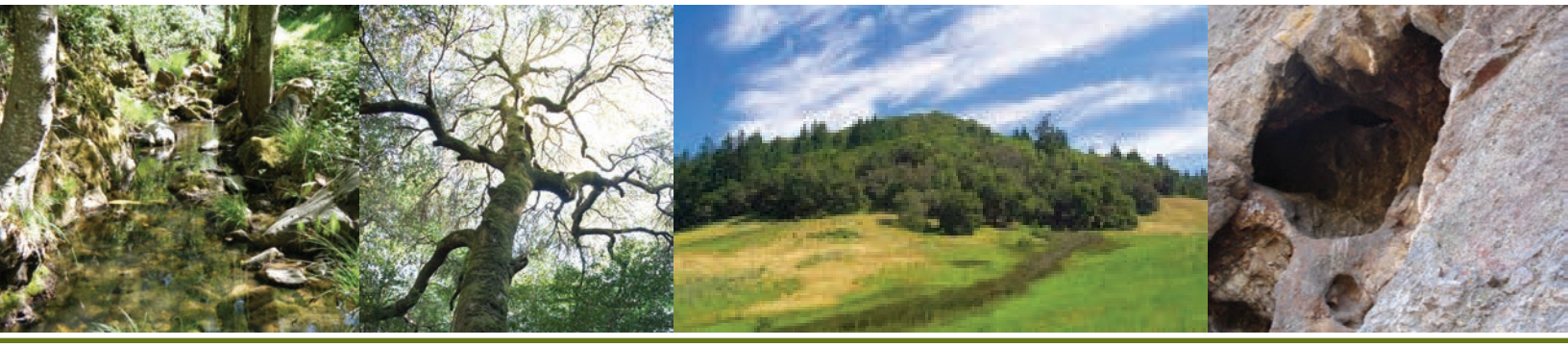
SONOMA COUNTY
AGRICULTURAL PRESERVATION
AND OPEN SPACE DISTRICT

SONOMA COUNTY AGRICULTURAL
PRESERVATION & OPEN SPACE DISTRICT

CALABAZAS CREEK OPEN SPACE PRESERVE PROJECT INITIAL STUDY AND PROPOSED MITIGATED NEGATIVE DECLARATION

JUNE 2016

747 Mendocino Avenue, Suite 100, Santa Rosa, CA 95401



CALABAZAS CREEK OPEN SPACE PRESERVE PROJECT

Initial Study and
Proposed Mitigated Negative Declaration

The following Initial Study has been prepared in compliance with California Environmental Quality Act (CEQA).

Prepared By:

Sonoma County Agricultural Preservation and Open Space District
747 Mendocino Avenue, Suite 100
Santa Rosa, CA 95401

June 2016

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

Initial Study

In 2004, the Sonoma County Agricultural Preservation and Open Space District (District) purchased 1,285 acres of a 1,600-acre property from Beltane Incorporated. Soon after the purchase, the District renamed the property Calabazas Creek Open Space Preserve (Preserve). The Preserve is located in southeastern Sonoma County along the western slope of the Mayacamas Mountains and the northeastern portion of Sonoma Valley, approximately 7 miles north of the town of Sonoma and 10 miles southeast of the city of Santa Rosa. To manage, enhance and protect the resources within the Preserve, the District has prepared the Calabazas Creek Open Space Preserve Resource Management Plan (Management Plan). The proposed project, for purposes of this environmental document, is the adoption and implementation of the Management Plan.

Pursuant to Section 15063 of the *State California Environmental Quality Act (CEQA) Guidelines* (Title 14, California Code of Regulations, Sections 15000 et seq.), an Initial Study is a preliminary environmental analysis that is used by the lead agency as a basis for determining whether an Environmental Impact Report, a Mitigated Negative Declaration, or a Negative Declaration is required for a project. The *State CEQA Guidelines* require that an Initial Study contain a project description, description of environmental setting, identification of environmental effects by checklist or other similar form, explanation of environmental effects, discussion of mitigation for significant environmental effects, evaluation of the project's consistency with existing, applicable land use controls, and the name of persons who prepared the study.

The purpose of this Initial Study is to evaluate the potential environmental impacts from the adoption and implementation of the proposed Management Plan to determine what level of environmental review is appropriate. As shown in **Section IV Determination** of this document, and based on the analysis contained in this Initial Study, it has been determined that the proposed project would not result in any significant impacts that cannot be mitigated to less than significant levels. The analysis contained in this Initial Study concludes that the proposed project would result in the following categories of impacts, depending on the environmental resource involved: no impact; less than significant impact; or less than significant impact with the implementation of project-specific mitigation measures. Therefore, preparation of a Mitigated Negative Declaration is appropriate (the Proposed Mitigated Negative Declaration is presented in **Appendix A**).

