A non-ionic surfactant concentration of 0.5% or more in the spray stream is required for use of this product in injection systems.

**Notice 29 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 8.7 Controlled Droplet Applicator (CDA) The amount of this product applied per acre using a controlled droplet applicator (CDA) must be no less than the rate specified on this label for application using conventional broadcast application equipment. A controlled droplet applicator produces a spray pattern that is not easily visible. Use extreme care to avoid spray or drift from contacting the foliage or any other tissue of desirable vegetation, as plant damage or destruction could result.

**Notice 30 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 9.0 AQUATIC AND TERRESTRIAL USE SITES This product may be used according to the directions for use described on this label to control weeds, woody brush, trees and vines listed on this label growing in aquatic environments and on any terrestrial site described on this label.

**Notice 31 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 9.2 Terrestrial Sites This product may be used according to the directions for use described on this label to control weeds, woody brush, trees and vines listed on this label on any terrestrial site described on this label. This product may be used to control weeds, woody brush, trees and vines on maintained landscapes, on improved and unimproved land, on lawns and turf and around ornamentals on industrial, commercial and residential sites, including airports, apartment complexes, chaparrals, ditch banks, driveways, dry ditches, dry canals, farmsteads, fencerows, forestry sites, golf courses, greenhouses, lumber yards, manufacturing sites, municipal sites, natural areas, nurseries, office complexes, ornamental beds, parks, parking areas, pastures, petroleum tank farms, pumping installations, railroads, rangeland, recreational areas, residential areas, roadsides, schools, shadehouses, sod and turfgrass seed farms, sports complexes, storage areas, substations, utility rights-of-way, utility sites, warehouse areas, wildlife food plots and wildlife management areas. This

product may be used for non-selective control of unwanted vegetation on any site listed on this label for trim-and-edge application around objects, including around building foundations, equipment storage areas and trees, and along and in fences, and to eliminate unwanted weeds growing in and around established shrub beds and ornamental plantings. This product may also be used for complete elimination of vegetation from a terrestrial site prior to planting ornamentals, flowers, or turfgrass (sod or seed), and prior to land development, including prior to beginning construction projects or the laying of asphalt or other road material. Application of this product may be repeated, as needed, to maintain bare ground, up to a total application of 8 quarts per acre per year. This product may be used for establishment and maintenance of fuel breaks, for establishing fire perimeters and black lines, along fire roads and to facilitate prescribed burning practices on any site described on this label. This product may also be used for weed control or growth regulation on Christmas tree farms, citrus orchards, farmsteads, production nurseries, sugarcane fields, sod farms and turfgrass seed farms. This product requires the addition of a nonionic surfactant to the spray solution labeled for herbicide application. See the "MIXING" section of this label for more information on the use of surfactants with this product. Unless otherwise directed, application of this product may be made according to the directions for use in the sections that follow on any of these sites using any method of application described on this label to control any weeds, woody brush, trees and vines listed in the "WEEDS CONTROLLED" section of this label.

**Notice 32 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 10.0 ADDITIONAL SITE MANAGEMENT INFORMATION The following sections contain additional use information specifically related to certain use sites. Unless otherwise directed, any application of this product described in the "WEEDS CONTROLLED" section or any other section of this label may be made on the use sites described in the sections that follow, where applicable, using any method of application described on this label that is appropriate.

**Notice 33 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 10.4 Commercial, Residential and Recreational Area Management All applications of this product described on this label may be used on commercial, residential and recreational areas, including parks, schools and athletic fields, using any method of application described on this label, including spot treatment of unwanted vegetation, trim-and-edge application around trees, fences, walking paths, buildings, sidewalks, nature trails and other objects in these areas, to eliminate unwanted weeds growing in established shrub and ornamental beds, for turf management and renovation, and to eliminate vegetation from a site prior to development, including prior to planting an area to ornamentals, flowers or turfgrass (sod or seed), or beginning construction projects.

**Notice 34 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 12.0 WEEDS CONTROLLED Read the entire label before proceeding to use this product. Unless otherwise directed, this product requires the addition of a nonionic surfactant that is labeled for use with herbicides to the spray solution. See the "MIXING" section of this label for more information on the use of surfactants with this product. Always use the higher application rate or spray solution concentration of this product within a given range when weed growth is heavy or dense, or when weeds are growing in an undisturbed (non-cultivated) area. Poor weed control could be realized if application is made to weeds covered with dust. For weeds that have been mowed, grazed or cut, allow re-growth to occur prior to application of this product. Refer to the sections that follow for application rates and timing of application for the control of annual and perennial weeds and woody brush, trees and vines.

**Notice 35 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 12.4 Woody Brush, Trees and Vines Apply this product to brush and trees that are actively growing after full leaf expansion, unless otherwise directed. Use a higher application rate within a given range for larger brush and trees and/or application in areas of dense vegetative growth. For control of vines, apply this product at a higher application rate or spray solution concentration within the given range when target plants have reached the woody stage of growth. Enhanced control of woody brush and trees is obtained when application is made in late-summer or fall after fruit formation; however, in arid areas, enhanced control can be obtained when application is made in the spring to early-summer when brush and trees are at high moisture content and flowering. Poor control can be expected when this product is applied to drought-stressed brush and trees. Some autumn color on undesirable deciduous species is acceptable when applying this product to brush and trees in the fall, provided no major leaf drop has occurred. Reduced performance of this product could result if fall application is made following a frost. Symptoms might not appear prior to frost or senescence following fall application. For enhanced results, allow 7 or more days after application before mowing, cutting, tilling, burning or removal of woody brush, trees and vines from the application site. Additional applications of this product will be needed to control brush and trees regenerating from underground parts or seed. TANK MIXTURES: This product may be applied at any rate stated on this label in a tank mixture with the following products to increase the spectrum of control of herbaceous weeds, woody brush, trees and vines. For control of herbaceous weeds, apply the tank-mix product at the lower end of the given application rate or spray solution concentration range. For control of dense stands or tough-to-control woody brush, trees and vines, increase the application rate or spray solution concentration of the tank-mix product towards the higher end of the range. Refer to the individual product labels for approved uses and application rates. Not all tank-mix products listed are labeled for aquatic use. Arsenal; Arsenal Herbicide Applicators Concentrate; Escort XP; Forestry Garlon 4 Specialty; Forestry Garlon XRT Specialty; Garlon 3A Specialty; Garlon 4 Specialty; Garlon 4 Ultra Specialty; Vastlan Specialty; imazapyr; metsulfuron methyl; triclopyr Ensure that the proper amount of the Garlon herbicide is thoroughly mixed with water in the spray tank before adding this product. Cut Stump Application This product may be used to control re-growth and re-sprouting of woody brush and trees on any site listed on this label. Cut the woody brush or tree close to the soil or water surface and immediately apply a 50- to 100-percent (undiluted) solution of this product to the freshly-cut surface using an applicator capable of applying this product to the entire cambium. A delay in application could result in reduced performance. For enhanced results, cut the woody brush or tree during period of active growth and full leaf expansion and apply this product. No surfactant is needed for cut stump application. For control of the tree of heaven (*Ailanthus altissima*), cut the tree close to the soil surface and immediately apply a 50-percent solution of this product (16 fluid ounces per quart of solution) and 10 percent Arsenal herbicide (3 to 4 fluid ounces per quart of solution) in water to the freshly-cut surface. DO NOT MAKE A CUT STUMP APPLICATION WHEN THE ROOTS OF DESIRABLE WOODY BRUSH OR TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMP, AS INJURY COULD OCCUR IN THE ADJACENT TREES. Some sprouts, stems, or trees can share a common root system. Adjacent trees having a similar age, height and spacing could be an indicator of a shared root system. Whether grafted or shared, injury is likely to occur to adjacent stems or trees when this product is applied to one or more trees sharing common root system. Woody Brush and Tree Injection and Frill Application This product may be used to control woody brush and trees listed in this section by injection or frill application on any aquatic and terrestrial site listed on this label. Inject or apply the equivalent of 1 milliliter (0.04 fluid ounce) of this product for every 2 to 3 inches of trunk diameter at breast height (DBH). If injecting this product into the woody brush or tree, use equipment capable of penetrating into the living plant tissue under the bark. No surfactant is required for direct injection of this product into woody brush and trees. For frill application, apply a 50 to 95-percent solution of this product in water, with 0.5% or more by volume of a nonionic surfactant, to either a continuous frill around the tree or to cuts evenly spaced around the tree below all branches. As tree diameter increases, enhanced results can be achieved by applying this product to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow this product to run out of the frill or cut areas. In species that freely exude sap, make the frill or cuts at an oblique angle to produce a cupping effect and apply a 95-percent solution of this product with a nonionic surfactant as described above. For enhanced results, make this application during period of active growth

and after full leaf expansion. Modified High-Volume and Low-Volume Backpack Application For control and partial control of woody bush, trees and vines listed on this label when using a backpack sprayer or other handheld equipment and a directed low-volume foliar application technique, apply a 4 to 8-percent solution of this product containing 0.5 to 1 percent by volume of a nonionic surfactant evenly over the plant crown to cover 50 percent of the upper foliage of undesirable woody brush, trees and vines.

**Notice 36 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** \* Partial control

**Notice 37 of 40 (Roundup Custom for Aquatic & Terrestrial Use)** 13.0 LIMIT OF WARRANTY AND LIABILITY Monsanto Company ("Company") warrants that this product conforms to the chemical description on the label. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, NO OTHER EXPRESS WARRANTY OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE OR MERCHANTABILITY IS MADE. This warranty is also subject to the conditions and limitations stated herein. Buyer and all users shall use this product only for the purposes of and in accordance with the Complete Directions for Use label ("Directions") and shall promptly notify this Company of any claims whether based in contract, negligence, strict liability, other tort or otherwise. To the extent consistent with applicable law, buyer and all users are responsible for all loss, injuries or damage from use or handling which results from conditions beyond the control of this Company, including, but not limited to, incompatibility with products other than those set forth in the Directions, application to or contact with desirable vegetation, crop injury or failure of this product to control weed biotypes which develop resistance to glyphosate, unusual weather, weather conditions which are outside the range considered normal at the application site and for the time period when the product is applied, as well as weather conditions which are outside the application ranges set forth in the Directions, use and/or application in any manner not explicitly set forth in or inconsistent with the Directions, moisture conditions outside the moisture range specified in the Directions, or the presence of products other than those set forth in the Directions in or on the soil, crop or treated vegetation. This Company does not warrant any product reformulated or repackaged from this product except in accordance with this Company's stewardship requirements and with express written permission from this Company. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE LIMIT OF THE LIABILITY OF THIS COMPANY OR ANY OTHER SELLER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT (INCLUDING CLAIMS BASED IN CONTRACT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE) SHALL BE THE PURCHASE PRICE PAID BY THE USER OR BUYER FOR THE QUANTITY OF THIS PRODUCT INVOLVED, OR, AT THE ELECTION OF THIS COMPANY OR ANY OTHER SELLER, THE REPLACEMENT OF SUCH QUANTITY, OR, IF NOT ACQUIRED BY PURCHASE, REPLACEMENT OF SUCH QUANTITY. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, IN NO EVENT SHALL THIS COMPANY OR ANY OTHER SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES. Upon opening and using this product, buyer and all users are deemed to have accepted the terms of this LIMIT OF WARRANTY AND LIABILITY which may not be varied by any verbal or written agreement. If terms are not acceptable, return at once unopened.

**Notice 38 of 40 (Brandt Big Foot)** General Information Designed to mark chemical spray solutions on golf courses, parks, turf, nursery and commercial applications. Eliminates overlapping or skipping of areas and also helps to indicate drift. BRANDT BIG FOOT is great for use with herbicides, fungicides, fertilizers, and pesticides.

**Notice 39 of 40 (Brandt Big Foot)** Directions for Use Add to water based spray solutions at the rate of 16 fl. oz. per 100 gallons of spray solution. Turf color and height may vary, and adjustments to this ratio may be advised. May be used with all types of spray equipment.

**Notice 40 of 40 (Brandt Big Foot)** Precautionary Statements: Based on currently available data, this product is not classified as a hazardous substance. However, observe good industrial hygiene practices. Wash hands after handling. Storage and Disposal: Do not contaminate water, food or feed by storage or disposal. Keep out of reach of children. Store away from incompatible materials. Dispose of contents/container in accordance with local authority requirements. Warranty: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label when used in accordance with directions under normal conditions of use; but neither this warranty nor any other warranty of merchantability or fitness of a particular product expressed or implied, extends to the use of this product contrary to label conditions, or under conditions not reasonably foreseeable to the seller; and buyer assumes the risk of any such use.

**Warnings**

**Rec No. 6494856**

Your label commodity of Park for Brandt Big Foot does not match your site commodity of RECREATION AREA. Review the site/label match, and verify this product is allowed on the commodity for this specific use in accordance with label exceptions.

**Conditions**

**Rec No. 6494856**

**Roundup Custom for Aquatic & Terrestrial Use:**

- Broadcast
- Hand-Held Equipment

# Personal Protective Equipment Information

Rec No. 6494856

**NOTE: The personal protective equipment (PPE) information described here is based solely on the manufacturer's label. Your county or state may have additional restrictions or requirements.**

## Roundup Custom For Aquatic & Terrestrial Use

Personal Protective Equipment (PPE) Applicators and other handlers must wear: long-sleeved shirt and long pants, socks and shoes. Follow manufacturer's instructions for cleaning/maintaining PPE (Personal Protective Equipment). If there are no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**Medical Number: 314-694-4000**

**Response Number: 800-424-9300**

## Brandt Big Foot

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Medical Number: 800-424-9300**

**Response Number: 217-547-5800**

# Product Use Recommendation

64374 - 6494917 (Rec No. 6494917)

<b>Agri Chemical &amp; Supply</b> 7100 Estrella De Mar Rd Carlsbad, CA 92009 Phone: 831-229-7744			Proposed Date / Timing <b>2021-03-22</b>	Expire Date <b>2021-03-29</b>	PCA & License <b>Gary Omori 72314</b>				
			Applicator <b>ACS Habitat</b>  <b>4011 Avenida De La Plata Suite 301</b> <b>Carlsbad, CA 92056</b> <b>Phone: 760-757-1840</b>		Grower & Permit Number <b>Pacific Horizon Preserve</b> <b>9992021</b>  <b>county park, CA</b> <b>Phone:</b>				
County <b>Orange</b>	Site Commodity <b>RECREATION AREA</b>	Preplant <b>No</b>	Method <b>Ground</b>	Proposed <b>1 Acres</b>	Treated <b>1 Acres</b>	Tank Vol <b>1.5 Ga</b>	No. Tanks <b>20</b>	Spray Vol <b>30 Ga</b>	
Site ID / STR <b>Pacific Horizon Preserve -</b> <b>210001</b> <b>1,7S,8W BM</b>		Location <b>Pls refer to AECOM map</b>			Planted Area <b>25 Acres</b>	Proposed Area <b>1 Acres</b>	Treated Area <b>1 Acres</b>	Row 	Band 

**\*\*\* ALWAYS READ AND FOLLOW LABEL DIRECTIONS \*\*\***

**\*\* In addition, adhere to all State and local regulations governing the use of these products \*\***

I certify that alternative and mitigation measures that would substantially lessen any significant adverse impact on the environment have been considered and, if feasible, adopted.

Product Name	Signal Word	Labeled Commodity	Pest	Rate	Per Full Tank	Mat. Req.
SUP Corteva Agriscience <b>Milestone (62719-519)</b> (40.60% - Triisopropanolammonium Salt Of 2-Py)	Caution	Recreational Area	Thistle, Artichoke	7 Floz / A		0.05 Ga
Corteva Agriscience <b>Garlon 4 Ultra (62719-527)</b> (60.45% - Triclopyr)	Caution	Non-Crop Area	Mustard	1 Pt / A		0.13 Ga
Brandt <b>Brandt Big Foot</b> (17.50% - Acid Blue 9)		Park	Na	16 Floz / 100ga		0.04 Ga

Pre-Harvest Interval : 0 Days

Re-Entry Interval : 48 Hours

**Restrictions:** Avoid Drift --

California Code of Regulations 6690-6692 go into effect starting January 2018. In summary these codes state pesticide use within a quarter mile of a school site or day care facility is prohibited between the hours of 6 AM to 6 PM on days when school is in session. For details or exceptions to this general summary please reference the code or speak to your County Ag Commissioner for clarification. -- See Label Regarding Feeding/Grazing -- Supplemental Label Required

**Species Toxic To:** Fish

**Criteria Used For Determining Recommendation:** Field Observation -- Pest is Present

**Advisor Comments:** Apply to targeted weeds. Avoid drift. Please follow label instructions and regulations. Please call Gary if you have any questions. 831-229-7744

THE MATERIAL AND CONTENT CONTAINED IN THE AGRIAN DATABASE AND ON THIS DOCUMENT ARE FOR INFORMATION ONLY AND NOT INTENDED TO BE A SUBSTITUTE FOR THE ACTUAL EPA AND/OR STATE APPROVED PRODUCT LABEL. USERS OF THIS DATABASE MUST READ AND FOLLOW THE APPROVED PRODUCT LABEL AFFIXED TO THE PRODUCT CONTAINER AND/OR APPLICABLE SUPPLEMENTAL LABELING BEFORE USE OF THE PRODUCT. RECIPIENT OF THIS DOCUMENT MUST HAVE THE PROPER KNOWLEDGE AND/OR LICENSING TO USE THIS DOCUMENT. USE SHALL BE DEEMED ACCEPTANCE OF, AND USE IS ONLY AUTHORIZED BY AGRIAN TO USERS WHO AGREE TO BE BOUND BY, THE TERMS OF USE PUBLISHED AT AGRIAN.COM.

I certify that the product recommendations in this document are consistent with my review of the product notices beginning on the following page and the product(s) label.

Signature : \_\_\_\_\_

Date : 2021-03-18
**Gary Omori PCA Lic. #72314**
**Rec No. 6494917**

**Notice 1 of 48 (Milestone)** Directions for Use It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying. This product is not intended for reformulation or repackaging into other end-use products. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

**Notice 2 of 48 (Milestone)** For Distribution and Use in the States of Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington, Wyoming For Control of Salt Cedar (*Tamarix* spp.) and Russian Olive (*Elaeagnus angustifolia* L.) ATTENTION + This recommendation is permitted under FIFRA 2(ee) and has not been submitted to or approved by the EPA. - It as a violation of Federal law to use this product in a manner inconsistent with its labeling. - Read and follow all applicable directions for use, precautions and limitations on the product label attached to the container for Milestone herbicide. The following recommended mixtures of herbicides can be used to control small Russian olive and salt cedar or regrowth after mowing or cutting. Broadcast Foliar Treatments to Re-sprouting Plants after Mowing or Cutting After cutting, mowing, or shredding operations, salt cedar and Russian olive will re-sprout. Allow time for the plants to re-grow and develop adequate leaf area for a foliar application. This may mean the application will need to be done the year after cutting or, at least, in September or October after mowing the previous winter or early spring. Apply Milestone at 7 fluid ounces per acre plus Remedy(R) Ultra or Garlon(R) 4 Ultra at 3 quarts per acre, or Garlon 3A at 1 gallons per acre with a non-ionic surfactant at 0.5% v/v or 1 quart/acre of crop oil concentrate or methylated seed oil. This treatment will also control herbaceous broadleaf weeds such as Canada thistle, musk thistle, Russian knapweed, and many other invasive plants and noxious weeds that may occur on the site or invade the site after trees are cut (see main Milestone label for complete list of weeds controlled). Foliar Treatments to Individual Trees (less than 6 feet in height) Treatments can be made to small (usually less than 6 feet in height) trees or to trees that have resprouted after cutting or shredding. (This may mean the application will need to be done the year after cutting or, at least, in September or October after mowing the previous winter or early spring). Mix 7 fluid ounces of Milestone and 3 quarts of Remedy Ultra or Garlon 4 Ultra, or 1 gallons of Garlon 3A and 1 quart (0.25% v/v) of non-ionic surfactant or 1 quart/acre of crop oil concentrate or methylated seed oil in enough water to make a total of 100 gallons of mix. Apply until foliage is wet, but not to runoff. This treatment may need to be applied again to trees that resprout after the initial treatment to achieve the desired level of long-term control. See above recommendations for waiting period prior to re-application. Follow applicable use directions, precautions, limitations on the EPA-registered labels for Milestone, Remedy Ultra, Garlon 4 Ultra, and Garlon 3A.

**Notice 3 of 48 (Milestone)** - For control of annual and perennial broadleaf weeds including invasive and noxious weeds, certain annual grasses, and certain woody plants and vines on: - rangeland, permanent grass pastures (including grasses grown for hay\*), Conservation Reserve Program (CRP); - non-crop areas for example, airports, barrow ditches, communication transmission lines, electric power and utility rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, unimproved rough turf grasses; - natural areas (open space) for example, campgrounds, parks, prairie management, trailheads and trails, recreation areas, wildlife openings, and wildlife habitat and management areas including seasonally dry flood plains, deltas, marshes, prairie potholes, or vernal pools; - including grazed areas in and around these sites. \*Hay from grass treated with Milestone within the preceding 18 months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling.

**Notice 4 of 48 (Milestone)** Precautionary Statements Hazards to Humans and Domestic Animals Keep Out of Reach of Children CAUTION Causes Moderate Eye Irritation Avoid contact with eyes or clothing. Personal Protective Equipment (PPE) Applicators and other handlers must wear: - Long-sleeved shirt and long pants - Shoes plus socks Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. User Safety Recommendations Users should: - Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. - Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. - Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**Notice 5 of 48 (Milestone)** First Aid If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

**Notice 6 of 48 (Milestone)** Environmental Hazards Do not apply directly to water. Take care to minimize the incidental overspray along the shoreline when applying to terrestrial plants at the water's edge or to water in areas where surface water is present. Do not apply directly to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

**Notice 7 of 48 (Milestone)** Agricultural Use Requirements Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about Personal Protective Equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours. PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: - Coveralls - Chemical-resistant gloves made of any waterproof material as polyethylene or polyvinyl chloride - Shoes plus socks - Protective eyewear



**Notice 8 of 48 (Milestone)** Resistance Management Guidelines This product contains aminopyralid, a Group 4 synthetic auxin. Appropriate resistance-management strategies should be followed. - Development of plant populations resistant to this herbicide mode of action is usually not a problem on rangeland, permanent grass pastures, Conservation Reserve Program (CRP), or non-cropland sites since these sites receive infrequent pesticide applications. - In croplands, use an effective integrated pest management (IPM) program, integrating tillage or other mechanical methods, crop rotation, or other cultural control methods into weed control programs whenever practical. - Similar looking biotypes of a given weed species occurring in a treated area may vary in their susceptibility to a herbicide. Application of a herbicide below its labeled rate may allow more tolerant weeds to survive and a shift to more tolerant biotypes within the treated area. - Where identified, spreading of resistant weeds to other fields may be prevented by cleaning harvesting and tillage equipment before moving to other areas and by planting weed-free seed. - Contact your extension specialist, certified crop consultant, or a Dow AgroSciences customer service representative 1-800-258-3033 for the latest resistance-management information.

**Notice 9 of 48 (Milestone)** Use Precautions - Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of Milestone. Injury to crops may result if treated soil and/or runoff water containing Milestone is washed or moved onto land used to produce crops. Exposure to Milestone may injure or kill susceptible crops and other plants such as grapes, soybeans, tobacco, sensitive ornamentals. - Grass revegetation: - Milestone can be used to control broadleaf plants in grass revegetation programs. Consult Dow AgroSciences literature for more details about Milestone applications and grass stand establishment. - Application before seeding grasses - Milestone can be applied to control broadleaf weeds prior to grass planting. Grass seed germination and seedling development can be adversely affected by many factors such as seed viability and seedling vigor, soil condition (sub-optimal soil temperatures or soil water content), weather after planting, seedbed preparation and seed placement, disease, insects, or animals. Milestone applications will help to reduce competition from weeds and improve the chance for successful grass stand establishment. Some grass species are more sensitive to Milestone; consult Dow AgroSciences literature for more details. - Postemergence applications on grass: During the season of establishment, Milestone should be applied only after perennial grasses are well established (have developed a good secondary root system and show good vigor). Most perennial grasses are tolerant to Milestone at this stage of development. Milestone may suppress certain established grasses such as smooth brome (Bromus inermis), especially when plants are stressed by adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition. - Seeding Broadleaf Plants (Forbs) and Wildflowers Milestone can be applied in the summer to control broadleaf weeds prior to forb planting. Forbs can be seeded 90 days after a summer application as a dormant fall planting or the following spring. Consult Dow AgroSciences literature for details. - Field Bioassay Instructions: In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, rainfall pattern, or drainage. The field bioassay can be initiated one year after the last application of aminopyralid in that field. Observe the test crop for symptoms of herbicidal activity such as poor stand (effect on seed germination), chlorosis (yellowing), epinasty, necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the intended rotational crop; plant only to wheat, forage grasses, native grasses, or grasses grown for hay. Consult with a Dow AgroSciences representative if you do not understand the Use Precautions and Use Restrictions. Call 1-800-258-3033 for more information.

**Notice 10 of 48 (Milestone)** Restrictions for All Uses Maximum Application Rate: On all labeled use sites, do not broadcast apply more than 7 fl oz per acre of Milestone per year. The total amount of Milestone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 7 fl oz per acre per year. Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications. Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product around public waters. State or local public agencies may require permits. - Avoiding Injury to Non-Target Plants: Do not aerially apply Milestone within 50 feet of a border downwind (in the direction of wind movement), or allow spray drift to come in contact with any broadleaf crop or other desirable broadleaf plants, including, but not limited to, alfalfa, cotton, dry beans, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops are growing or will be planted. Avoid application under conditions that may allow spray drift because very small quantities of spray may seriously injure susceptible crops. Read and consider the Spray Drift Management and Aerial Drift Reduction Advisory to help minimize the potential for spray drift. - Do not contaminate water intended for irrigation or domestic purposes. Do not treat inside banks or bottoms of irrigation ditches, either dry or containing water, or other channels that carry water that may be used for irrigation or domestic purposes. - Do not apply this product to lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas. - Trees adjacent to or in a treated area can occasionally be affected by root uptake of Milestone. Do not apply Milestone within the root zone of desirable trees unless such injury can be tolerated. Use special caution near roses and leguminous trees such as locusts, redbud, mimosa, and caragana. - Do not treat frozen soil where runoff could damage sensitive plants. - Grazing and Haying Restrictions: There are no restrictions on grazing or grass hay harvest following application of Milestone at labeled rates. Cutting hay too soon after spraying weeds will reduce weed control. Wait 14 days after herbicide application to cut grass hay to allow herbicide to work. Do not transfer grazing animals from areas treated with Milestone to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an untreated pasture. Otherwise, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants. - Grazing Poisonous Plants: Herbicide application may increase palatability of certain poisonous plants. Do not allow livestock to graze treated areas until poisonous plants are dry and no longer palatable to livestock. - Restrictions in Hay or Manure Use: - Do not use aminopyralid-treated plant residues, including grass, wood plants, trees, hay, or straw from areas treated within the preceding 18 months, in compost, mulch wood chips, or mushroom spawn. - Do not use manure from animals that have eaten aminopyralid-treated forage or hay within the previous 3 days in compost, mulch, or mushroom spawn. Livestock must have 3 days of eating non-aminopyralid-treated materials in order to clear their system of aminopyralid. Do not use aminopyralid-treated plants in areas where commercially grown mushrooms or susceptible broadleaf plants may be grown. - Do not spread manure from animals that have consumed aminopyralid-treated forage or hay within the previous 3 days on land used for growing susceptible broadleaf crops. - Manure from animals that have consumed aminopyralid-treated forage or hay within the previous 3 days may only be used on areas used for pasture, grass grown for seed, wheat, and corn. - Do not plant a broadleaf crop (including soybeans, sunflower, tobacco, vegetables, field beans, peanuts, and potatoes) in fields or areas treated with aminopyralid or manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted. - Do not plant a broadleaf crop in fields or areas treated in the previous year with manure from animals that have consumed aminopyralid-treated forage or hay until an adequately sensitive field bioassay is conducted to determine that the

aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted. - To promote herbicide decomposition, plant residues should be evenly incorporated in the surface soil or burned. Breakdown of aminopyralid in plant residues or manure is more rapid under warm, moist soil conditions and may be enhanced by supplemental irrigation. - Crop Rotation: Do not rotate to any crop from rangeland, permanent pasture, or CRP acres within one year following treatment. Cereals and corn can be planted one year after treatment. Broadleaf crops are sensitive to aminopyralid residues in the soil and prediction of crop safety by field bioassay (see instructions below) is the BEST way to determine planting options. Broadleaf crops such as canola, flax, and alfalfa can require at least 2 to 3 years depending on the crop and environmental conditions. More sensitive crops such as soybeans, tobacco, peanuts, potatoes, and peas may require a longer plant-back interval and should not be planted until a field bioassay shows that the level of aminopyralid present in the soil will not adversely affect that broadleaf crop.

**Notice 11 of 48 (Milestone)** **Sprayer Clean-Out Instructions** It is recommended to use separate spray equipment on highly sensitive crops such as tobacco, soybeans, potatoes, peanuts, and tomatoes. Do not use spray equipment used to apply Milestone for other applications to land planted to, or to be planted to, broadleaf plants unless it has been determined that all residues of this herbicide have been removed by thorough cleaning of equipment. Equipment used to apply Milestone should be thoroughly cleaned before reusing to apply any other chemicals as follows: 1. Rinse and flush application equipment thoroughly after use. Dispose of rinse water in non-cropland area away from water supplies. 2. Rinse a second time, adding 1 quart of household ammonia or tank cleaning agent for every 25 gallons of water. Circulate the solution through the entire system so that all internal surfaces are contacted (15 to 20 minutes). Let the solution stand for several hours, preferably overnight. 3. Flush the solution out of the spray tank through the boom. 4. Rinse the system twice with clean water, recirculating and draining each time. 5. Spray nozzles and screens should be removed and cleaned separately. - Do not apply this product with mist blower systems that deliver very fine spray droplets. Use of mist blower equipment can reduce control achieved with the herbicide and increase spray drift potential.

**Notice 12 of 48 (Milestone)** **Use Information** Apply the specified rate of Milestone as a coarse low-pressure spray. Do not apply this product with mist blower systems that deliver very fine spray droplets. Spray volume should be sufficient to uniformly cover foliage or intended application site. Increase the spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. To enhance foliage wetting and coverage, a non-ionic agricultural surfactant or other adjuvant may be added to the spray mixture as specified by the adjuvant label. Milestone may be applied by ground or aerial application equipment on any registered use site specified on this label. Ground Broadcast Application: Higher spray volumes (greater than 10 gallons per acre) generally provide better coverage and better control, particularly in dense and/or tall foliage. Aerial Broadcast Application: Do not apply less than 2 gallons per acre total spray volume. Five gallons per acre or greater will generally provide better coverage and better control, particularly in dense and/or tall foliage. High-Volume Foliar Application: High volume foliar treatments may be applied at rates equivalent to a maximum of 7 fl oz per acre per year. Use sufficient spray volume to thoroughly and uniformly wet foliage and stems. For basal bark and cut stubble and all types of cut surface applications, see woody plant section. Low-Volume Foliar Treatment To control susceptible woody plants, use Milestone alone or in tank mixes with other herbicides in water. The spray concentration of Milestone tank mixes and total spray volume per acre should be adjusted according to the size and density of target woody plants and type of spray equipment used. With low-volume application, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars. For best results, an adjuvant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck-mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush. Spot Application: Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications. Spray volume should be sufficient to thoroughly and uniformly wet the weed foliage, but not to the point of runoff. Repeat treatments may be made, but the total amount of Milestone applied must not exceed 7 fl oz per acre per year. To prevent misapplication, spot treatments should be applied with a calibrated sprayer with a known volume per acre. Table 1 shows Milestone amount to mix for various sprayer outputs in gallons per acre (GPA). Please see the Table 1 located on page 5 of Milestone Label for Amount of Milestone (in mL) to mix in 1 gallon of water. Note: Table 1 above shows mixes for various sprayer outputs in gallons per acre (GPA). Conversions: 1 tsp = 5 mL 30 ml = 1 fluid ounce 1 cc = 1 mL 3 tsp = 1 Tbsp 2 Tbsp = 1 fluid ounce

**Notice 13 of 48 (Milestone)** **Use Rates and Timing** Milestone may be applied as a broadcast spray by ground or aerial equipment or as a spot application to control weeds including, but not limited to, those listed on this label. When a rate range is given, use the higher rate to control weeds at advanced growth stages or when under less-than-favorable growing conditions. For optimum uptake and translocation of Milestone, avoid mowing, haying, shredding, burning, or soil disturbance in treated areas for at least 14 days following application. Milestone provides post emergence control and preemergence control of emerging seedlings of susceptible weeds and re-growth of certain perennial weeds following application. Preventing establishment of weeds will depend upon application rate, season of application, and environmental conditions after application. Milestone can provide long-term control of susceptible weeds. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigor of competing desirable vegetation. Long-term weed control is most effective where grass vegetation is allowed to recover from overgrazing, drought, etc., and compete with weeds. Milestone can be an important component of integrated vegetation management programs designed to renovate or restore desired plant communities. To maximize and extend the benefits of weed control provided by Milestone, it is important that other vegetation management practices, including proper grazing management, biological control agents, replanting, fertilization, prescribed fire, etc., be used in appropriate sequences and combinations to further alleviate the adverse effects of weeds on desirable plant species and to promote development of desired plant communities. Agricultural and natural resources specialists with federal and state government agencies can provide guidance on best management practices and development of integrated vegetation management programs. Plants Controlled The following weeds and woody plants will be controlled with the rates of Milestone indicated below in Table 2. For best results, most weeds and woody plants should be treated when they are actively growing and under conditions favorable for growth. Use a higher rate in the rate range when growing conditions are less than favorable or when weed foliage is tall and dense, or when optimal longer term residual control is desired. Milestone also provides preemergence control of germinating seeds or seedlings of susceptible weeds following application. Please see the Table 2 located on pages 6-8 of Milestone Label for Weeds and Woody Plants Controlled. Note: Numbers in parentheses (-) refer to specific use directions for a particular weed species.

**Notice 14 of 48 (Milestone)** Spray Drift Management THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS. Avoid application under conditions that may allow spray drift because very small quantities of spray, which may not be visible, may injure susceptible crops. This product should be applied only when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, non-target crops, and other plants) is minimal (e.g., when wind is blowing away from the sensitive areas). A drift control aid may be added to the spray solution to further reduce the potential for drift. If a drift control aid is used, follow the use directions and precautions on the manufacturer's label. Do not use a thickening agent with Microfoil, Thru-Valve booms, or other spray delivery systems that cannot accommodate thickened spray solutions. Importance of Droplet Size An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions. Ground Equipment: With ground equipment, spray drift can be lessened by keeping the spray boom as low as possible; by applying 10 gallons or more of spray per acre; by keeping the operating spray pressures at the manufacturer's specified minimum pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when the wind velocity is low (follow state regulations). Avoid calm conditions which may be conducive to thermal inversions. Direct sprays no higher than the tops of target vegetation and keep spray pressures low enough to provide coarse spray droplets to minimize drift. Aerial Application: Avoid spray drift at the application site. The interaction of many equipment-related and weather-related factors determine the potential for spray drift. Users are responsible for considering all these factors when making decisions. The following drift management requirements must be followed to avoid off-target drift movement from aerial applications: 1. The boom length must not exceed 75% of the fixed wing span and must be located at least 8 to 10 inches below the trailing edge of the fixed wing; the boom length must not exceed 85% of the rotary blade. 2. Nozzles should be pointed backward parallel with the air stream or not pointed downward more than 45 degrees. State and local regulations must be followed. The applicator should be familiar with, and take into account, the information covered in the following Aerial Drift Reduction Advisory. This information is advisory in nature and does not supersede mandatory label requirements.

**Notice 15 of 48 (Milestone)** Aerial Drift Reduction Advisory Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions). Controlling Droplet Size: - Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. - Pressure - Do not exceed the nozzle manufacturer's specified pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure. - Number of Nozzles - Use the minimum number of nozzles that will provide uniform coverage. - Nozzle Orientation - Orient nozzles so that the spray is released parallel to the airstream to produce larger droplets than other orientations. Significant deflection from horizontal will reduce droplet size and increase drift potential. - Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift. Boom Length: The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan for airplanes or 85% of rotor blade diameter for helicopters. Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind. Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.). Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors including droplet size and equipment type determine drift potential at any given speed. Application should be avoided when wind speeds are below 2 mph due to variable wind direction and high inversion potential. Note: Local terrain such as valleys and ravines can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift. Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry. Temperature Inversions: Applications should not occur during a local, low-level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves up ward and rapidly dissipates indicates good vertical air mixing.

**Notice 16 of 48 (Milestone)** Non-Agricultural Use Requirements The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS does not pertain to non-agricultural use on sites, such as, rangeland, permanent grass pastures, or non-cropland. See the Agricultural Use Requirements section below for information where the WPS applies. Entry Restrictions for Non-WPS Uses: For applications on rangeland and permanent grass pastures (not harvested for hay) and non-cropland areas, do not enter or allow worker entry into treated areas until sprays have dried.