Public and Agency Review

This Initial Study/Proposed Mitigated Negative Declaration will be circulated for public and agency review from June 20, 2016 to July 20, 2016. Copies of this document are available for review at the Sonoma County Agricultural Preservation and Open Space District office (747 Mendocino Avenue, Santa Rosa, CA), Sonoma Valley Regional Library (755 West Napa Street, Sonoma, CA), and Oakmont Library (6575 Oakmont Drive, Santa Rosa, CA). This document is posted on the District's website: www.sonomaopenspace.org.

Comments on this Initial Study/Proposed Mitigated Negative Declaration must be received by 5:00 PM on July 20, 2016 and can be sent by regular mail or emailed to:

Sonoma County Agricultural Preservation and Open Space District
747 Mendocino Avenue, Suite 100
Santa Rosa, CA 95401
Attn: Kim Batchelder

Kim.Batchelder@sonoma-county.org

Organization of the Initial Study

This Initial Study is organized into the following sections.

Section 1 **Project Information:** provides summary background information about the proposed project, including project location, lead agency, and contact information.

Section 2 **Project Description:** includes a description of the proposed project, including the need for the project, the project's objectives, and the elements included in the project.

Section 3 **Environmental Factors Potentially Affected:** identifies what environmental resources, if any, would involve at least one significant or potentially significant impact that cannot be reduced to a less than significant level.

Section 4 **Determination:** indicates whether impacts associated with the proposed project would be significant, and what, if any, additional environmental documentation is required.

Section 5 **Evaluation of Environmental Impacts:** contains the Environmental Checklist form for each resource and presents an explanation of all checklist answers. The checklist is used to assist in evaluating the potential environmental impacts of the proposed project and determining which impacts, if any, need to be further evaluated in an EIR.

Section 6 **References:** lists documents used in the preparation of this document.

Section 7 **Initial Study Preparers:** lists the names of individuals involved in the preparation of this document.

Appendices present the proposed Mitigated Negative Declaration and the technical studies used in the preparation of this Initial Study.

1. PROJECT INFORMATION

Project title:

Calabazas Creek Open Space Preserve Management Plan

Lead agency name and address:

Sonoma County Agricultural Preservation and Open Space District
747 Mendocino Avenue, Suite 100
Santa Rosa, CA 95401

Contact person and phone number:

Kim Batchelder
(707) 565-7360

Project location:

Project Site: Assessor Parcel Numbers: 053-030-002, 053-030-003, 053-040-002, 053-040-003, 053-040-006, 053-040-024, 053-040-025, 053-040-032, and 053-040-033

Project sponsor's name and address:

Sonoma County Agricultural Preservation and Open Space District
747 Mendocino Avenue, Suite 100
Santa Rosa, CA 95401

2.0 PROJECT DESCRIPTION

2.1 Introduction

In 2004, the Sonoma County Agricultural Preservation and Open Space District (District) purchased 1,285 acres of a 1,600-acre property from Beltane Incorporated. Soon after the purchase, the District renamed the property Calabazas Creek Open Space Preserve (Preserve) and since has managed the property as an open space preserve. The District provides docent-led outings, and a dedicated volunteer patrol in combination with other partners and consultants, has implemented a range of management practices, including road maintenance, erosion control, invasive plant management, and removal of illegal marijuana grows.

In order to manage, enhance and protect the resources within the Preserve, the District proposes to adopt and implement the Calabazas Creek Open Space Preserve Resource Management Plan (Resource Management Plan). The sections below describe the need and objectives of the proposed project as well as the key management activities included in the Management Plan that are the focus of the environmental review.

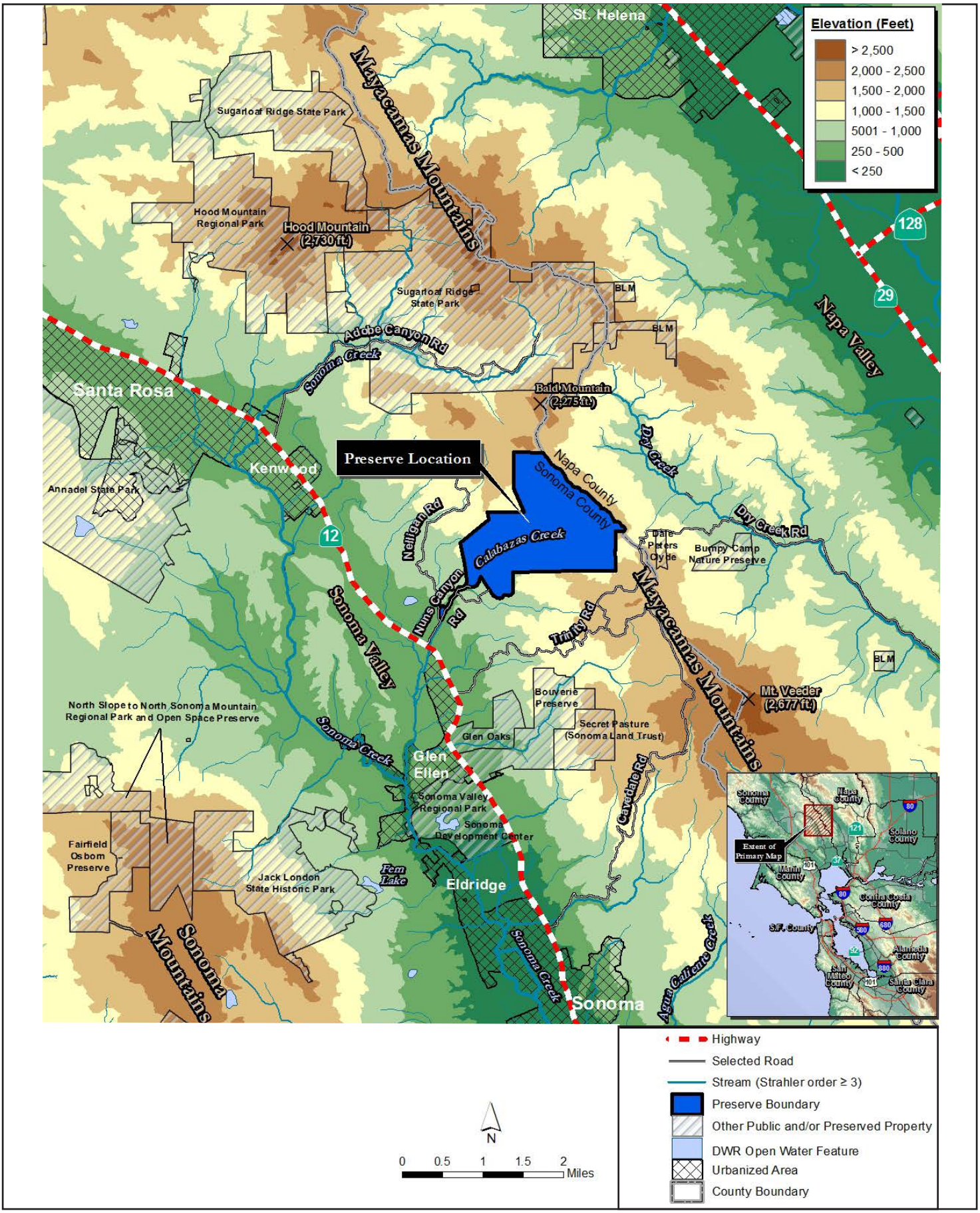
2.2 Project Need, Objectives, and Scope

The objectives of the proposed project are to manage and enhance the habitats and natural resources on the Preserve over the short-, mid- and long-term. Based on resource evaluations, conducted in conjunction with the preparation of the Resources Management Plan, the District has identified a number of existing environmental conditions and threats that are detrimental to the Preserve's natural and cultural resources. These include (1) erosion and sedimentation, (2) threats from invasive non-native plant and wildlife species to native habitats and species, and (3) threats from certain human activities, including illicit *Cannabis* farming on the Preserve. The objective of the proposed project is to implement a series of management strategies to address these existing environmental conditions and threats and avoid any further degradation of the natural and sensitive resources on the Preserve.

In addition, the plan assessed sensitive habitat to determine how public access would be planned to avoid specific sensitive habitats or, at least, minimize detrimental impacts to sensitive resources. However, this Resource Management Plan does not address additional public access beyond the existing docent-led tours. It is anticipated that additional public access on the Preserve would be addressed in a master plan and accompanying environmental document at a later date.

2.3 Project Location

The 1,285-acre Preserve is located in southeastern Sonoma County, approximately 7 miles north of the town of Sonoma and 10 miles southeast of the city of Santa Rosa. The Preserve extends from the low-lying eastern edge of Sonoma Valley upward toward a prominent ridge top of the southern Mayacamas Mountains, near the longitudinal center of California's Coast Ranges geomorphic province, as shown in **Figure 1, Regional Location**.