**Notice 17 of 48 (Milestone)** Mixing Instructions Mixing with Water: To prepare the spray, add about half the required amount of water in the spray tank. Then, with agitation, add the specified amount of Milestone and other herbicides (if tank mixing). Finally, with continued agitation, add the rest of the water and additives such as adjuvants, surfactants, or drift control and deposition aids. Addition of Surfactants or Adjuvants on All Labeled Use Sites: The addition of a high quality non-ionic surfactant (of at least 80% active principal) or adjuvant at 0.25 to 0.5% volume per volume (1 to 2 quarts per 100 gallons of spray) is recommended to enhance herbicide activity under adverse environmental conditions (such as, high temperature, low relative humidity, drought conditions, dusty plant surfaces) or when weeds are heavily pubescent or more mature. Tank Mixing with Other Herbicides: Milestone may be applied in tank mix combination with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated, (2) mixing is not prohibited by the label of the tank mix product(s), and (3) that the tank mix combination is physically compatible (see tank mix compatibility testing below). When tank mixing, use only in accordance with the restrictions, precautions, and limitations on the respective product labels. - It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture. - Do not exceed specified application rates. If products containing the same active ingredient are mixed, do not exceed the maximum allowable active ingredient use rates. - For

direct injection or other spray equipment where the product formulations will be mixed in undiluted form, special care should be taken to ensure tank mix compatibility. - Always perform a compatibility test (jar test) to ensure the compatibility of products to be used in tank mixture. Tank Mix Compatibility Testing: Perform a jar test prior to mixing in a spray tank to ensure compatibility of Milestone and other pesticides or carriers. Use a clear glass jar with lid and mix ingredients in the same order and proportions as will be used in the spray tank. The mixture is compatible if the materials mix readily when the jar is inverted several times. The mixture should remain stable after standing for 30 minutes or, if separation occurs, should readily remix if agitated. An incompatible mixture is indicated by separation into distinct layers that do not readily remix when agitated, and/or the presence of flakes, precipitates, gels, or heavy oily film in the jar. Use of an appropriate compatibility aid may resolve mix incompatibility. If the mixture is incompatible do not use that tank mix partner in tank mixtures. Invert Emulsion Spray Mixtures Milestone can be applied in an invert emulsion using oil and an appropriate inverting agent. Follow label directions of the inverting agent. Mixing with Sprayable Liquid Fertilizer Solutions: Milestone is usually compatible with liquid fertilizer solutions. It is anticipated that Milestone will not require a compatibility agent for mixing with fertilizers; however, a compatibility test (jar test) should be made prior to mixing. Jar tests are particularly important when a new batch of fertilizer or pesticide is used, when water sources change, or when tank mixture ingredients or concentrations are changed. Compatibility may be determined by mixing the spray components in the desired order and proportions in a clear glass jar before large scale mixing of spray components in the spray tank. Note: The lower the temperature of the liquid fertilizer, the greater the likelihood of mixing problems. Use of a compatibility aid may be required if Milestone is mixed with a 2,4-D-containing product and liquid fertilizer. Mixing Milestone and 2,4-D in N-P or N-P-K liquid fertilizer solutions is more difficult than mixing with straight nitrogen fertilizer and should not be attempted without first conducting a successful compatibility jar test. Agitation in the spray tank must be vigorous to be comparable with jar test agitation. Apply the spray mixture the same day it is prepared while maintaining continuous agitation. Rinse the spray tank thoroughly after use. Note: Foliar-applied liquid fertilizers themselves can cause yellowing of the foliage of forage grasses and other vegetation.

**Notice 18 of 48 (Milestone)** Preemergent Weed Control Typically Milestone is used as a post emergent herbicide but it has preemergent activity on susceptible weeds. Use Milestone as a preemergence spray prior to weed seed germination. Control will depend upon species susceptibility, application timing, and environmental conditions such as precipitation following application. When applied at rates lower than 7 fl oz per acre, Milestone can provide short-term control of some susceptible weeds, but when applied at 7 fl oz (broadcast) or 14 fl oz (spot treatment), weed control is extended. Best results for use as a preemergent application for total vegetation control are obtained if Milestone at 7 fl oz per acre is tank mixed with other herbicides to broaden the weed spectrum and to control grasses. If grasses and broadleaf weeds tolerant to Milestone are present at the time of application or will germinate on the site, then tank mixtures with other herbicides such as the products listed below, or flumioxazin, diuron, or other herbicides labeled for total vegetation control applications. For Tank Mix Product please refer to the table located on page 10 of Milestone label.

**Notice 19 of 48 (Milestone)** SPOT TREATMENTS FOR AREAS SUCH AS SUBJECT POLES, SUBSTATIONS, AND OTHER SMALL AREAS Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year to small spots for clearing around utility subject poles to help prevent fire damage, on small substations, and other spot areas. To prevent misapplication, spot treatments should be applied with a calibrated sprayer.

**Notice 20 of 48 (Milestone)** IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS - Carefully read the section "Restrictions in Hay or Manure Use." - It is mandatory to follow the "Use Precautions and Restrictions" section of this label. - Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants. - Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling. - Consult with a Dow AgroSciences representative if you do not understand the Use Precautions and Use Restrictions. Call 1-800-258-3033 Customer Information Group.

**Notice 21 of 48 (Milestone)** Storage and Disposal Do not contaminate water, food, feed, or fertilizer by storage or disposal. Open dumping is prohibited. Pesticide Storage: If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40 degrees F and agitated well to dissolve any crystallized active ingredient prior to use. Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Nonrefillable containers 5 gallons or less: Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Refillable containers larger than 5 gallons: Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Nonrefillable containers larger than 5 gallons: Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

**Notice 22 of 48 (Garlon 4 Ultra)** Precautionary Statements Hazards to Humans and Domestic Animals Keep Out of Reach of Children CAUTION Causes Moderate Eye Irritation - Harmful If Swallowed - Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Reactions In Some Individuals Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

**Notice 23 of 48 (Garlon 4 Ultra)** Environmental Hazards This pesticide is toxic to fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

**Notice 24 of 48 (Garlon 4 Ultra)** Directions for Use It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

**Notice 25 of 48 (Garlon 4 Ultra)** Product Information Garlon 4 Ultra specialty herbicide is recommended for the control of woody plants and vines, and herbaceous broadleaf weeds on forest sites, conifer plantations, non-cropland areas, including airports, barrow ditches, communication transmission lines, electrical power and utility rights-of-way, fencerows, gravel pits, industrial sites, military lands, mining and drilling areas, non-irrigation ditch banks, oil and gas pads, parking lots, petroleum tank farms, pipelines, railroads, roadsides, storage areas, storm water retention areas, substations, unimproved rough turf grasses, vacant lots and other non-crop residential areas; and natural areas (open space) for example campgrounds, parks, prairie management, trials and trialheads, recreation areas, wildlife openings, and wildlife habitat and management areas including grazed area on all these listed sites.

**Notice 26 of 48 (Garlon 4 Ultra)** Use Precautions When applying this product in tank mix combination, follow all applicable use directions and precautions on each manufacturer's label. It is the pesticide user's responsibility to ensure that all products in the listed mixtures are registered for the intended use. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture. Sprays applied directly to Christmas trees may result in conifer injury. When treating unwanted vegetation in Christmas tree plantations, care should be taken to direct sprays away from conifers. Garlon 4 Ultra is formulated as a low volatile ester. However, the combination of spray contact with impervious surfaces, such as roads and rocks, and increasing ambient air temperatures, may result in an increase in the volatility potential for this herbicide, increasing a risk for off-target injury to sensitive crops such as grapes and tomatoes. Use Restrictions Chemigation: Do not apply this product through any type of irrigation system. Do not apply Garlon 4 Ultra directly to, or otherwise permit it to come into direct contact with cotton, grapes, peanuts, soybeans, tobacco, vegetable crops, flowers, citrus, or other desirable broadleaf plants. Do not permit spray mists containing it to drift onto such plants. It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands (such as flood plains, deltas, marshes, swamps, or bogs) and transitional areas between upland and lowland sites where surface water is not present except in isolated pockets due to uneven or unlevel conditions. Do not apply to open water (such as lakes, reservoirs, rivers, streams, creeks, salt water bays, or estuaries). Do not apply on ditches that are used to transport irrigation water. Do not apply where runoff or irrigation water may flow onto agricultural land as injury to crops may result. Do not apply this product using mist blowers.

**Notice 27 of 48 (Garlon 4 Ultra)** Maximum Use Rates - Apply no more than 2 lb ae of triclopyr (2 quarts of Garlon 4 Ultra) per acre per growing season on range and pasture sites, or any area where grazing or harvesting hay is allowed. - On forestry sites, apply no more than 6 lb ae of triclopyr (6 quarts of Garlon 4 Ultra) per acre per year. - For all use sites other than range, pasture, forestry sites, and grazed /hayed areas, apply no more than 8 lb ae triclopyr (8 quarts of Garlon 4 Ultra) per acre per year. - See Table 1 below for relationship between mixing rate, spray volume, and maximum application rate. Grazing - There are no grazing restrictions for livestock or dairy animals on treated areas - Portions of grazed areas that intersect treated non-cropland and rights-of-way sites may be treated at up to 8 lb ae per acre if the area to be treated on the day of application comprises no more than 10% of the total grazable area. Haying (harvesting of dried forage) - Do not harvest hay for 14 days after application. Slaughter Restriction: During the season of application, withdraw livestock from grazing treated grass at least 3 days before slaughter.

**Notice 28 of 48 (Garlon 4 Ultra)** Avoid Injurious Spray Drift Make applications only when there is little or no hazard from spray drift. Small quantities of spray, which may not be visible, may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants that are near enough to be injured. It is suggested that a continuous smoke column at or near the spray site or a smoke generator on the spray equipment be used to detect air movement, lapse conditions, or temperature inversions (stable air). If the smoke layers or indicates a potential of hazardous spray drift, do not spray. Aerial Application (Helicopter Only): For aerial application on rights-of-way or other areas near susceptible crops, apply through a Microfoil1 or Thru-Valve1 boom, or other drift control application equipment and/or use an agriculturally labeled drift control additive. If a spray thickening agent is used, follow all use recommendations and precautions on the product label. Spray only when the wind velocity is low (follow state regulations). Avoid application during air inversions. 1 Reference within this label to a particular piece of equipment produced by or available from other parties is provided without consideration for use by the reader at its discretion and subject to the reader's independent circumstances, evaluation, and expertise. Such reference by Dow AgroSciences is not intended as an endorsement of such equipment, shall not constitute a warranty (express or implied) of such equipment, and is not intended to imply that other equipment is not available and equally suitable. Any discussion of methods of use of such equipment does not imply that the reader should use the equipment other than is advised in directions available from the equipment's manufacturer. The reader is responsible for exercising its own judgment and expertise, or consulting with sources other than Dow AgroSciences, in selecting and determining how to use its equipment. Spray Drift Management Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. The following drift management requirements must be followed to avoid off-target drift movement from aerial applications: - The distance of the outer most operating nozzles on the boom must not exceed 3/4 the length of the rotor. - Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they must be observed. The applicator should be familiar with and take into account the information covered in the following Aerial Drift Reduction Advisory. [This information is advisory in nature and does not supersede mandatory label requirements.] Aerial Drift Reduction Advisory Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions). Controlling Droplet

Size: - Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. - Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure. - Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage. - Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential. - Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift. Boom Length: For some use patterns, reducing the effective boom length to less than 3/4 of the rotor length may further reduce drift without reducing swath width. Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind. Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.). Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift. Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry. Temperature Inversions: Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Sensitive Areas: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas). Ground Equipment: To aid in reducing spray drift potential when making ground applications near susceptible crops or other desirable broadleaf plants, Garlon 4 Ultra should be used in thickened (high viscosity) spray mixtures using an agriculturally labeled drift control additive, high viscosity invert system, or equivalent as directed by the manufacturer. When using a spray thickening or inverting additive, follow all use directions and precautions on the product label. With ground equipment, spray drift can be reduced by keeping the spray boom as low as possible; by applying 20 gallons or more of spray per acre; by keeping the operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when wind velocity is low. Do not apply with nozzles that produce a fine droplet spray. Select nozzles and pressures which provide adequate plant coverage, but minimize the production of fine spray particles. High Volume Leaf-Stem Treatment: To minimize spray drift, keep sprays no higher than brush tops and keep spray pressures low enough to provide coarse spray droplets. A agriculturally labeled thickening agent may be used to reduce spray drift.

**Notice 29 of 48 (Garlon 4 Ultra)** Use Information Use Garlon 4 Ultra at rates of 1 to 8 quarts per acre to control broadleaf weeds and woody plants. It is suggested that rates higher in this rate range be used to control woody plants. In all cases, use the amount specified in enough water to give uniform and complete coverage of the plants to be controlled. The order of addition to the spray tank is water, spray thickening agent (if used), surfactant (if used), additional herbicide (if used), and Garlon 4 Ultra. If a standard agricultural surfactant is used, use at a rate of 1 to 2 quarts per acre. Use continuous adequate agitation. Before using any recommended tank mixtures, read the directions and all precautions on both labels. For best results apply when woody plants and weeds are actively growing. When hard to control species such as ash, blackgum, choke cherry, elm, maples (other than vine or big leaf), oaks, pines, or winged elm are prevalent, during applications made during late summer when the plants are mature, or during drought conditions, use the higher rates of Garlon 4 Ultra alone or in combination with Graslan L or Tordon 22K herbicide. Graslan L and Tordon 22K are restricted use pesticides. Graslan L and Tordon 22K are not registered for use in the states of California and Florida. When using Garlon 4 Ultra in combination with Freelexx or a 2,4-D low volatile ester herbicide, generally the higher rates of Garlon 4 Ultra should be used for satisfactory brush control. Use the higher dosage rates when brush approaches an average of 15 feet in height or when the brush covers more than 60% of the area to be treated. If lower rates are used on hard to control species, resprouting may occur the year following treatment. On sites where easy to control brush species dominate, rates less than those listed may be effective. Consult state or local extension personnel for such information.

**Notice 30 of 48 (Garlon 4 Ultra)** Foliage Treatment With Ground Equipment High Volume Foliage Treatment For control of woody plants, use Garlon 4 Ultra at the rate of 2 to 6 quarts per 100 gallons of spray mixture, or Garlon 4 Ultra at 2 to 4 quarts may be tank mixed with labeled rates of Freelexx or a 2,4-D low volatile ester herbicide, Graslan L, or Tordon 22K and diluted to make 100 gallons of spray. Do not apply more than 2 gallons of Garlon 4 Ultra per acre. Apply at a volume of 100 to 400 gallons of total spray per acre depending upon size and density of woody plants. Graslan L and Tordon 22K are not registered for use in the states of California and Florida. When tank mixing, follow applicable use directions and precautions on each manufacturer's label. Depending upon the size and density of the woody plants, apply sufficient spray volume to thoroughly wet all leaves, stems, and root collars. To minimize spray drift, select the minimum spray pressure that provides adequate plant coverage without forming a mist and direct sprays no higher than the top of the target plants. Use a drift control additive cleared for application to growing crops to reduce spray drift. Before using any tank mixture, read the directions and use precautions on both labels. For best results, apply when woody plants and weeds are actively growing. Table 1: The following table is provided as a guide to the user to achieve the proper rate of Garlon 4 Ultra on forestry and non cropland sites Please see the Table 1 located on page 6 of Garlon 4 Ultra Label for Rate of Garlon 4 Ultra. 1 Do not exceed the maximum use rate of 6 quarts of Garlon 4 Ultra (6 lb ae of triclopyr) per acre per year. 2 Do not exceed the maximum use rate of 8 quarts of Garlon 4 Ultra (8 lb ae of triclopyr) per acre per year for non-grazable areas, or 2 quarts (2 lb ae of triclopyr) per acre per year for grazed areas, except on portions of grazed areas that meet the following requirement. Portions of grazed areas that intersect treated non-cropland, rights-of-way and forestry sites may be treated at up to 8 lb ae per acre if the area to be treated on the day of application comprises no more than 10% of the total grazable area. Low Volume Foliar Treatment To control susceptible woody plants, mix up to 5% v/v of Garlon 4 Ultra in water and apply 10 to 100 gallons of finished spray. The spray concentration of Garlon 4 Ultra and total spray volume per acre should be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (see Use Precautions and Restrictions). For best results, a surfactant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray

tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush. See Table 1 for relationship between mixing rate, spray volume and maximum application rate. Tank Mixing: As a low volume foliar spray, up to 9 quarts of Garlon 4 Ultra may be applied in tank mix combination with labeled rates of Tordon 22K or Graslan L in 10 to 100 gallons of finished spray. Graslan L and Tordon 22K are not registered for use in the states of California and Florida.

**Notice 31 of 48 (Garlon 4 Ultra)** Basal Bark, Dormant Stem and Cut Surface Treatments for use on all sites Individual plant treatments such as basal bark and cut surface applications may be used on any use site listed on this label at a maximum use rate of 8 quarts of Garlon 4 Ultra (8 lb ae of triclopyr) per acre. These types of applications are made directly to ungrazed parts of plants and, therefore, are not restricted by the grazing maximum rate of 2 quarts of Garlon 4 Ultra (2 lb ae of triclopyr) per acre. Conventional Basal Bark Treatment To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 1 to 5 gallons of Garlon 4 Ultra in enough oil to make 100 gallons of spray mixture. Apply with backpack sprayer or power spraying equipment using low pressure (20 to 40 psi). Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground, thoroughly wetting the indicated area. Spray until runoff at the ground line is noticeable. Old or rough bark requires more spray than smooth young bark. Apply anytime, including the winter months, except when snow or water prevent spraying to the ground line. Mixing with oil requires vigorous agitation to form an oil solution. Once a solution is formed it will stay stable. Low Volume Basal Bark Treatment To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 20 to 30 gallons of Garlon 4 Ultra in enough oil to make 100 gallons of spray mixture. Apply with a backpack or sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground in a manner that thoroughly wets the lower stems, including the root collar area, but not to the point of runoff. Herbicide concentration should vary with size and susceptibility of species treated. Treatments may be applied throughout the year including when snow is present. Efficacy may be reduced when stem surfaces are saturated with water. See Table 1 for relationship between mixing rate, spray volume and maximum application rate. Mixing with oil requires vigorous agitation to form an oil solution. Once a solution is formed it will stay stable. Garlon 4 Ultra Plus Milestone for basal bark applications Mix Garlon 4 Ultra with Milestone in a commercially available basal diluent (or other oils or basal diluents as recommended by the manufacturer); the basal oil should be compatible with a water soluble herbicide such as Milestone. Make a stable tank mixture for basal bark application by first combining each product with a compatibility agent prior to final mixing in the desired ratio. If using a tank mix, mix the oil-based products such as Garlon 4 Ultra thoroughly with basal oil and add any other oil-based products before adding the water based products. If the mixture stands for more than 30 minutes, reagitiation may be required. Oil and water based mixtures can separate over time. Long-term storage is not recommended without vigorous agitation prior to use or without a recommended compatibility agent. Garlon 4 Ultra Plus Tordon 22K in Oil Tank Mix: Garlon 4 Ultra and Tordon 22K may be used in tank mix combination as a low volume basal bark treatment to improve control of certain woody species such as ash, elm, maple, poplar, aspen, hackberry, oak, oceanspray, birch, hickory, pine, tanoak, cherry, locust, sassafras, and multiflora rose. (See product bulletin for mixing instructions.) Tordon 22K is not registered for use in the states of California and Florida.