SOURCE: Sonoma County Agricultural Preservation and Open Space District

FIGURE **1**

Regional Location

0926.002-5/16

The Preserve is bordered on the west by a former rock quarry along the floor of Sonoma Valley, on the east by the ridgeline of the Mayacamas Mountains and the Sonoma-Napa county line as shown in **Figure 2, Project Location.** Large landholdings with residential homes and some agriculture (vineyards and a former turkey farm) and an active rock quarry form the southern border. There is extensive vineyard development north and west of the Preserve along with scattered rural residential development. Elevations on the Preserve range from approximately 380 feet above mean sea level (msl) closer Highway 12 to approximately 2,047 feet msl along the ridgeline of the southern Mayacamas Mountains. Calabazas Creek runs through the Preserve. There are several ranch style homes in the vicinity of the Preserve, primarily along Nuns Canyon Road[1] and the northern portion of the Preserve.

2.4 Project Site Characteristics

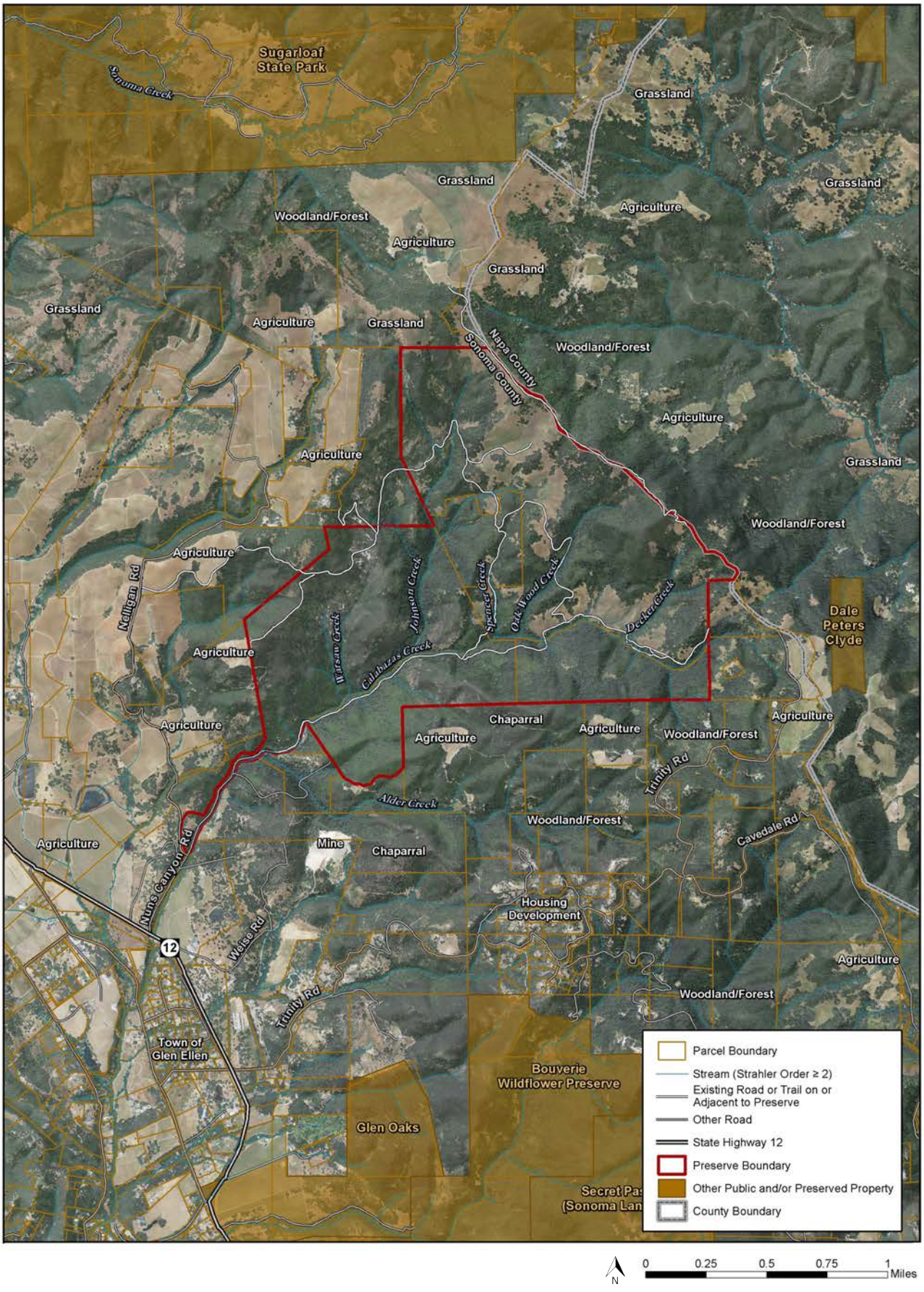
Topography and Hydrology

The Preserve elevation ranges from 380 to 2,047 feet msl and the varied topography consists of steep to moderate slopes with scattered rocky outcrops, ridges, deeply cut valleys, and occasional flats mostly bordering stream courses. The elevation of Sonoma Valley at the Preserve's southwestern edge is approximately 380 feet. From this location, elevation dips slightly into Sonoma Creek and then rises again westward up toward Sonoma Mountain, which ranges from roughly 850 to 2,450 feet. The ridge line on the property's eastern edge, with a maximum elevation of 2,047 feet, divides Sonoma Valley from Napa Valley (District 2016).

Most of the topography in the region is a result of faulting and volcanic activity. Thrust faults such as those that produced the Mayacamas Mountains, are common in the region, as evident in the prominent, generally north-south trending parallel ridgelines. The ridges have been thrust up, and the valleys have dropped along the fault lines. However, these ridges are being actively eroded by seasonal and perennial drainages that have incised valleys along the east and west sides of the ridges contributing to their topographic complexity (District 2016).

Aside from the prominent north-south trending ridge that defines the site's eastern edge, Calabazas Creek and its tributaries have carved out deep, steeply sloping valleys along the lower Mayacamas hill slopes. Calabazas Creek traverses the southern portion of the property, and flows westward from the Napa/Sonoma County divide into Sonoma Creek. The headwaters of the creek are on the Preserve and all of the surface waters on the Preserve, from ephemeral swales to seasonal tributaries, drain into Calabazas Creek, such that a self-contained sub-watershed is contained within the Preserve boundaries. In addition to Calabazas Creek, the Preserve encompasses seven named seasonal streams, several of which support perennial pools and riparian vegetation along much of their lengths, as well as many more unnamed seasonal streams and ephemeral drainages (District 2016).

[1] The name of the road that enters Calabazas Creek Open Space Preserve goes by many spellings depending on the source. The District has elected to refer to the road on the Preserve as Nunns' Canyon Road and the paved public road between the Preserve and Route 12 as Nuns Canyon Road (to be consistent with most road maps).



SOURCE: Sonoma County Agricultural Preservation and Open Space District

FIGURE **2**

Project Location

0926.002-2/16

Geology and Soils

There are two geologic formations mapped on the Preserve – the Western Sonoma Volcanics (WSV) that occur throughout most of the Preserve, and a limited exposure of the older, underlying sedimentary Neroly Formation within the central and southeastern portions of the site. The soils are primarily clay loams and loams. Most of the site consists of moderate to steep slopes, where the soils are typically shallow, highly weathered and relatively infertile due to the characteristics of the parent material and lack of accumulation of topsoil and organic matter. In more level areas, the soils are typically deeper and richer. All of the soils on the Preserve are rated as having "Moderate" or "Severe" erosion potential (District 2016).

Habitats Present

There are several habitat types on the Preserve that support a wide variety of plant and wildlife species. The predominant habitats are shown in **Table 1, Habitats of the Preserve.** Grasslands occur in the northern and eastern portions of the Preserve in open stands surrounded by scrub, woodland, and/or forest types. The predominant grassland type on the site is introduced annual grasslands. While constituting only about 10 percent of the site, grasslands support plant and animal species that prefer or are endemic to this habitat type, and thereby add significantly to the overall site biodiversity. The chaparral habitat on the Preserve provides unique wildlife habitat and supports three sensitive chaparral habitat types on the Preserve. Forests and woodlands are among the dominant plant communities on the Preserve with numerous individual alliances identified and mapped. They support a variety of native plant and animal species including some special-status species such as Napa false indigo and Northern spotted owl.

Table 1
Habitats on the Preserve

Habitat Type	Acreage	Description
Grasslands	*139*	predominantly introduced annual grasslands dominated by non-native bromes
Harding Grass Swards	-	
Wild Oats Grasslands	-	
Yellow Starthistle Fields	-	
Annual Brome Grasslands	-	
Chaparral	*207*	
Chamise Chaparral	99	occurs primarily on shallow, rocky soils along steep, often south-facing hill slopes
Stanford Manzanita Chaparral [1]	49	occurs primarily along northwestern portions of the Preserve
Common Manzanita Chaparral [1]	55	occurs primarily along steep slopes near the center of the property
Hoary Manzanita Chaparral [1]	4	occurs on rhyolitic flow and ash materials, both of which consist of substantial gravels and large boulders
Streams and Riparian Corridors [1]	-	Calabazas Creek and Johnson Creek, a semi-perennial stream (i.e., flows most of the year), support riparian vegetation
White Alder Groves	7.7	occurs exclusively along the two streams and constitutes wetland