**Notice 32 of 48 (Garlon 4 Ultra)** Broadcast Applications With Ground Equipment Apply Garlon 4 Ultra using equipment that will assure thorough and uniform coverage at spray volumes applied. See Table 1 for relationship between mixing rate, spray volume and maximum application rate. Woody Plant Control Foliage Treatment: Use 4 to 8 quarts of Garlon 4 Ultra in enough water to make 5 gallons or more per acre of total spray, or 1 1/2 to 3 quarts of Garlon 4 Ultra may be combined with labeled rates of Freelexx or a 2,4-D low volatile ester, Graslan L, or Tordon 22K in sufficient water to make 5 gallons or more per acre of total spray. Graslan L and Tordon 22K are not registered for use in the states of California and Florida. Broadleaf Weed Control Use Garlon 4 Ultra at rates of 1 to 4 quarts in a total volume of 5 gallons or more per acre as a water spray mixture. Apply anytime weeds are actively growing. Garlon 4 Ultra at 0.25 to 3 quarts may be tank mixed with labeled rates of Freelexx or a 2,4-D amine or low volatile ester, Tordon 22K, or Graslan L to improve the spectrum of activity. For thickened (high viscosity) spray mixtures, Garlon 4 Ultra can be mixed with diesel oil or other inverting agent. When using an inverting agent, read and follow the use directions and precautions on the product label. Graslan L and Tordon 22K are not registered for use in the states of California and Florida.

**Notice 33 of 48 (Garlon 4 Ultra)** Mixing Directions for all use sites Garlon 4 Ultra may be foliarly applied by diluting with water or by preparing an oil-water emulsion. For woody plant control, an oil-water emulsion performs more dependably under a broader range of conditions than a straight water dilution and is recommended for aerial applications. Oil-Water Mixture Sprays Prepare a premix of oil, surfactant and Garlon 4 Ultra in a separate container using diesel fuel, fuel oil, or kerosene plus an emulsifier such as Sponto 712 or Triton X-100. Use a jar test to check spray mix compatibility before preparing oil-water emulsion sprays in the mixing tank. Do not allow any water or mixtures containing water to get into the premix or Garlon 4 Ultra since a thick "invert" (water in oil) emulsion may form that will be difficult to break. Such an emulsion may also be formed if the premix of Garlon 4 Ultra is put into the mixing tank before the addition of water. Fill the spray tank about one-half full with water, then slowly add the premix with continuous agitation and complete filling the tank with water. Continue moderate agitation. Oil Mixture Sprays for Basal Treatment Prepare oil-based spray mixtures using either a commercially available basal oil, kerosene diesel fuel, or No. 1 or No. 2 fuel oil. Substitute other oils or diluents only as recommended by the oil or diluent's manufacturer. When mixing an oil mixture, read and follow the use directions and precautions on the manufacturer's product label. Add Garlon 4 Ultra to the required amount of oil in the spray tank or mixing tank and mix thoroughly. If the mixture stands over four hours, reagitiation is required. Oil Mixtures of Garlon 4 Ultra and Tordon 22K: Tordon 22K and Garlon 4 Ultra may be used in tank mix combination for basal bark treatment of woody plants. These herbicides are incompatible and will not form a stable mixture when mixed together directly in oil. Make a stable tank mixture for basal bark application by first combining each product with a compatibility agent prior to final mixing in the desired ratio. Tordon 22K is not registered for use in the states of California and Florida.

**Notice 34 of 48 (Garlon 4 Ultra)** Thinline Basal Bark Treatment To control susceptible woody plants with stems less than 6 inches in diameter, apply Garlon 4 Ultra, either undiluted or mixed at 50 to 75% v/v with oil, in a thin stream to all sides of the lower stems. The stream should be directed horizontally to apply a narrow band of Garlon 4 Ultra around each stem or clump. Use a minimum of 2 to 15 milliliters of Garlon 4 Ultra or oil mixture with Garlon 4 Ultra to treat single stems and from 25 to 100 milliliters to treat clumps of stems. Use an applicator metered or calibrated to deliver the small amounts required. Mixing with oil requires vigorous agitation to form an oil solution. Once a solution is formed it will stay stable. Dormant Stem Treatment Dormant stem treatments will control susceptible woody plants and vines with stems less than 2 inches in diameter. Plants with stems greater than 2 inches in diameter may not be controlled and resprouting may occur. This treatment method is best suited for sites with dense, small diameter brush. Dormant stem treatments of Garlon 4 Ultra can also be used as a chemical side-trim for controlling lateral branches of larger trees that encroach onto roadside, utility, or other rights-of-way. High volume and low volume applications using backpacks deliver approximately the same amount of herbicide per acre but differ in delivery volumes to achieve that rate.

**Notice 35 of 48 (Garlon 4 Ultra)** Backpack Applications for Control of Woody Plants with Dormant Stem Treatments ATTENTION This recommendation is permitted under FIFRA 2(ee) and has not been submitted to or approved by the EPA. - It as a violation of Federal law to use this product in a manner inconsistent with its labeling. - Read and follow all applicable directions for use, precautions and limitations on the product label attached to the container for Garlon(R) 4 Ultra herbicide. Dormant Stem Woody Plant Control: High volume and low volume dormant stem treatments will control susceptible woody plants and vines with stems generally around than 2 inches in diameter or less. Both application techniques deliver approximately the same amount of herbicide per acre but differ in delivery volumes to achieve that rate. Plants with stems with larger stem diameters may not be controlled and resprouting may occur. This treatment method is best suited for sites with dense, small diameter brush. Dormant stem treatments of Garlon 4 Ultra can also be used as a chemical side-trim for controlling lateral branches of larger trees that encroach onto roadside, utility, or other rights-of-way. High Volume Application: Mix 4 to 8 quarts of Garlon 4 Ultra in 2 to 3 gallons of crop oil concentrate or other recommended oil and add this mixture to enough water to make 100 gallons of spray solution. Use continuous adequate agitation. Apply with using low pressure (20 to 40 psi). In western states, apply anytime after woody plants are dormant and most of the foliage has dropped. In other areas apply anytime within 10 weeks of budbreak, generally February through April. Garlon 4 Ultra may be mixed with 4 quarts of Weedone 170 herbicide to improve the control of black cherry and broaden the spectrum of herbicidal activity. Do not apply to wet or saturated bark as poor control may result. Low Volume Application: Mix Garlon 4 Ultra at 4-6 gallons and 2 to 3 gallons of crop oil concentrate or other recommended oil and add this mixture to enough water to make 100 gallons of spray solution. Use continuous adequate agitation. Apply with backpack or other low volume spraying equipment, using low pressure (20 to 40 psi). Garlon 4 Ultra may be mixed with other herbicides to broaden the spectrum of herbicidal activity. Do not apply to wet or saturated bark as poor control may result.

**Notice 36 of 48 (Garlon 4 Ultra)** High Volume Applications Mix 4 to 8 quarts of Garlon 4 Ultra in 2 to 3 gallons of crop oil concentrate or other recommended oil and add this mixture to enough water to make 100 gallons of spray solution. Use continuous adequate agitation. Apply using low pressure (20 to 40 psi). In western states, apply anytime after woody plants are dormant and most of the foliage has dropped. In other areas apply anytime within 10 weeks of budbreak, generally February through April. Garlon 4 Ultra may be mixed with 4 quarts of Weedone 170 herbicide to improve the control of black cherry and broaden the spectrum of herbicidal activity. Do not apply to wet or saturated bark as poor control may result.

**Notice 37 of 48 (Garlon 4 Ultra)** Low Volume Applications Mix Garlon 4 Ultra at 4 to 6 gallons and 2 to 3 gallons of crop oil concentrate or other recommended oil and add this mixture to enough water to make 100 gallons of spray solution. Use continuous adequate agitation. Apply with backpack or other low volume spraying equipment, using low pressure (20 to 40 psi). Garlon 4 Ultra may be mixed with other herbicides to broaden the spectrum of herbicidal activity. Do not apply to wet or saturated bark as poor control may result.

**Notice 38 of 48 (Garlon 4 Ultra)** Cut Surface Cut surface applications with Garlon 4 Ultra can be made anytime after cutting up to re-sprouting. After re-sprouting basal bark or foliar applications are more suitable. Basal Cut Stump Treatment To control resprouting, mix 20 to 30 gallons of Garlon 4 Ultra in enough oil to make 100 gallons of spray mixture. Apply with a backpack or sprayer using low pressures and a solid cone or flat fan nozzle. Spray the root collar area and any exposed roots of root suckering species, sides of the stump, and the outer portion of the cut surface, including the cambium, until thoroughly wet, but not to the point of runoff. Spray mixture concentration should vary with size and susceptibility of species treated, using the higher rate for larger stumps, stumps with thicker bark or harder to control plants. Apply anytime, including in winter months, except when snow or water prevent spraying to the ground line. Mixing with oil requires vigorous agitation to form an oil solution. Once a solution is formed it will stay stable. Cut Stump Treatment To control resprouting of difficult to control species like saltcedar and other Tamarix species, bigleaf maple, tanoak, Oregon myrtle, and other susceptible species, apply Garlon 4 Ultra as a 50% dilution v/v in water by spraying all the exposed cambium layer on the freshly cut surface, or use undiluted Garlon 4 Ultra immediately after cutting. Use of undiluted Garlon 4 Ultra is most effective for hard-to-control species. Treatments may be applied throughout the year; however, control may be reduced with treatment during periods of moisture stress as in late summer or early spring sap flow. Cut stumps so that they are approximately level to facilitate uniform coverage of Garlon 4 Ultra. Use an applicator that can be calibrated to deliver the small amounts of material required.

**Notice 39 of 48 (Garlon 4 Ultra)** Basal Bark and Dormant Stem Treatments Individual plant treatments such as basal bark and cut surface applications may be used on any use site listed on this label at a maximum use rate of 8 lb ae of triclopyr per acre. See above in the section Basal Bark, Dormant Stem and Cut Surface Treatments for use on all site for more use information. Low Volume Basal Bark Treatment To control susceptible woody plants such as mesquite, huisache, red maple, red and white oak, birches and aspen with stems less than 6 inches in basal diameter. Streamline Basal Bark Treatment To control or suppress susceptible woody plants such as mesquite, huisache, red maple, white and red oak, elbowbush, greenbriar, hackberry, pricklyash, yaupon and wild grape Cut Stump, Basal Cut Stump, Dormant Stem, Thinline Basal Bark Treatments To control resprouting, apply undiluted Garlon 4 Ultra to wet the cambium and adjacent wood around the entire circumference of cut stumps. Treatments may be applied throughout the year; however, control may be reduced with treatment during periods of moisture stress as in late summer. Cut stumps so that they are approximately level to facilitate uniform coverage of Garlon 4 Ultra. Use an applicator which can be calibrated to deliver the small amounts of material required. Growing Point and Leaf Base (Crown) Treatment of Yucca Prepare a 2% v/v solution of Garlon 4 Ultra in basal oil, diesel or fuel oil (13 fl oz of Garlon 4 Ultra in 5 gallons of spray mixture). Thoroughly wet the center of the plant including growing point and leaf bases to the soil surface. Complete coverage of leaves is not necessary.

**Notice 40 of 48 (Garlon 4 Ultra)** Engineering Controls When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-6)), the handler PPE requirements may be reduced or modified as specified in the WPS.

**Notice 41 of 48 (Garlon 4 Ultra)** User Safety Recommendations Users should: - Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. - Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**Notice 42 of 48 (Garlon 4 Ultra)** First Aid If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice. If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.



**Notice 43 of 48 (Garlon 4 Ultra)** Agricultural Use Requirements Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

**Notice 44 of 48 (Garlon 4 Ultra)** Non-Agricultural Use Requirements The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. Entry Restrictions for Non-WPS Uses: Do not enter or allow others to enter the treated area until sprays have dried.

**Notice 45 of 48 (Garlon 4 Ultra)** Herbicide Resistance Management: Triclopyr, the active ingredient in this product, is a Group 4 herbicide based on the mode of action classification system of the Weed Science Society of America. Any weed population may contain or develop plants resistant to Group 4 herbicides. Resistant weeds may dominate the weed population if these herbicides are used repeatedly in the same field. Such resistant weed plants may not be effectively managed using Group 4 herbicides but may be effectively managed utilizing other herbicides alone or in mixtures from a different herbicide Groups that are labeled for control of these weeds and/or by using cultural or mechanical practices. However, a herbicide mode of action classification by itself may not adequately address specific weeds that are resistant to specific herbicides. Rotate the use of Garlon 4 Ultra or other Group 4 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field. Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use less the resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is less prone to resistance. Adopt an integrated weed management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation that considers tillage (or other mechanical control methods), cultural, biological, and other management practices. Scout after a herbicide application to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed production in the affected area by an alternative herbicide from a different group or by mechanical method such as hoeing, mowing or tillage. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed. If a weed population continues to progress after treatment with this product, discontinue use of this product, and switch to another management strategy or herbicide with a different mode of action, if available. Contact your local extension specialist or certified crop advisor for additional pesticide resistance management or integrated weed management recommendations for specific use sites.

**Notice 46 of 48 (Brandt Big Foot)** General Information Designed to mark chemical spray solutions on golf courses, parks, turf, nursery and commercial applications. Eliminates overlapping or skipping of areas and also helps to indicate drift. BRANDT BIG FOOT is great for use with herbicides, fungicides, fertilizers, and pesticides.

**Notice 47 of 48 (Brandt Big Foot)** Directions for Use Add to water based spray solutions at the rate of 16 fl. oz. per 100 gallons of spray solution. Turf color and height may vary, and adjustments to this ratio may be advised. May be used with all types of spray equipment.

**Notice 48 of 48 (Brandt Big Foot)** Precautionary Statements: Based on currently available data, this product is not classified as a hazardous substance. However, observe good industrial hygiene practices. Wash hands after handling. Storage and Disposal: Do not contaminate water, food or feed by storage or disposal. Keep out of reach of children. Store away from incompatible materials. Dispose of contents/container in accordance with local authority requirements. Warranty: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label when used in accordance with directions under normal conditions of use; but neither this warranty nor any other warranty of merchantability or fitness of a particular product expressed or implied, extends to the use of this product contrary to label conditions, or under conditions not reasonably foreseeable to the seller; and buyer assumes the risk of any such use.

**Warnings****Rec No. 6494917**

Your label commodity of Non-Crop Area for Garlon 4 Ultra does not match your site commodity of RECREATION AREA. Review the site/label match, and verify this product is allowed on the commodity for this specific use in accordance with label exceptions.

Your label commodity of Park for Brandt Big Foot does not match your site commodity of RECREATION AREA. Review the site/label match, and verify this product is allowed on the commodity for this specific use in accordance with label exceptions.

This application of Garlon 4 Ultra may not exceed the rate of 50ga/Unit. It is the user's responsibility to verify that the current rate of 1pt/A will not exceed this.

You have selected a rate of 1 PT for Garlon 4 Ultra which is lower than the recommended minimum rate of 2 PT

**Conditions****Rec No. 6494917****Milestone:**

- Broadcast/Other Cases
- Foliar Treatment

**Garlon 4 Ultra:**

- Non-grazed portions/No more 10% of grazable area
- Broadcast Applications With Ground Equipment/Alone

# Personal Protective Equipment Information

Rec No. 6494917

**NOTE: The personal protective equipment (PPE) information described here is based solely on the manufacturer's label. Your county or state may have additional restrictions or requirements.**

## Milestone

Applicators and other handlers must wear: - Long-sleeved shirt and long pants - Shoes plus socks Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

**Medical Number: 800-992-5994**

**Response Number: 800-992-5994**

## Garlon 4 Ultra

Applicators and other handlers who handle this pesticide must wear: - Long-sleeved shirt and long pants - Chemical-resistant gloves made of barrier laminate, nitrile rubber  $\geq 14$  mils, neoprene rubber  $\geq 14$  mils, or viton  $\geq 14$  mils - Shoes plus socks Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**Medical Number: 800-992-5994**

**Response Number: 800-992-5994**

## Brandt Big Foot

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Medical Number: 800-424-9300**

**Response Number: 217-547-5800**

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



4633687E Before Photo



4633687E After Photos – kikuyu grass and red bromes manually removed around the pole

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331711E Before Photo

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331711E After Photo – red bromes manually removed

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331707E Before Photo



Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331707E After Photo – red bromes manually removed

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331721(b) [site # different on pole label] Before Photo

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331721(b) [site # different on pole label] After Photo – red bromes manually removed

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331702E Before Photo

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



1331702E After Photo – red bromes manually removed

Other Photos Below



Infestation of artichoke thistle area – artichoke seedlings chemically treated indicated with blue dye

Pacific Horizon 3<sup>rd</sup> Maintenance 6/14/2021 and 6/15/2021



Another photo of artichoke thistle area



Artichoke thistle sprayed with Garlon/Milestone mixture (~1% solution)



Photo of crew manually collecting artichoke thistle seed heads for removal



## APPENDIX H

# MEMORANDUM

GLENN LUKOS ASSOCIATES

Regulatory Services



**TO:** Lesley Hill, OCTA

**FROM:** Sheri Asgari and Cynthia Arnold, GLA

**DATE:** July 7, 2021

**SUBJECT:** Fourth Quantitative Monitoring Associated with the Road Encroachment Area at OCTA's Bobcat Ridge Preserve, Located in Trabuco Canyon, Orange County, California

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The purpose of this memorandum is to document the 2021 quantitative monitoring associated with the road encroachment area (Encroachment Area) at Bobcat Ridge Preserve, a property owned by Orange County Transportation Authority (OCTA). The Preserve is one of seven of OCTA's properties associated with their Measure M2 Environmental Mitigation Program. The 48-acre Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon, immediately adjacent to the east side of Live Oak Canyon Road, north of its intersection with Shelter Canyon Road and is accessed from Live Oak Canyon Road, Shelter Canyon Road, and Hunky Dory Lane.

OCTA was notified by California Department of Fish and Wildlife (CDFW) in January 2017 of a disturbance at the southern boundary of the Bobcat Ridge Preserve. The adjacent resident had cleared and graded a dirt road to provide access to an additional part of his property. OCTA and Glenn Lukos Associates (GLA) mapped the disturbance "Encroachment Area" on February 2, 2017, which totaled approximately 0.135 acre (617 linear feet) of California sagebrush-California buckwheat scrub and scrub oak chaparral. Three individual intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) points and one intermediate mariposa lily point mapped as a population of three were located in the disturbance footprint. GLA conducted additional site visits on August 18, 2017 and November 21, 2017 to review status of the Encroachment Area that had passively recovered since the initial disturbance. OCTA contacted the resident to discuss the property boundary location and sensitivity of the Preserve's resources.

GLA conducted the first quantitative monitoring of the recovery within the Encroachment Area on December 18, 2018. The second quantitative monitoring event occurred on May 2, 2019 and the third on May 26, 2020. During the third quantitative monitoring site visit (May 26, 2020), additional impacts to native vegetation were observed within approximately 0.04 acre (175 linear feet) or approximately 30-percent of the Encroachment Area. Due to this, the results of the quantitative monitoring are being described in two categories: Re-disturbed Area and Previously Disturbed Area [Exhibit 1]. Photographs of the Re-disturbed Area are provided in Exhibit 2 (Photos 1-2).