Habitat Type	Acreage	Description
		as well as riparian habitat
Spring and Seep Wetlands [1]	-	occurring along hill slopes that otherwise support upland habitats
Soft Rush Marshes [1]	-	
Forests and Woodlands	*935*	
Redwood Forest [1]	22	confined to the Calabazas Creek riparian zone and immediately adjacent hill slopes and drainages, most of which are north-facing
Oak Woodlands	372	occur along transitional zones between mixed evergreen forest and chaparral or mixed evergreen forest and grassland, where soil fertility and depth as well as solar radiation are intermediate between the two other habitats
Coast Live Oak Woodland [1]	304	primarily along steep, primarily higher elevation, south-facing hill slopes and along more open (i.e., within predominantly grassland) seasonal drainages
Oregon White Oak Woodland [1]	61	occurs along generally sheltered, narrow "shoulders," or gently sloping piedmonts above the major streams
Interior Live Oak Woodland [1]	6.4	found on gravelly, shallow volcanic soils
Pacific Madrone Forest	169	characterized by fairly even aged stands of Pacific madrone (*Arbustus menziesii*), many of which are multi-stemmed, as result of most trees having been killed during the 1964 Nunns' Canyon fire
California Bay Forest	174	wide variety of habitats, from deeply shaded riparian corridors, to high elevation, exposed slopes that are otherwise dominated by chaparral
Douglas Fir Forest	188	primarily along drainages and along north-facing slopes
Knobcone Pine Forest	2	occurrences are on south-facing slopes
Coyote Brush Scrub	0.6	occurs in north-central portion of the Preserve located along a level terrace that also supports *ruderal* (i.e., disturbed) grassland, with adjacent steeper slopes supporting California Bay Forest as well as scattered chaparral species such as chamise and buckbrush
Eucalyptus Groves	0.8	occurs at the central eastern portion of the Preserve, at the site of a former homestead

Source: District 2016

[1] This habitat is considered a sensitive habitat.

- Acreage unavailable

Special Status Plant and Wildlife Species Present

Four special-status plant taxa were identified on the Preserve during the 2013 field surveys.

- Narrow-flowered California brodiaea (*Brodiaea leptandra*) (CRPR List 1B.2)
- Napa false indigo (*Amorpha californica var. napensis*) (CRPR List 1B.2)
- Napa biscuitroot (*Lomatium repostum*) (CRPR List 4.3)
- Biolett's erigeron (*Erigeron biolettii*) (CRPR List 3)

Six special-status animal species were documented on the Preserve during reconnaissance wildlife surveys.

- Steelhead trout (*Oncorhynchus mykiss*) (Federally Threatened)
- Northern spotted owl (*Strix occidentalis caurina*) (Federally Threatened; candidate for State listing)
- American peregrine falcon (*Falco peregrinus anatum*) (California Fully Protected Species)
- Nuttall's woodpecker (*Picoides nuttallii*) (USFWS Bird of Management Concern)
- Foothill yellow-legged frog (*Rana boylii*) (CDFW Species of Special Concern)
- California giant salamander (*Dicamptodon ensatus*)

Cultural Resources on the Preserve

Calabazas Creek lies in an area where the territories of three indigenous tribal groups converge. The Preserve is located near the eastern border of the traditional territory of the Coast Miwok with the Wappo to the east and Southern Pomo to the north. A portion of the eastern boundary of the Preserve along the ridgeline separating Sonoma and Napa counties may be the ethnographic boundary between Coast Miwok and Wappo territory.

A cultural resources survey, conducted in May and June 2013, identified a total of 11 sites: nine historic-era sites, one pre-historic site, and a single site had both pre-historic and historic-era components. The sites described within the study area have scientific, heritage, and interpretive values. The archaeological sites contain a low density and diversity of materials, with only a handful of artifacts or associated features. The historic-era sites include a stone quarry, segments of Nunns' Canyon Road, several homestead sites, structural debris, and artifacts. Pre-historic resources include a bedrock mortar site and artifacts. There are additional unrecorded resources on the Preserve, including a mercury mine, graves, and other artifacts.

2.5 Project Components

As noted above, the Resources Management Plan presents an assessment of the types of resources present on the Preserve, their status, and threats to the resources. Having established the status of the resources and known threats to each resource requiring remediation, protection and/or enhancement, the Resource Management Plan presents recommended management activities, which are summarized below.

Physical Resources (PR) (Sediment Erosion and Water Resources)

Erosion and discharge of sediment into Calabazas Creek and other drainages is a serious problem on the Preserve. The Resource Management Plan includes the following management activities to address this issue.

PR-1: Finalize and Implement Erosion Control and Erosion Prevention Plan

The Erosion Control and Prevention Plan focuses on erosion caused by roads and infrastructure. The plan recommends the treatment of 36 sites and 3.84 miles of road on and near the Preserve as

shown in **Figure 3, Erosion Control Locations**. The treatment of the 36 sites (26 stream crossings, three ditch relief culverts, one landslide, two road discharge points, two bank erosion sites, and two gullies) would prevent 760 cubic yards of sediment from entering Calabazas Creek and its tributaries in the next 30 years, and the treatment of 3.84 miles of road that are hydrologically connected to the creek would prevent an additional 3,755 cubic yards from eroding over the next decade.

Short-term erosion control and erosion prevention treatments recommended are shown in **Table 2**, **Proposed Erosion Control Activities.** The plan also includes 10 different types of long-term erosion control and erosion prevention treatments (site-specific treatments and road surface treatments) which are also presented in **Table 2**. Treatment recommendations include culvert replacement, trash racks, creation of critical dips, rock armoring, soil excavation, rolling dips, cross road drains, road outsloping, and road surface rocking. **Table C-1** in **Appendix C** provides more detail about the erosion control sites.

PR-2: Erosion Control and Prevent Sediment Deposition

Proposed erosion control activities that would prevent sediment deposition into stream courses are outlined in **Table 2**. These activities are designed to improve water quality and preserve aquatic habitat.

Table 2
Proposed Erosion Control Activities

Treatment Type	Number of Applications	Proposed Activity and Site Number[1]
Short-Term Treatments		
Clean Culvert	1	At existing partially plugged culvert, clear obstructions (debris) and remove any stored sediment from the inlet to increase culvert capacity (Site#17)[1].
Trash rack	1	Install at culvert inlet to prevent plugging (Site#14).
Critical water bar	1	Install water bar to prevent stream diversions (Site#5).
Site Specific Treatments (Long-Term)		
Culvert (replace)	3	Replace an undersized, poorly installed, or worn out culvert (Site#5, 6, 14).
Trash Rack	1	Install at culvert inlet to prevent plugging (Site#14).
Armored fill or ford (wet) crossing	20	Install two ford crossings[2] (Site# 11, 30) and 18 armored fill crossings[3] (Site# 3, 4, 7, 8, 9, 10, 12, 13, 18, 19, 26, 27, 29, 31, 32, 33, 33.1, 43) using 290 yd^3 of rock armor.
Critical dip	1	Install to prevent stream diversions (Site# 5).
Rock (armor)	3	At 3 sites (Site# 14, 15, 32.1), add a total of 25 yd^3 of rock armor to buttress stream banks or dip outlet.
Soil excavation	27	At 27 sites, excavate and remove a total of 985 yd^3 of sediment, primarily at fill slopes and stream crossings.
Road Surface Treatments (Long-Term)		
Rolling dips	84	Install to improve road drainage on upgraded roads.
Cross road drains	19	Install to improve drainage on decommissioned roads.

Treatment Type	Number of Applications	Proposed Activity and Site Number [1]
Outslope road and remove ditch	28	At 28 locations, outslope road and remove ditch for a total of 14,810 feet of road to improve road surface drainage.
Road rock (for road surfaces)	1	At 1 location, use a total of 2 yd^3 of coarse drain rock to rock the road surface.

Notes:
*[1] All site numbers are referenced on **Figure 3.***
[2] A ford crossing may use rock armor to stabilize the roadway, but the road is built essentially on the natural streambed and fill is not used.
[3] A properly constructed armored fill crossing is based on a site-specific design, using a mix of riprap-sized rock to minimize erosion while allowing the stream to flow across the road prism.

Plant Communities (PC)

The Preserve's valued plant communities are threatened by invasive plants and encroaching trees, including encroachment by Douglas fir. The Resource Management Plan includes the following management activities to address these issues.

PC-1: Invasive Weed Control

See *IPM-1* through *IPM-15* below for details.

PC-2: Update Grazing Management Plan

When feasible, an updated Grazing Management Plan would be prepared to assess reintroducing grazing on the Preserve. The plan would identify the livestock type, stocking rates, watering requirements, and a schedule of grazing to achieve target habitat management goals, which include thatch reduction, native plant conservation and enhancement, invasive weed control, and shrub and tree encroachment control (District 2016). The Grazing Management Plan should include fencing requirements and proposed styles so that grazing regimens could be adhered to and yet wildlife passage is not excluded or adversely affected.