## MEMORANDUM

July 7, 2021

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On May 3, 2021, GLA biologists Stephanie Cashin, Sheri Asgari and Cynthia Arnold conducted the fourth quantitative monitoring and took photographs from the same position and orientation as photo location points established during the first quantitative monitoring event in 2018 along the road encroachment area. Quantitative monitoring included walking the entire length of the Encroachment Area to document native habitat re-establishment, including percent cover and species recruitment. Note that two wildlife cameras were established along the encroachment in 2019 to document wildlife usage and unauthorized activities. The cameras did not pick up any unauthorized activities.

### I. RE-DISTURBED AREA

Due to the impacts described above, the Re-disturbed Area remains relatively bare. The fourth quantitative monitoring indicates that this area consists of approximately 65-percent bare ground, approximately 19-percent native species coverage, and approximately 16-percent non-native species coverage. Signs of passive restoration from prior impact are continuing at a slow rate due to drought conditions during the 2021 growing season. Growth and seed production of non-impacted species along the margins of the Re-disturbed Area including existing California sagebrush (*Artemisia californica*), sand aster (*Corethrogyne filaginifolia*), and telegraph weed (*Heterotheca grandiflora*), have continued to facilitate some revegetation in this area.

Native species detected in the Re-disturbed Area include (listed in order of relative dominance): deerweed, California sagebrush, sand aster, telegraph weed, owl's clover (*Castilleja exserta*), yellow pincushion (*Chaenactis glabriuscula*), sapphire woollystar (*Eriastrum sapphirinum*), California buckwheat (*Eriogonum fasciculatum*), annual lupine (*Lupinus bicolor*), black sage (*Salvia mellifera*), and chaparral yucca (*Yucca whippleii*).

Non-native species coverage during the fourth quantitative monitoring is higher than previous years, with one non-native species, Crete weed (*Hedypnois cretica*), comprising 15-percent of this area. This is due to the re-disturbance activities that removed native and non-native vegetation. The Re-disturbed Area is likely to be susceptible to additional weed invasion for the remaining bare areas in the upcoming wet season (winter/spring 2022).

### II. PREVIOUSLY DISTURBED AREA

The Previously Disturbed Area has been reestablishing vegetative cover and diversity with native species since the original unauthorized disturbance detected in 2017. Passive restoration successfully reduced non-native coverage and revegetated the area through naturally recruited seedlings and the expansion of existing shrubs. The current lack of rainfall and trending heat over the year has since increased bare ground due to lack of herbaceous annual species that typically follow the spring rains. Total native vegetative cover is approximately 72-percent, while non-native species contribute approximately 3-percent and 25-percent remains bare ground. Deerweed

## MEMORANDUM

July 7, 2021

Page 3

(*Acmispon glaber*) has continued to grow however with the current dry conditions at the time of monitoring, many were already in dormancy and therefore did not provide as much coverage as noted in the previous year. California sagebrush and black sage are continuing to establish in the area, at a slower than typical growth rate due to dry conditions. Additional native species such as crested needlegrass (*Stipa cornata*) and foothill needlegrass (*Stipa lepida*) are beginning to fill in bare areas along the edges to further revegetate this area. Establishing native vegetation has suppressed non-native growth as indicated by the low percentage of non-native species coverage noted again during the fourth quantitative monitoring.

Native plant species detected within the Previously Disturbed Area include (listed in order of relative dominance): deerweed, California sagebrush, black sage, foothill needlegrass, California buckwheat, sand aster, telegraph weed, sticky monkeyflower (*Diplacus aurantiacus*), owl's clover, sapphire eriastrum, saw-tooth goldenbush (*Hazardia squarrosa*), ladies' tobacco (*Pseudognaphalium californicum*), rattlesnake sandmat (*Euphorbia albomarginata*), yellow pincushion, annual lupine, and crested needlegrass. These species indicate high natural recruitment and diversity in this area.

Non-native plant species detected within the Previously Disturbed Area (listed in order of relative dominance) include: summer mustard (*Hirschfeldia incana*), Crete weed, ripgut brome (*Bromus diandrus*), and tocalote (*Centaurea melitensis*).

### III. DISCUSSION

As compared to last year's (third year) monitoring results, the Previously Disturbed Area showed a decrease in native cover from 89-percent to 72-percent, and a slight decrease in non-native cover from 5-percent to 3-percent. Bare ground had a significant increase from 6-percent to 25-percent, indicating a shift from vegetative cover to bare ground most likely due to the trending drought. Low rainfall and subsequent dry conditions likely caused the surface-water-dependent herbaceous layer to die back as well as pushed early dormancy in some of the normally fuller shrubs such as deerweed and black sage. If rainfall were to increase, it is likely that bare ground will convert to herbaceous cover, although the threat of non-native invasion remains and should be the focus of maintenance activities following rain events in the coming rainy season. Diversity of native vegetation is still present and is expected to further develop over time as the surrounding vegetation is predominantly native. Native shrub species including California sagebrush, deerweed, black sage, and California buckwheat are creating good structure for the re-establishing area even during dry conditions, with native needlegrass along with other lower growing natives filling in and increasing diversity.

Within the Re-disturbed Area, approximately 65-percent is bare ground (a minor decrease as compared to last year at 70-percent), with native cover at approximately 19-percent (a 10-percent reduction as compared to last year's 29-percent) and non-native cover at approximately 16-percent (last year was 1-percent). Although evidence of native seedling recruitment and annual species coverage is present in the Re-disturbed Area, this area has experienced an increase in non-natives

**MEMORANDUM**

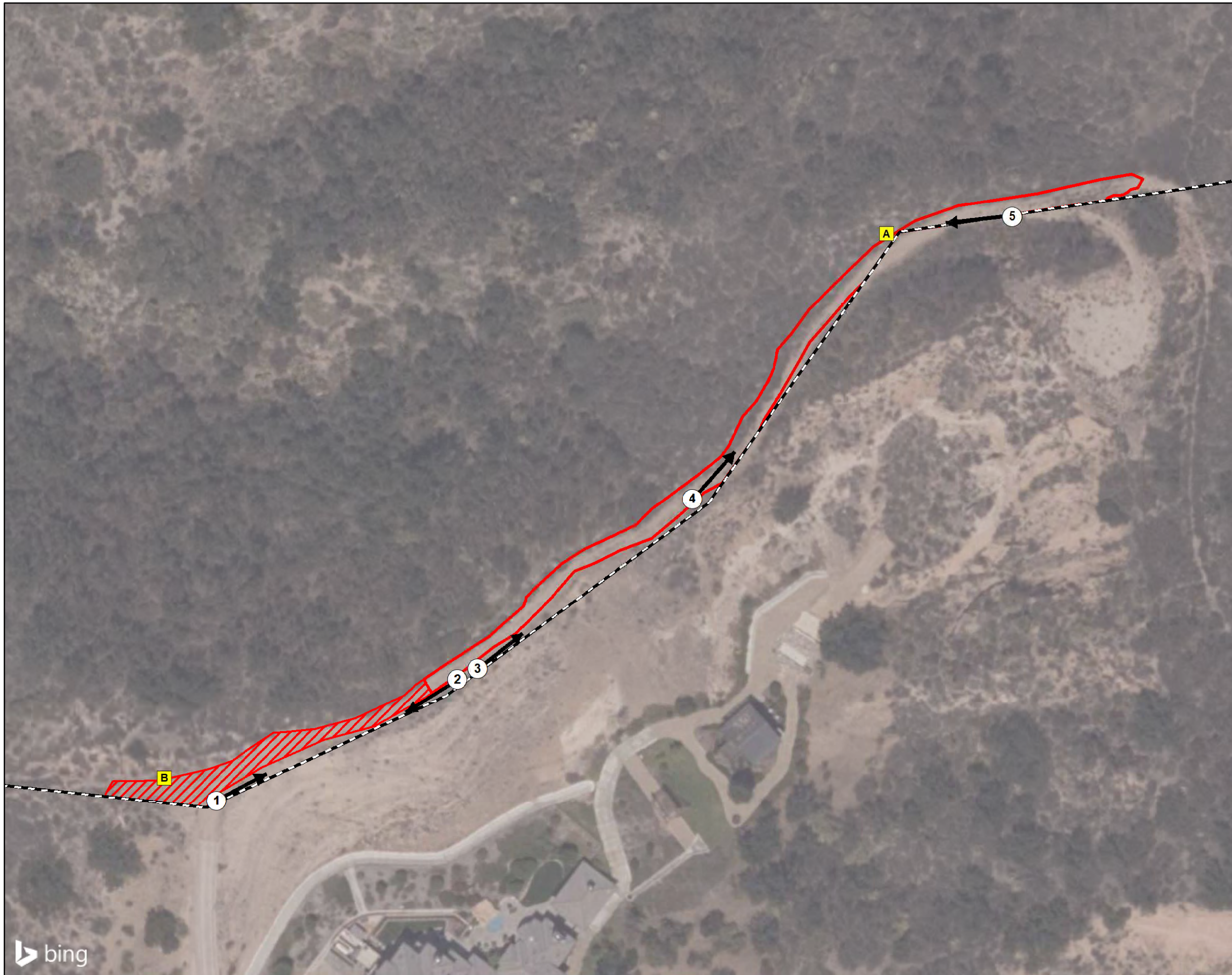
**July 7, 2021**






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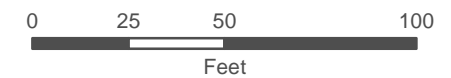
and remains highly susceptible to additional weed invasion in the next rainy season. The weed whipping that occurred between the second and third quantitative monitoring has set back the expected regeneration of native species within this area and has provided an advantage for non-native species competing to fill in bare areas.

GLA recommends the installation of staking and repair signage in the Re-disturbed Area to clearly demarcate the property boundary and prevent future disturbance events. Weed abatement will be necessary in the Re-Disturbed Area in the coming rainy season and should be conducted in the winter months prior to seed set of non-native species. Installation of coast prickly pear (*Opuntia littoralis*) pads and/or hand seeding of black sage, California buckwheat, and California sagebrush during the winter months would also aid in the quicker infill with native species. GLA recommends continued monitoring of the Previously Disturbed and Re-Disturbed Areas in the winter and spring months when vegetation is actively growing to determine native and non-native species development and provide timely maintenance recommendations.

Please contact Lexi Kessans at (949) 340-3942 with any questions.



-  Preserve Boundary
-  Previously Disturbed Area (2017)
-  Re-disturbed Area (2020)
-  Wildlife Camera Station
-  Photo Location



1 inch = 50 feet

Coordinate System: State Plane 6 NAD 83  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Map Prepared by: B. Gale, GLA  
 Date Prepared: July 9, 2021

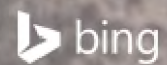
## BOBCAT RIDGE PRESERVE

2021 Encroachment Area Map

GLENN LUKOS ASSOCIATES



Exhibit 1





Photograph Location 1: View of the Re-disturbance Area on May 26, 2020 after new impacts were identified in 2020. Native vegetation including deerweed (*Acmispon glaber*) and California buckwheat (*Eriogonum fasciculatum*) and non-native vegetation including red brome and crete weed (*Hedypnois cretica*) appear to be weed whipped to less than an inch tall in this location.



Photograph Location 1: View of the same location on May 3, 2021 of the Re-disturbance Area. Photograph depicts bare areas with some non-native species such as crete weed (*Hedypnois cretica*) along with native vegetation including California sagebrush (*Artemisia californica*) and deerweed (*Acmispon glaber*).



GLENN LUKOS ASSOCIATES

Exhibit 2 – Page 1

**BOBCAT RIDGE PRESERVE  
ROAD ENCROACHMENT**

Site Photographs



Photograph Location 2: Taken May 26, 2020 depicting the Re-disturbed Area in the background and Previously Disturbed Area in the foreground after new impacts in 2020. Further establishment of the deerweed (*Acmispon glaber*) noted in 2018 and 2019. Non-impacted native shrubs have begun to expand into the encroachment area.



Photograph Location 2: View of the same location on May 3, 2021. Due to lack of rainfall, there is not notable infill since the previous year's monitoring, however, native vegetation deerweed (*Acmispon glaber*) continues to persist and grow along with buckwheat (*Eriogonum fasciculatum*), and black sage (*Salvia mellifera*), seen in foreground.



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Exhibit 2 – Page 2

**BOBCAT RIDGE PRESERVE  
ROAD ENCROACHMENT**

Site Photographs





Photograph Location 3: View of the Previously Disturbed Area on May 26, 2020. Native annuals including sapphire eriastrum (*Eriastrum sapphirinum*), California dodder (*Cuscuta californica*), and telegraph weed (*Heterotheca grandiflora*) were noted in the understory.



Photograph Location 3: View of the same location on May 3, 2021 of the Previously Disturbed Area depicting deerweed (*Acmispon glaber*), continuing to fill in bare areas. Other native vegetation can be seen including sand aster (*Corethrogyne filaginifolia*), and chaparral yucca (*Yucca whippleii*).



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Exhibit 2 – Page 3

**BOBCAT RIDGE PRESERVE  
ROAD ENCROACHMENT**

Site Photographs



Photograph Location 4: Mature deerweed (*Acmispon glaber*) in the Previously Disturbed Area as photographed on May 26, 2020.



Photograph Location 4: View of the same area on May 3, 2021. Note the lack of vigor in smaller stature of the deerweed (*Acmispon glaber*), which is a result of low precipitation in the spring of 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2 – Page 4

**BOBCAT RIDGE PRESERVE  
ROAD ENCROACHMENT**

Site Photographs



Photograph Location 5: View of the upper limit of the Previously Disturbed Area in May 2020 depicting mature deerweed with young shrubs and seedlings of California sagebrush, black sage, foothill needlegrass (*Stipa lepida*), and crested needle grass (*Stipa cornata*) developing under and between deerweed shrubs.



Photograph Location 5: View of the same location on May 3, 2021 depicting mature deerweed (some going dormant), and grasses that are beginning to fill in bare areas such as crested needlegrass (*Stipa cornata*) and foothill needlegrass (*Stipa lepida*). Other native vegetation includes California sagebrush (*Artemisia californica*) and black sage (*Salvia mellifera*).



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Exhibit 2 – Page 5

**BOBCAT RIDGE PRESERVE  
ROAD ENCROACHMENT**

Site Photographs

**Appendix D**

**2021 Summary Letter for Maintenance Activities  
Performed on OCTA Preserves (RECON Number 9779)**

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*An Employee-Owned Company*

February 14, 2022

Ms. Lesley Hill  
Environmental Mitigation Program  
Orange County Transportation Authority  
550 South Main Street  
Orange, CA 92863-1584

Reference: 2021 Summary Letter for Maintenance Activities Performed on OCTA Preserves (RECON Number 9779)

Dear Ms. Hill:

This letter summarizes the maintenance activities that were performed in 2021 (January–December) on the Orange County Transportation Authority (OCTA) Preserves. The preserves where maintenance occurred during 2021 include Trabuco Rose, Wren’s View, Live Oak Creek, Silverado Chaparral, Pacific Horizon, and Eagle Ridge. During 2021, there were no maintenance needs requested for Bobcat Ridge. All maintenance work tasks were performed by a RECON Environmental, Inc. (RECON) field crew with supervision/coordination from a RECON restoration biologist. The specific maintenance tasks and dates performed, for each preserve, are included below. Figures of each preserve where work was performed during 2021 have been included in Attachment 1, Figures 1 through 6. Additionally, photographs taken in 2021 of maintenance work at the preserves have been included in Attachment 2, Photographs 1 through 38.

### **Trabuco Rose Preserve**

During 2021, maintenance tasks performed at the Trabuco Rose Preserve included removal of fallen branches and debris, vegetation thinning and removal within two fuel modification zones, vegetation removal on fire roads and access roads, invasive plant treatments, and repairs to two gates located on the preserve (Figure 1 and Photographs 1 through 10).

In January 2021, RECON field crews cut up and removed large branches that had fallen along Trabuco Oaks Drive, pruned a large oak tree near the main entrance of the preserve, and removed and/or thinned vegetation within the fuel modification zone adjacent to 20022 Trabuco Oaks Drive (Figure 1, Trabuco Rose A). All biomass was placed away from roads and drainages and spread out as to not create a fire hazard.

During mid-February, vegetation growing on the fire roads and access roads was spot-sprayed with a glyphosate-based herbicide, and vegetation growing along both sides of Trabuco Oaks Drive (north of the main gate) was removed with mechanical line-trimmers for fire prevention/removal of fire hazards (Table 1). Consistent with previous years of treatment, depending on the plants’ stage of growth and proximity to sensitive species growing on or near the fire roads (i.e., intermediate mariposa lily [*Calochortus weedii* var. *intermedius*]), vegetation was removed either by hand, mechanically with line trimmers, and/or sprayed with herbicide.

Invasive plant species control work on Trabuco Rose Preserve continued in 2021 (see Table 1) and followed the methodology in the approved Invasive Species Management Plan for OCTA M2 Preserves – Trabuco Rose Preserve, prepared by Glenn Lukos Associates (GLA; 2017). The initial treatment of the Priority 1 invasive species and some of the Priority 2 invasive species, as classified by GLA (2017), was completed in fall 2018, and retreatments occurred in spring 2019; early 2020 (January and February); and in February, March, and June 2021

(see Table 1). The areas of the Trabuco Rose Preserve that were retreated for invasive species in 2021 are presented in Figure 1.

Vegetation was also removed and/or thinned within two fuel modification zones on Trabuco Rose Preserve, which include the zones adjacent to 20022 Trabuco Oaks Drive (performed in January, May, and June; Figure 1), and 1 Windy Ridge Road (performed in April; Figure 1). In May, overhanging branches along Rose Canyon Road and Hickey Spur Road were trimmed to allow for safe ingress/egress of emergency vehicles. Non-native grasses and mustards (*Brassica* sp.) growing along the edges of Rose Canyon Road were also removed with mechanical line-trimmers for fire prevention.

In July, subcontractor Aussie Industrial made repairs on two of the gates that are located at access points of the preserve. The gate located on Rose Canyon Road was scraping on the concrete footing and was repaired, and the gate located near the erosion gully’s locking mechanism was not sliding properly and was also repaired.

During September, fallen branches and debris located within Hickey Creek (located west of Trabuco Oaks Drive) were removed and placed in other areas of the preserve. In November, a fallen oak tree that was blocking an equestrian path was removed, low hanging branches were cut back along some of the fire roads, and loose sections of fencing along Rose Canyon Road were tightened.

The final maintenance task performed at Trabuco Rose Preserve during 2021 was at the end of December, following rain events. Fallen branches that were blocking Trabuco Oaks Drive were removed, as well as branches that had fallen into the stream at the very northern end of the preserve.

Table 1 Summary of Work Completed at Trabuco Rose Preserve During 2021	
Date	Task
January 26–28, 2021	Removed and dispersed fallen branches from along Trabuco Oaks Drive; removed a large sycamore branch that had fallen into an oak tree near the main gate; pruned an oak tree that had split along Trabuco Oaks Drive; performed fuel modification work adjacent to 20022 Trabuco Oaks Drive (see Figure 1a, Trabuco Rose A); cleared debris and trimmed down taller vegetation from Rose Canyon Creek near the culvert; and repaired broken sections of fence located along Trabuco Oaks Drive and Rose Canyon Road.
February 15–18, 2021	Sprayed vegetation on fire roads with a glyphosate-based herbicide, and line-trimmed taller vegetation growing along both sides of Trabuco Oaks Drive (north of main gate, see Figure 1a).
February 18–19, 2021	Non-native invasive species treatment work to control germinating artichoke thistle plants ( <i>Cynara cardunculus</i> ) via backpack sprayers with a glyphosate-based herbicide. Spraying was conducted (in order of treatment) at Areas 24, 25, 26, 32, 17, 13, 14, 15, 2, and B (see Figure 1b, invasive species control areas). On these dates, field crew also removed weeds/biomass that had been illegally dumped in the Trabuco Rose Preserve, along Rose Canyon Road. All biomass was disposed of off-site.
March 17–18, 2021	Non-native invasive species treatment work to control germinating artichoke thistle plants via backpack sprayers with a glyphosate-based herbicide. Spraying was conducted (in order of treatment) at Areas 28, C, and 31. Field crew also installed preserve signs in an area near the main gate (adjacent to a home) to deter unauthorized access from neighboring residents.
March 22–23, 2021	Non-native invasive species treatment work to control germinating artichoke thistle plants via backpack sprayers with a glyphosate-based herbicide. Spraying was conducted (in order of treatment) at Areas 33, 35, D, 36, and 37.
April 20, 2021	Vegetation thinning and removal within the fuel modification zone adjacent to 1 Windy Ridge Road (see Figure 1a, Trabuco Rose B).

Table 1 Summary of Work Completed at Trabuco Rose Preserve During 2021	
Date	Task
May 7, 2021	Vegetation thinning and removal within fuel modification zone adjacent to 20022 Trabuco Oaks Drive (see Figure 1).
May 27, 2021	Trimmed overhanging oak tree branches along Rose Canyon Road and along the Hickey Spur Road for safe ingress/egress of emergency vehicles. All cut branches were left on-site and moved from Rose Canyon Road to areas of the preserve not in or near streams and not on roads. Non-native grasses and mustards growing along the edges of Rose Canyon Road and within the OCTA preserve were also line-trimmed for fire prevention.
June 16 & 18, 2021	Performed fuel modification work near 20022 Trabuco Oaks Drive (see Figure 1) which consisted of line-trimming non-native grasses that had grown back near the home and removing any fallen tree branches and relocating them to other areas of the preserve (avoiding waterways and roads). The field crew also line-trimmed grasses that had grown back along Trabuco Oaks Drive (on both sides of the road), in between the electric gate and north to the Their Stable entrance.
June 24, 2021	Performed additional fuel modification work near 20022 Trabuco Oaks Drive (see Figure 1) which consisted of removing fallen tree branches and relocating to other areas of the preserve (avoiding waterways and roads).
June 28–29, 2021	Spot-sprayed germinating artichoke thistle plants with a glyphosate-based herbicide with backpack sprayers in all areas where artichoke thistle was observed growing back throughout the preserve, including new patches along Rose Canyon Road.
July 12, 2021	Repairs to two gates were made by subcontractor Aussie Industrial: (1) the gate located on Rose Canyon Road was scraping on the concrete footing and was repaired, and (2) the gate located near the erosion gully was not sliding properly and was also repaired (see Figure 1b).
September 14–15, 2021	Removed fallen branches and debris that were located within Hickey Creek, located to the west of Trabuco Oaks Drive.
November 17, 2021	Removed a fallen oak tree that was blocking an equestrian path, cut back low hanging branches along fire roads, and tightened sections of the fence line along Rose Canyon Road.
December 20 & 27, 2021	Removed fallen branches that were blocking road access and that had fallen within the stream, at the very northern end of the preserve.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans (RMPs).	

**Wren’s View Preserve**

Maintenance tasks performed at Wren’s View Preserve were performed in March, April, and May 2021. This included vegetation removal on fire roads and access roads and the trimming of overhanging vegetation that was blocking the roads, which was performed in late March/early April. In late May, work was performed to repair damage to the fence line, at three separate locations, along the perimeter of the reserve on Trabuco Canyon Road (Figure 2 and Photographs 11 through 13). A summary of the work completed at Wren’s View Preserve is included in Table 2.



Table 2 Summary of Work Completed at Wren's View Preserve During 2021	
Date	Task
March 29–April 1, 2021	Removed vegetation on fire roads and access roads and trimmed back overhanging vegetation that was blocking safe access along the roads.
May 26, 2021	Repaired fence at three separate locations along the perimeter of the preserve on Trabuco Canyon Road with barbless wire and metal T-posts.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA RMPs.	

### Live Oak Creek Preserve

Maintenance tasks performed at the Live Oak Creek Preserve included vegetation thinning and removal within two fuel modification zones, and vegetation removal on the fire roads and access roads of the preserve (Figure 3 and Photographs 14 through 17). Vegetation was either thinned or completely removed around two properties which included 19071 Live Oak Canyon Road (performed in February and April; see Figure 3, Live Oak Creek A) and 19041 Lambrose Canyon Road (performed in April; see Figure 3, Live Oak Creek B). Vegetation was also controlled on all fire roads/access roads within the preserve using either a glyphosate-based herbicide or line trimmers. This work was performed in February. In July and August, large oak branches that had fallen near the entrance of the preserve and along the roads were removed from the roads but left on the preserve. A summary of the work completed at Live Oak Creek Preserve is included in Table 3.

Table 3 Summary of Work Completed at Live Oak Creek Preserve During 2021	
Date	Task
February 15, 2021	Sprayed vegetation on fire roads with a glyphosate-based herbicide, and line-trimmed vegetation within the fuel modification zone adjacent to 19071 Live Oak Canyon Road (see Figure 3).
April 20, 2021	Thinned and removed vegetation within the fuel modification zones adjacent to 19071 Live Oak Canyon Road (see Figure 3) and 19041 Lambrose Canyon Road (see Figure 3).
July 22 & August 4, 2021	Removed fallen oak tree branches that were blocking the entrance of the preserve and portions on the shoulder of Live Oak Canyon Road. All branches were left within the preserve, removed from the roads, and not placed into any waterways.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA RMPs.	

### Silverado Chaparral Preserve

Maintenance tasks performed at the Silverado Chaparral Preserve included removal of a non-native invasive plant, line-trimming along one of the fire roads, and repairs to fencing that had been installed in 2020 to deter unauthorized access (Figure 4 and Photographs 18 through 21). Dates of the work performed at the Silverado Chaparral Preserve are included below in Table 4.

The removal of the non-native invasive species Spanish broom (*Spartium junceum*) occurred in April and consisted of cutting all biomass to the ground, painting the cut stumps with herbicide, and removing the cut vegetation from the site and disposing of it at an off-site facility.

In May, June, and September 2021, repairs were made to the damaged fencing located along an unauthorized trail within the preserve. Repairs included the installation of more barbed wire, and adding more metal T-posts, wire stays, and wilderness signs. Additionally in May, vegetation growing on the northern fire road was removed with line trimmers. A summary of the work completed at the Silverado Chaparral Preserve is included in Table 4.

Table 4 Summary of Work Completed at Silverado Chaparral Preserve During 2021	
Date	Task
April 20, 2021	Removed Spanish broom from the southern end of preserve (see Figure 4) by cutting all biomass to the ground, painting the stump with herbicide, and removing the cut vegetation from the site and disposing of it at an off-site facility.
May 5–6, 2021	Repaired barbed wire fence lines in six separate areas (see Figure 4), which included installing more barbed wire in areas where it had been cut, and adding more metal T-posts, wire stays, and wilderness signs. Once fence repairs were made, the field crew line-trimmed the northern fire road that traverses the preserve in an east-west direction.
June 23, 2021	Made fence repairs, including the installation of more barbed wire, metal T-posts, wire stays, and flagging at five separate locations along an unauthorized trail to deter access.
September 2, 2021	Fixed damaged fence and posts along an unauthorized trail to deter access.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA RMPs.	

### Pacific Horizon Preserve

The maintenance tasks performed at the Pacific Horizon Preserve in 2021 included non-native invasive species control, repairs to the fence line, the addition of more preserve signs, and restoration work along the decommissioned trail (Figure 5 and Photographs 22 through 29). The work performed on the Pacific Horizon Preserve followed the Restoration Plan for Disturbed Lands Within Pacific Horizon Preserve (GLA 2019), and the Coastal Development Permit (California Coastal Commission 2020).

Non-native invasive species control was performed at the preserve in February, March, April, and June. In February, March, and June, artichoke thistle plants were retreated with a glyphosate-based herbicide. In February and March, freeway iceplant (*Carpobrotus edulis*) growing at the northern end of the preserve was also treated with a glyphosate-based herbicide. In March and April, the pampas grass (*Cortaderia selloana*) population growing at the bottom of the canyon was treated for the first time, which consisted of spraying the foliage of the plants with a glyphosate-based herbicide. All weed removal areas that have been treated in the year 2020 and/or 2021 are presented in Figure 5.

Additional maintenance work performed at the Pacific Horizon Preserve included work in the northern section where repairs were made to the damaged fence line, additional restoration signs were added to this area, particularly to inform the public of sensitive resources on the Preserve including the many-stemmed dudleya (*Dudleya multicaulis*), and branches and debris that had been placed on live vegetation was moved back on to the decommissioned trail. Additionally, coast prickly pear (*Opuntia littoralis*) was salvaged from other areas of the

Preserve and planted along the decommissioned trail. A summary of the work completed at Pacific Horizon Preserve is included in Table 5.

Table 5 Summary of Work Completed at Pacific Horizon Preserve During 2021	
Date	Task
February 2–4, 2021	Sprayed artichoke thistle and iceplant with a glyphosate-based herbicide (only sprayed iceplant on OCTA property; see Figure 5); repaired damaged fence line, added three more restoration signs to fence; removed all branches and debris that had been placed on live vegetation and placed back onto decommissioned trail; salvaged coast prickly pear from cactus collection areas and left to callous, to be installed at a later date along decommissioned trail.
March 2, 2021	Sprayed ice plant with a glyphosate-based herbicide on OC Parks lands, immediately north of OCTA Preserve boundary, following all permit requirements. Field crew also spot-sprayed germinating artichoke thistle plants with a glyphosate-based herbicide (see Figure 5).
March 4, 2021	Finished spot-spraying germinating artichoke thistle plants with a glyphosate-based herbicide, and planted the salvaged coast prickly pear cuttings along the decommissioned trail and in areas where freeway iceplant died back and created open spaces for native plant establishment.
March 5 & 8–9, 2021	Sprayed pampas grass with a glyphosate-based herbicide in pampas grass removal areas (see Figure 5).
March 18, 2021	Installed additional restoration signs that informed the public of the sensitive resources on the preserve, including the many-stemmed dudleya.
April 19–21, 2021	Finished spraying pampas grass with a glyphosate-based herbicide in the pampas grass removal areas.
June 7, 2021	Spot-sprayed germinating artichoke thistle plants with a glyphosate-based herbicide with backpack sprayers.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA RMPs.	

### Eagle Ridge Preserve

Maintenance tasks performed at the Eagle Ridge Preserve included the installation of wilderness signs, vegetation control along the fire road, and installation of a new fence line (Figure 6 and Photographs 30 through 38).

In March 2021, wilderness signs were attached to posts and installed along Soquel Canyon Road, attached to the fence line along the eastern boundary of the preserve, and installed along the ridge road at the top of the preserve. Additionally, the gate located at the eastern boundary of the preserve had a new combination lock placed on it to secure this access point.

During October, vegetation growing on the fire road/ridge road located at the top of the preserve was line-trimmed. Due to the potential for fires, a 500-gallon water buffalo with hoses was also staged on-site every day of work, for safety. Following the vegetation removal, a new fence line was installed at the northern section of the preserve, near an adjacent home (6200 Carbon Canyon Road) to deter unauthorized access. Dates of the work performed at the Eagle Ridge Preserve are included below in Table 6.

Table 6 Summary of Work Completed at Eagle Ridge Preserve During 2021	
Date	Task
March 24, 2021	Installed two wilderness signs attached to metal T-posts along Soquel Canyon Road; attached three wilderness signs to the fence line along the eastern boundary of the preserve; and secured the gate at the eastern boundary with a new combination lock.
October 18–21, 2021	Line-trimmed vegetation growing on the access/ridge road, located on the top of the preserve. A 500-gallon water buffalo with hoses was also on-site every day of work for safety (fire prevention).
October 22 & 26, 2021	Installed fence along boundary line that borders a home and installed wilderness preserve signs on gate on ridge road and at one other location near the newly installed fence line.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA RMPs.	

If you have any questions regarding this letter, please contact me by email (ratik@reconenvironmental.com) or by phone (619-308-9333 ext. 178).

Sincerely,



Raquel Atik  
Restoration Project Manager

### References Cited

California Coastal Commission  
2020 Coastal Development Permit. February 5.

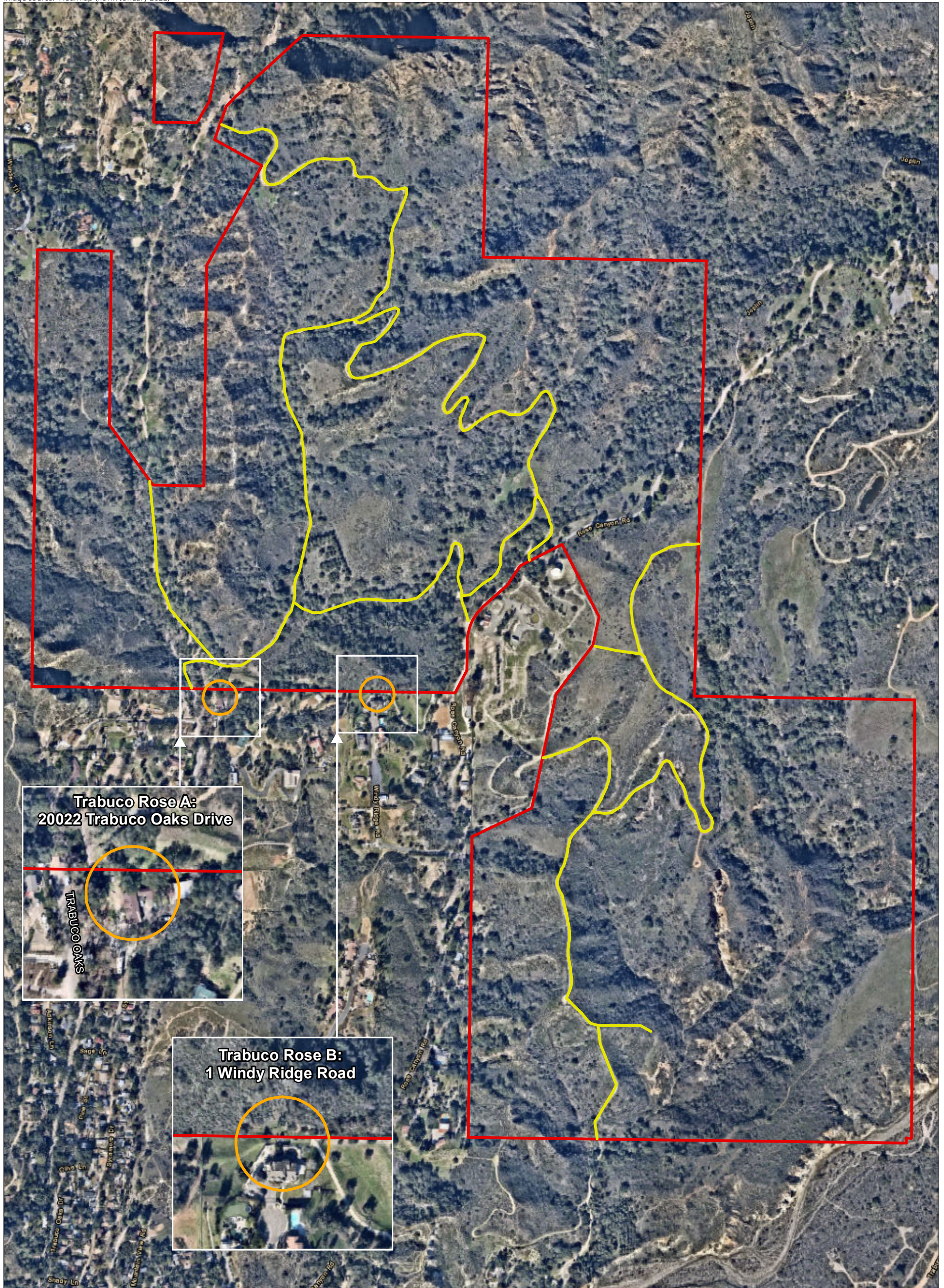
Glenn Lukos Associates (GLA)  
2017 Invasive Species Management Plan for OCTA M2 Preserves – Trabuco Rose Preserve. November.

2019 Restoration Plan for Disturbed Lands Within Pacific Horizon Preserve. August.

## ATTACHMENTS

## ATTACHMENT 1

Figures 1 through 6



- Trabuco Rose
- Fire Road / Access Road
- 100' Buffer Around Habitable Structures

- Fuel Modification Zones**  
Trabuco Rose A  
Trabuco Rose B

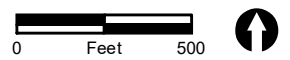
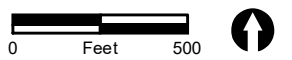
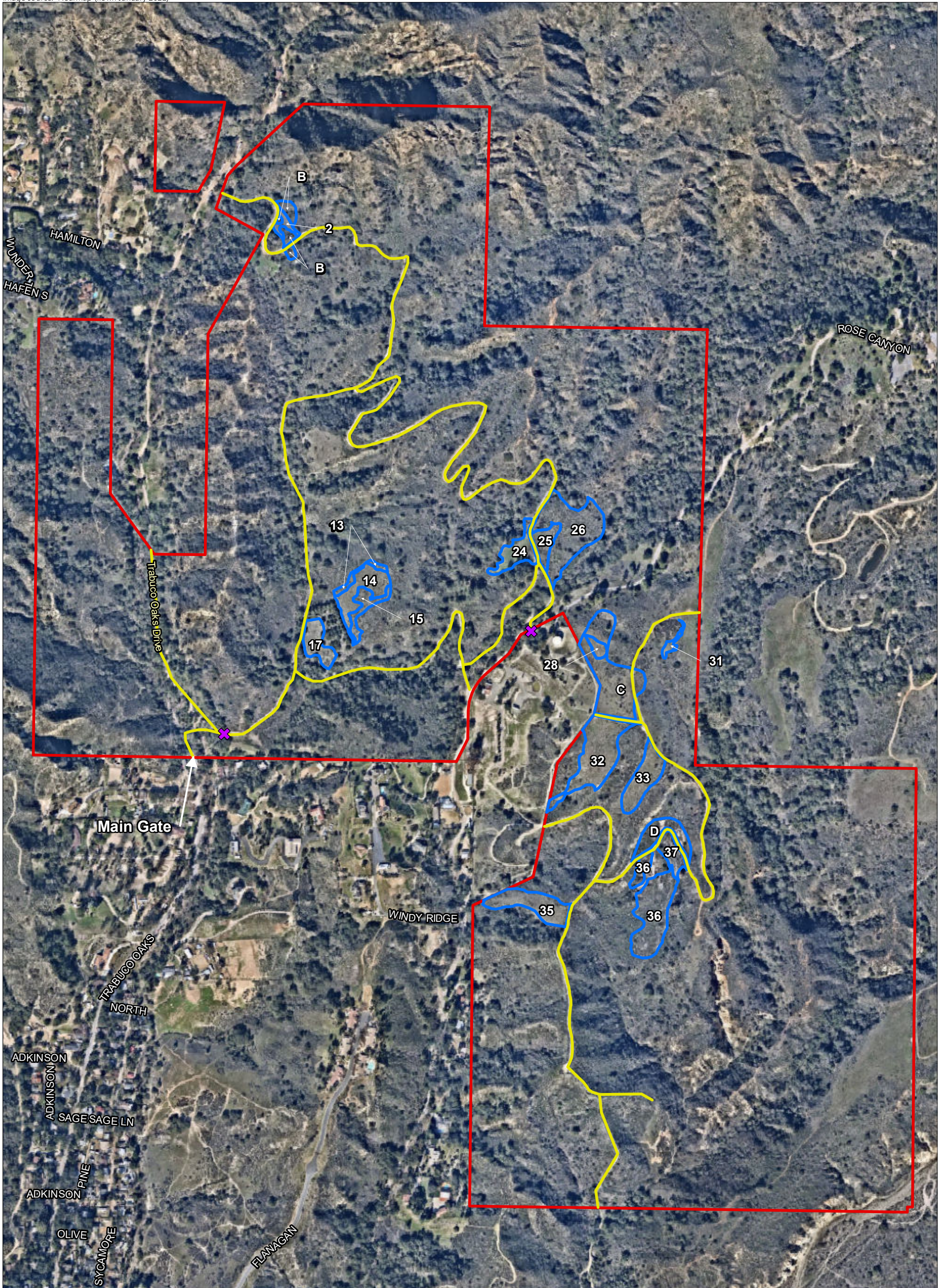


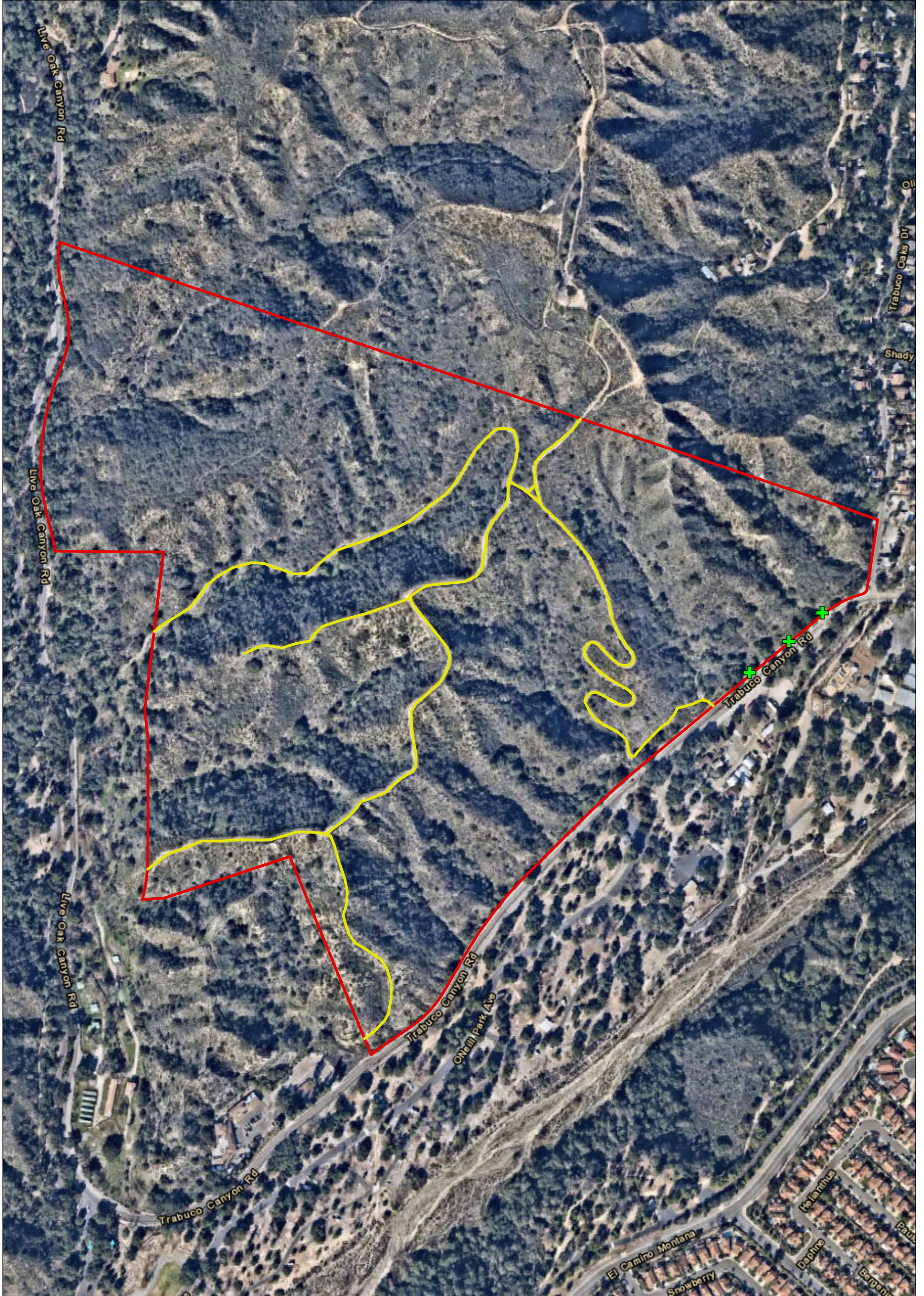
FIGURE 1a  
Trabuco Rose Preserve



- Trabuco Rose
- Fire Road / Access Road
- ✕ Gates (Repaired in 2021)
- Invasive Species Control Areas (Treated in 2021)
- Artichoke Thistle

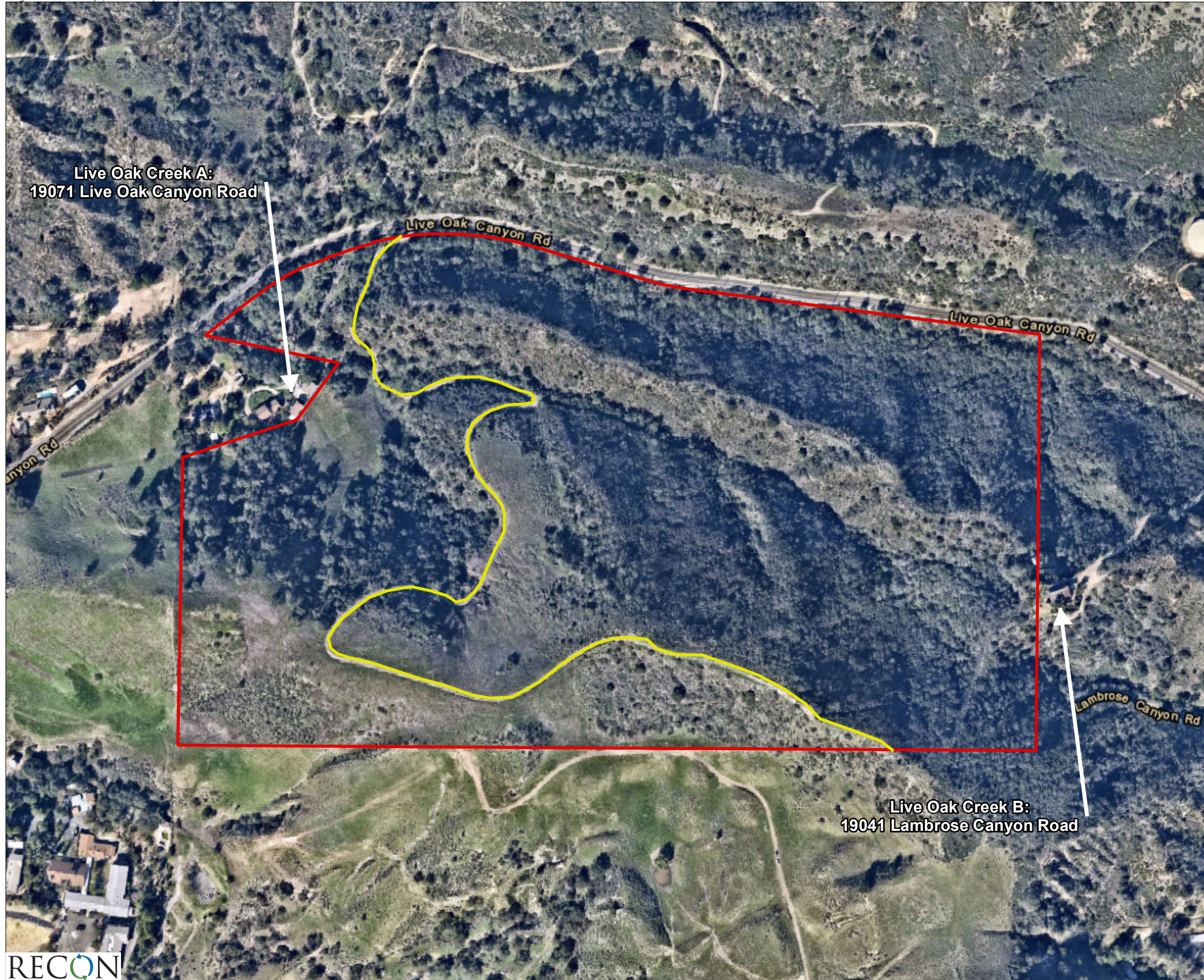
Note: Polygons with numbers were mapped by GLA and presented in the ISMP (2017); polygons with letters were mapped by RECON (2019)





- Wren's View Preserve Boundary
- Fire Road / Access Road
- + Repaired Fence (2021)







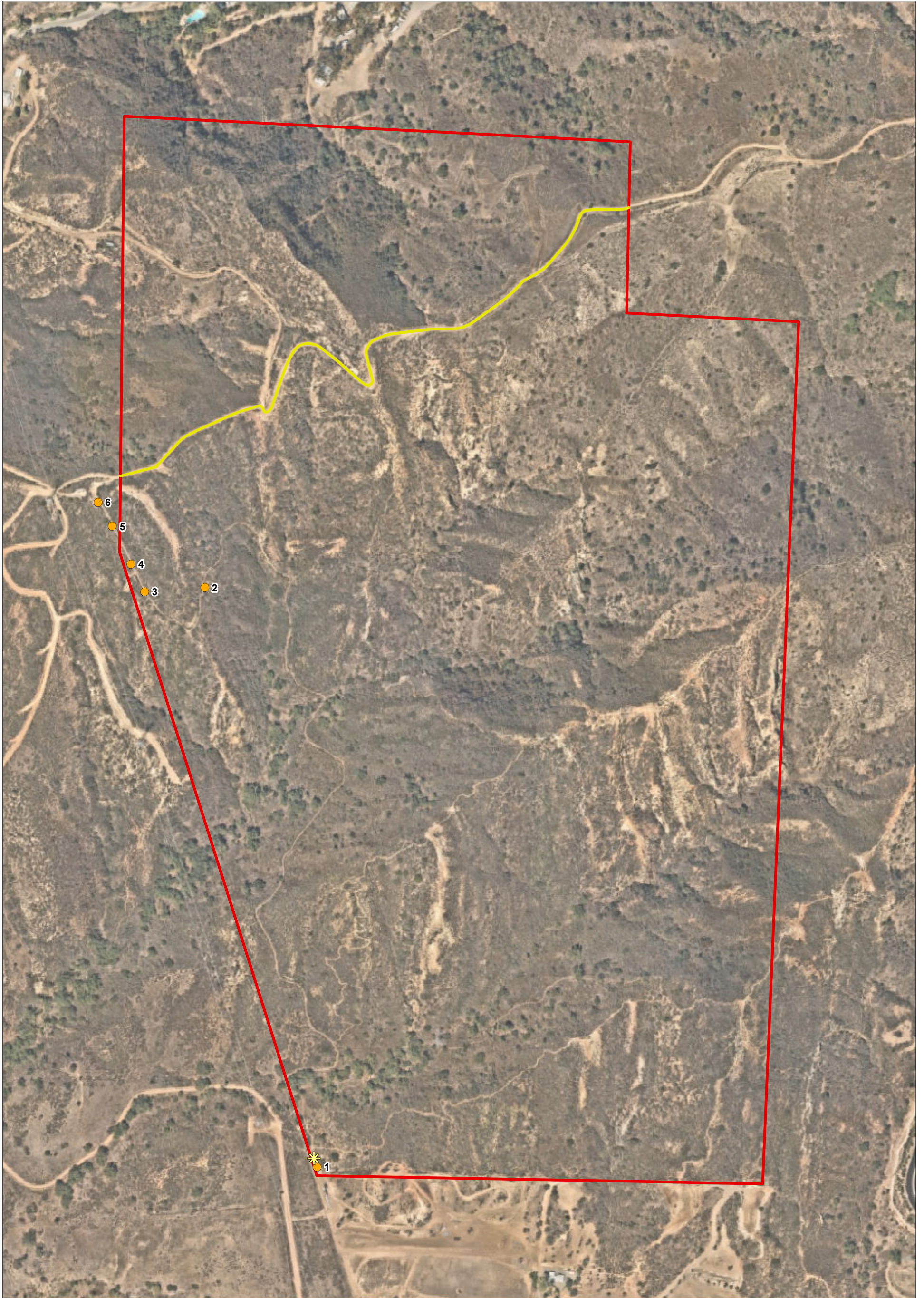




-  Live Oak Creek Preserve Boundary
-  Fire Road / Access Road
- Fuel Modification Zones**
- Live Oak Creek A
- Live Oak Creek B



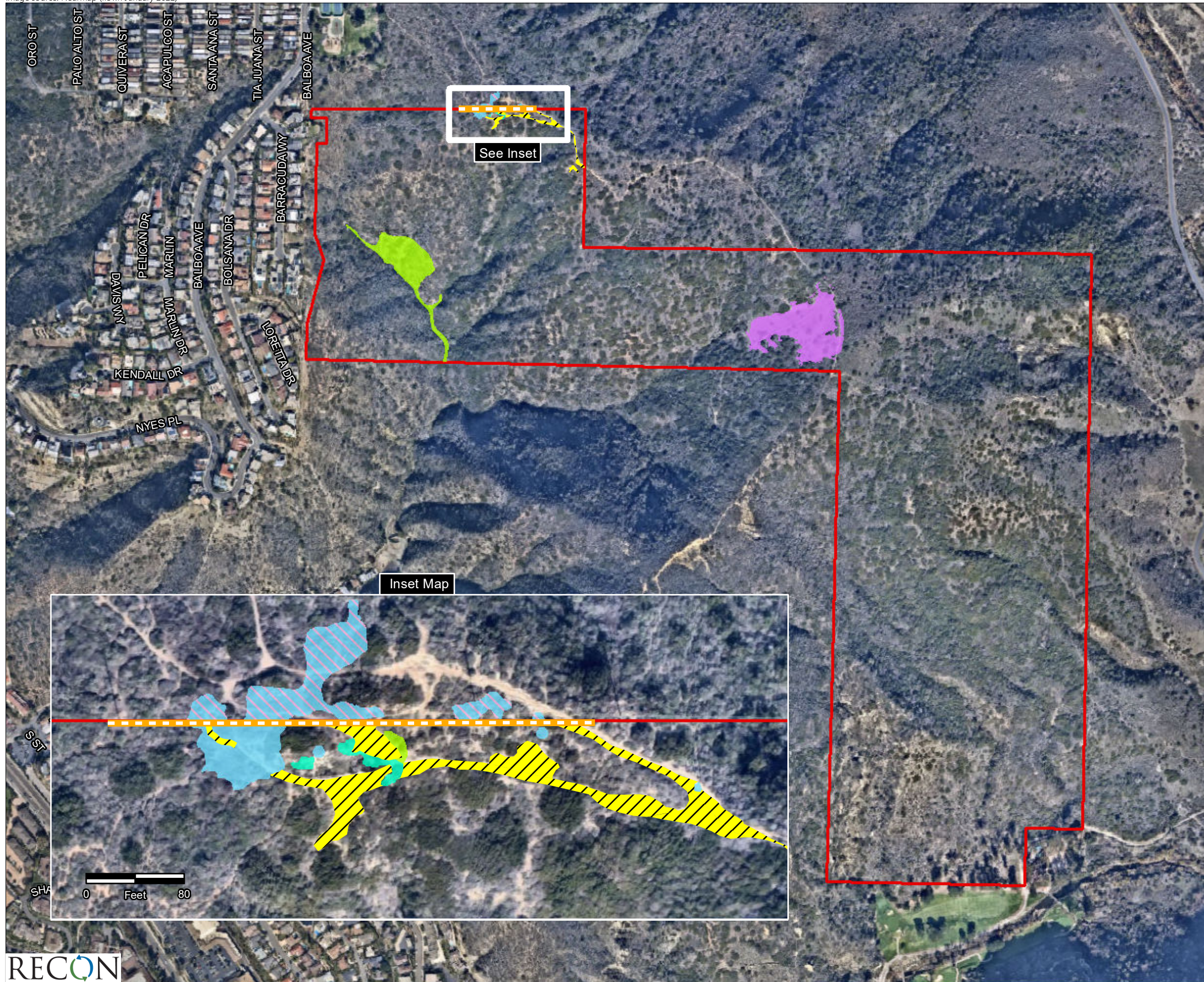
FIGURE 3  
Live Oak Creek Preserve



-  Silverado Chaparral Preserve Boundary
-  Barbed Wire Fence and Preserve Signs (Repaired in 2021)
-  Spanish Broom (removed March 2021)
-  Fire Road

0 Feet 350 

FIGURE 4  
Silverado Chaparral Preserve



-  Pacific Horizon Preserve Boundary
-  Barbless Wire Fence (Repaired in 2021)
-  Decommissioned Trail (October 2020)
- Invasive Species Control Areas**
-  Artichoke Thistle
-  Fountain Grass
-  Pampas Grass
-  Iceplant
-  Iceplant (County Lands)

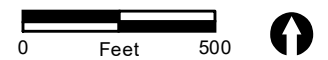
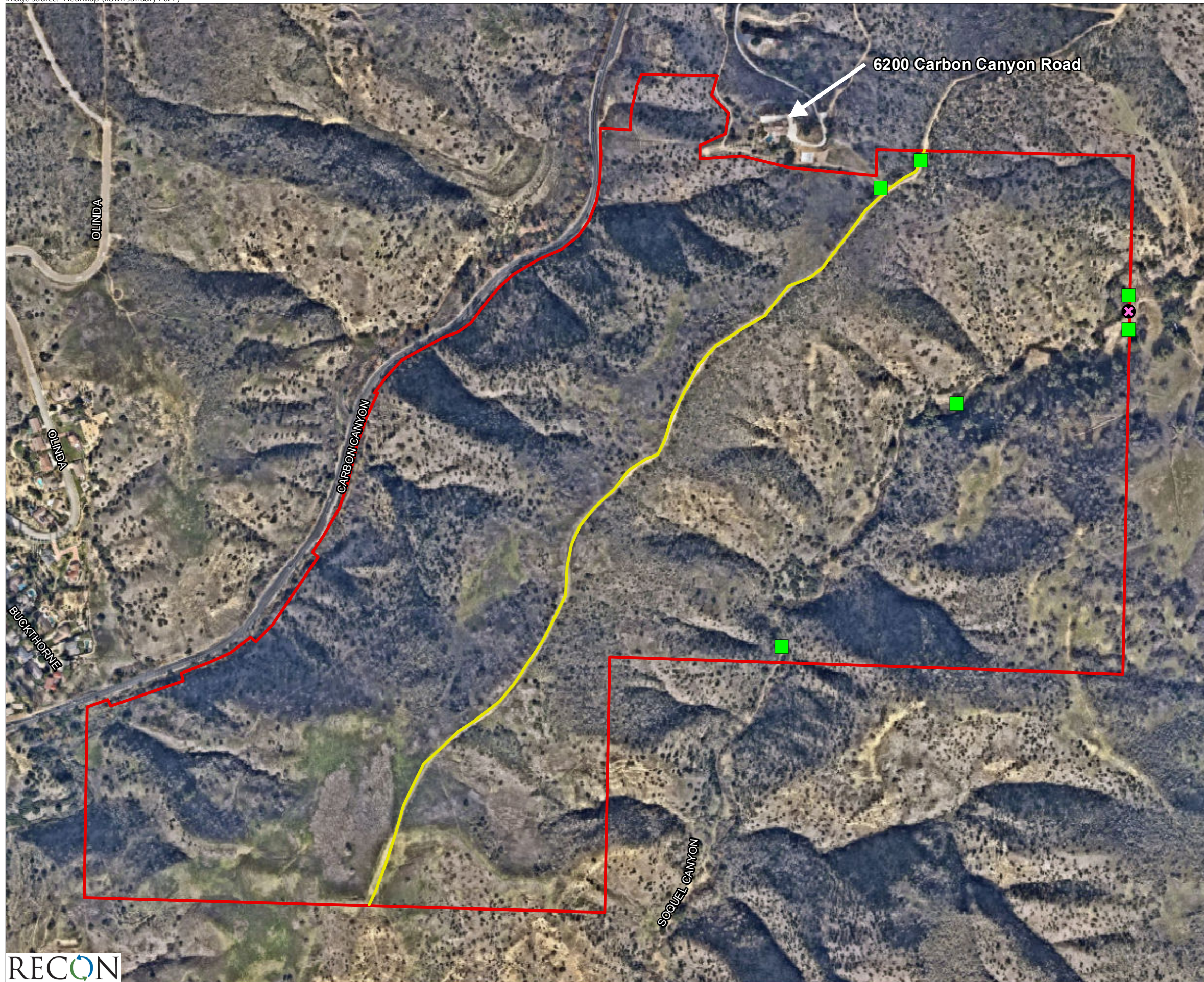






FIGURE 5  
Pacific Horizon Preserve



-  Eagle Ridge Preserve Boundary
-  Fire Road / Access Road
-  Combination Lock Added to Gate in 2021
-  Wilderness Signs (Installed in 2021)

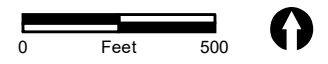


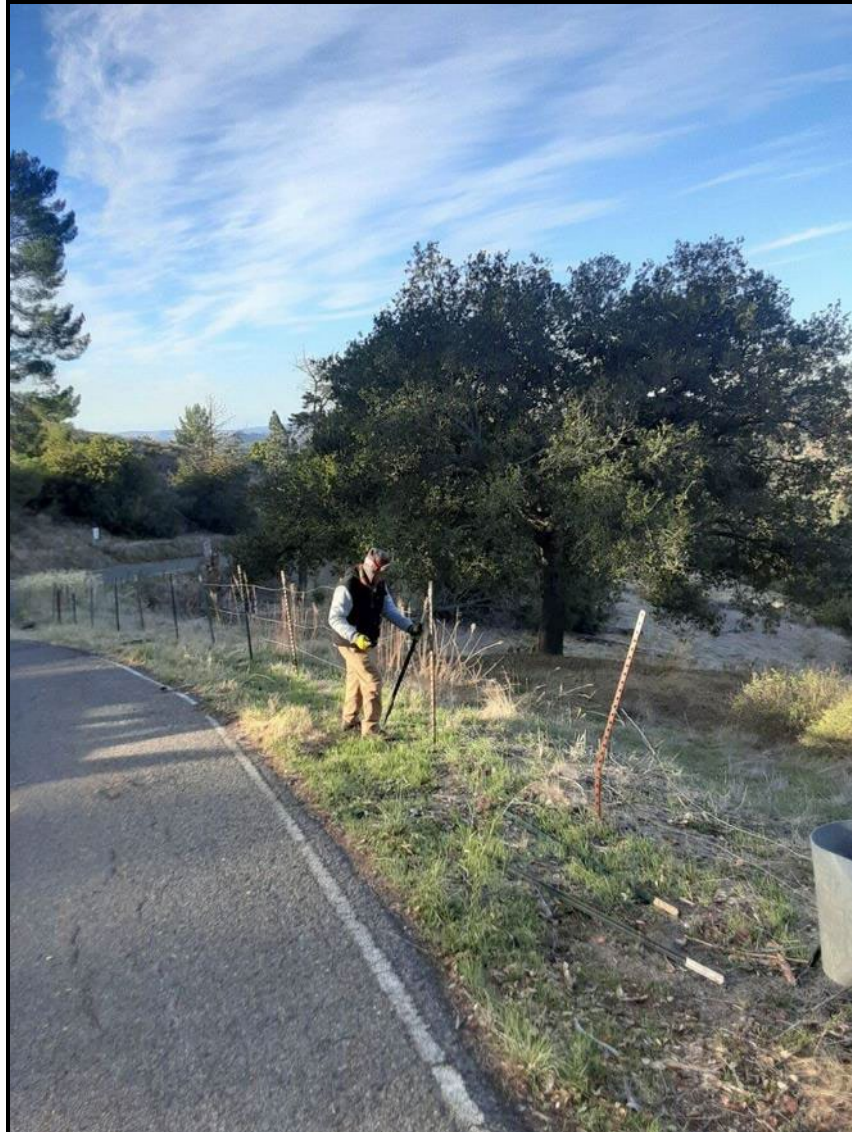
FIGURE 6  
Eagle Ridge Preserve

## ATTACHMENT 2

Photographs 1 through 38



PHOTOGRAPH 1  
Removal of Fallen Branches within a Fuel Modification Zone,  
Trabuco Rose Preserve, January 2021



PHOTOGRAPH 2  
Repairs to Fence Line Along Rose Canyon Road, Trabuco  
Rose Preserve, January 2021





PHOTOGRAPH 3  
Vegetation Control on Fire Roads with Line Trimmers,  
Trabuco Rose Preserve, February 2021



PHOTOGRAPH 4  
Vegetation Control on Fire Roads with Herbicide,  
Trabuco Rose Preserve, February 2021



PHOTOGRAPH 5  
Retreatment of Artichoke Thistle Plants with Herbicide,  
Trabuco Rose Preserve, February 2021



PHOTOGRAPH 6  
Vegetation Control with Line Trimmers within a Fuel Modification Zone,  
Trabuco Rose Preserve, April 2021



PHOTOGRAPH 7  
Trimming of Overhanging Branches Along Rose Canyon Road,  
Trabuco Rose Preserve, May 2021



PHOTOGRAPH 8  
Vegetation Control with Line Trimmers within a Fuel Modification Zone,  
Trabuco Rose Preserve, June 2021



PHOTOGRAPH 9  
Debris Removal Within Hickey Creek, Trabuco Rose Preserve,  
September 2021



PHOTOGRAPH 10  
Branch Removal from a Stream, Trabuco Rose Preserve, December 2021



PHOTOGRAPH 11  
Vegetation Control on Fire Roads with Line Trimmers,  
Wren's View Preserve, March 2021



PHOTOGRAPH 12  
Vegetation Control on Fire Roads with Herbicide,  
Wren's View Preserve, March 2021





PHOTOGRAPH 13  
Fence Repairs Along Trabuco Canyon Road, Wren's View Preserve, May 2021



PHOTOGRAPH 14  
Vegetation Control with Line Trimmers within a  
Fuel Modification Zone, Live Oak Creek Preserve,  
February 2021



PHOTOGRAPH 15  
Vegetation Control on Fire Roads with Herbicide,  
Live Oak Creek Preserve, February 2021



PHOTOGRAPH 16  
Vegetation Control with Line Trimmers within a Fuel Modification Zone,  
Live Oak Creek Preserve, April 2021



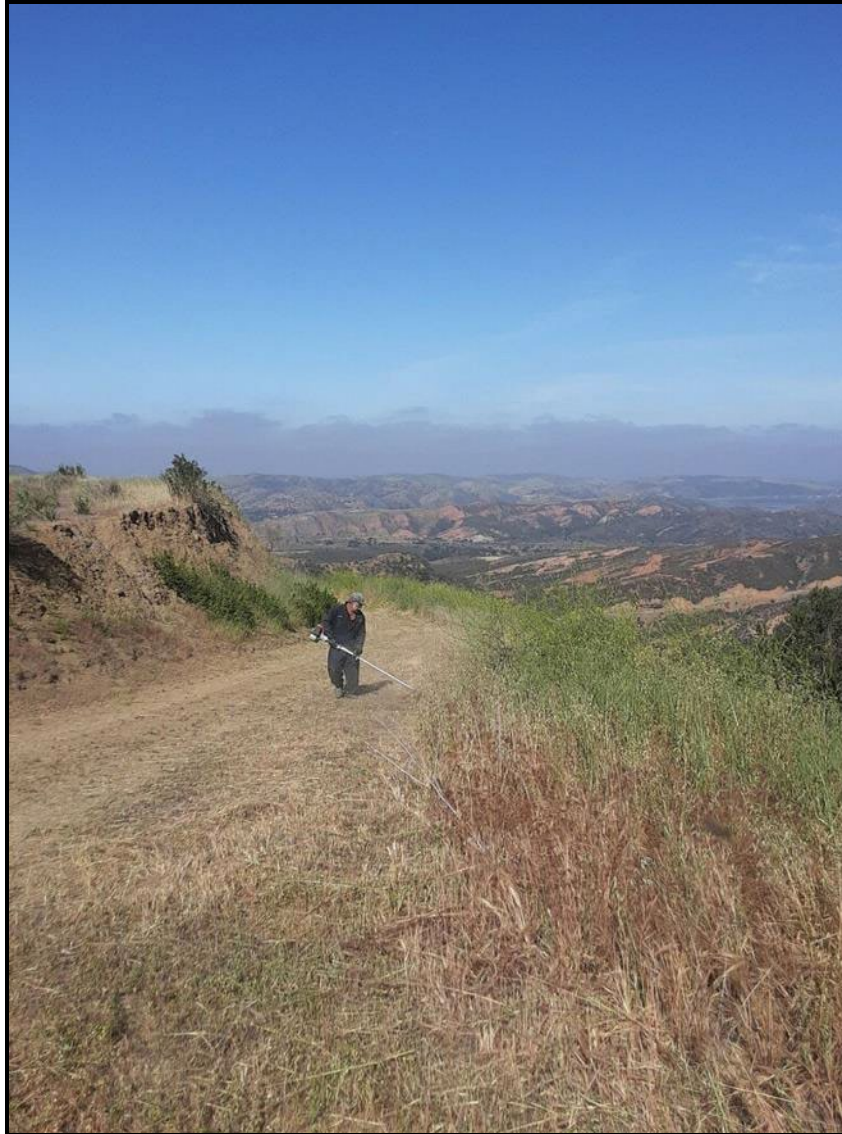
PHOTOGRAPH 17  
Removal of Branches and Debris from Fire Road, Live Oak Creek Preserve,  
August 2021



PHOTOGRAPH 18  
Fence Repairs to Deter Unauthorized Access,  
Silverado Chaparral Preserve, May 2021



PHOTOGRAPH 19  
Additional Posts and Flagging Added to Damaged  
Fence, Silverado Chaparral Preserve, May 2021



PHOTOGRAPH 20  
Vegetation Control on Fire Roads with Line Trimmers,  
Silverado Chaparral Preserve, May 2021



PHOTOGRAPH 21  
Fence Repairs to Deter Unauthorized Access,  
Silverado Chaparral Preserve, June 2021



PHOTOGRAPH 22  
Retreatments of Artichoke Thistle Plants with Herbicide Application,  
Pacific Horizon Preserve, February 2021





PHOTOGRAPH 23  
Iceplant Control with Herbicide Application,  
Pacific Horizon Preserve, February 2021



PHOTOGRAPH 24  
Restoration Signs Attached to Fence Line,  
Pacific Horizon Preserve, February 2021



PHOTOGRAPH 25  
Iceplant Control (on County Lands) with Herbicide  
Application, Pacific Horizon Preserve, February 2021



PHOTOGRAPH 26  
Planting of *Opuntia littoralis* Cuttings on Decommissioned  
Trail, Pacific Horizon Preserve, March 2021



PHOTOGRAPH 27  
Pampas Grass Control with Herbicide Application,  
Pacific Horizon Preserve, March 2021



PHOTOGRAPH 28  
Dying Pampas Grass Following Herbicide Treatments,  
Pacific Horizon Preserve, March 2021



PHOTOGRAPH 29  
Retreatments of Artichoke Thistle Plants with Herbicide Application,  
Pacific Horizon Preserve, June 2021



PHOTOGRAPH 30  
Installation of Wilderness Sign on Post on Soquel  
Canyon Road, Eagle Ridge Preserve, March 2021





PHOTOGRAPH 31  
New Wilderness Sign, Installed on Soquel Canyon Road,  
Eagle Ridge Preserve, March 2021

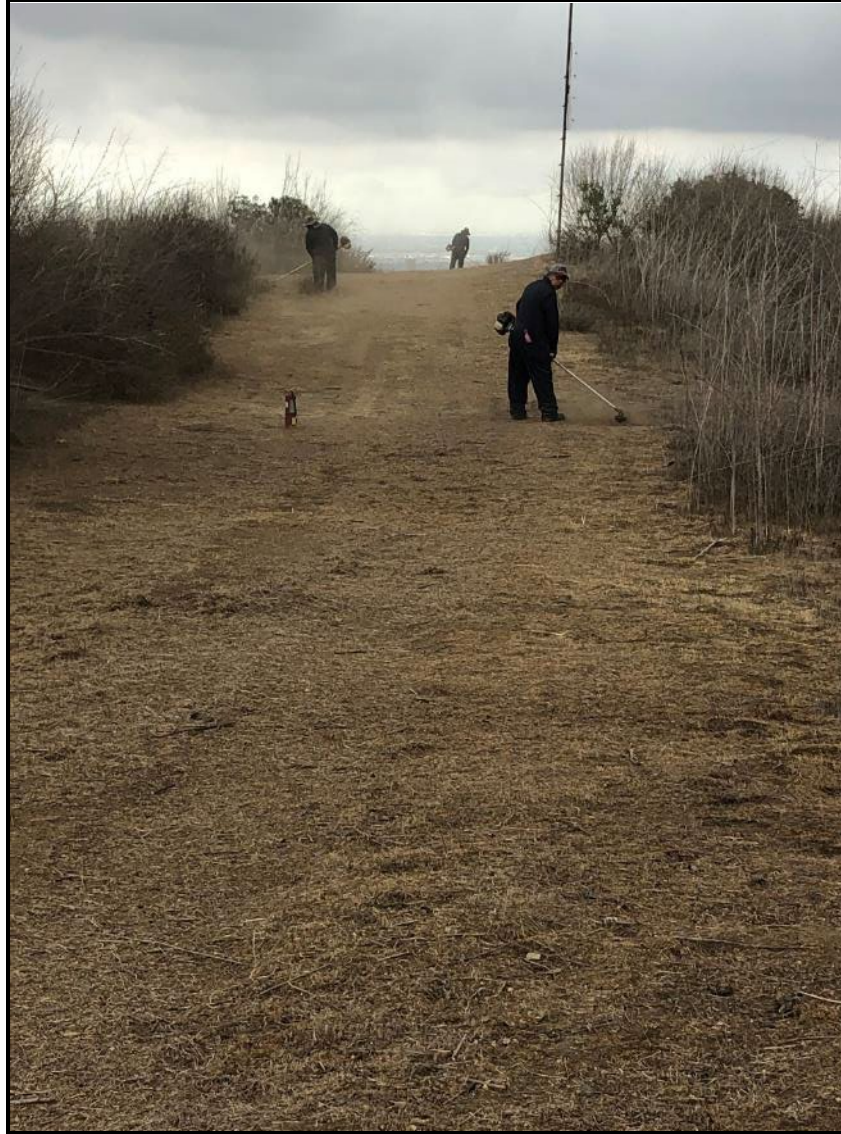


PHOTOGRAPH 32  
New Lock Placed on Access Gate at Northeastern  
Edge of Property on Soquel Canyon Road,  
Eagle Ridge Preserve, March 2021



PHOTOGRAPH 33

New Wilderness Sign Attached to Fence Line at Northeastern Edge of Property on Soquel Canyon Road, Eagle Ridge Preserve, March 2021



PHOTOGRAPH 34  
Vegetation Control on Ridge Road/Fire Road with Line  
Trimmers, Eagle Ridge Preserve, October 2021



PHOTOGRAPH 35  
New Wilderness Sign Posted on Access Gate on Ridge  
Road/Fire Road, Eagle Ridge Preserve, October 2021



PHOTOGRAPH 36  
New Fence Line Installed at Northern Edge of Property,  
Eagle Ridge Preserve, October 2021



PHOTOGRAPH 37  
New Fence at Northern Edge of Property,  
Looking Downslope, Eagle Ridge Preserve, October 2021



PHOTOGRAPH 38  
New Fence Line at Northern Edge of Property, Following Installation,  
Eagle Ridge Preserve, October 2021