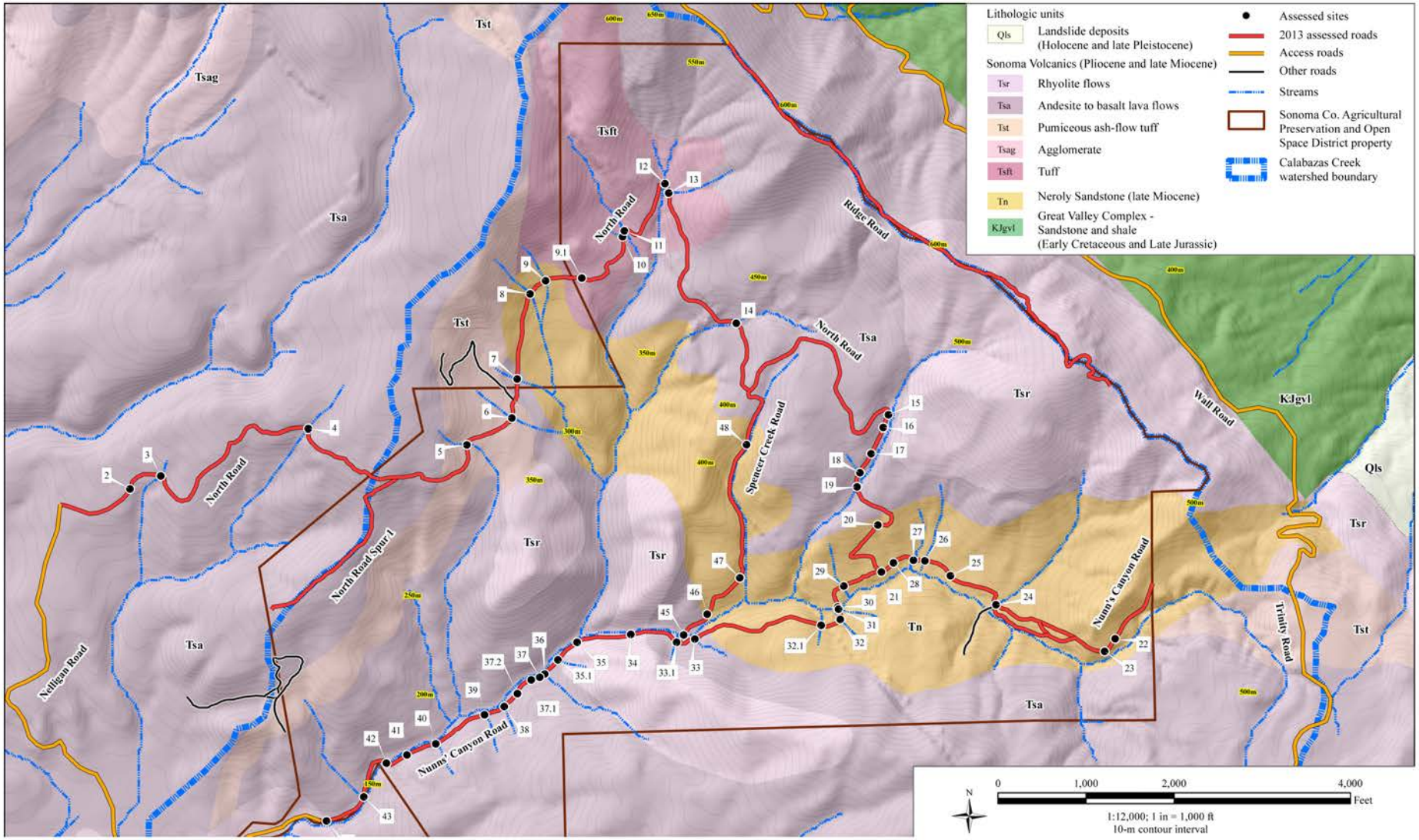
PC-3: Fire Management Plan

A Fire Management Plan would be prepared to guide the use of prescribed burns and include historic role of fire, weather analysis, suppression and prevention. This plan would also describe how tools like shaded fuelbreaks would be incorporated into the management of the preserve.

PC-4: Chaparral Management Plan

A Chaparral Management Plan would be prepared that incorporates as appropriate:

- Girdling or felling of encroaching trees.
- Specific, individual management strategies for the special-status manzanita species (see *SPM-3* and *SPM-4* below).



SOURCE: Pacific Watershed Associates

FIGURE **3**

Erosion Control Locations

- Removal of invasive plants including mowing and chemical treatments, where appropriate (see IPM).

- Evaluation of the long-term feasibility of prescribed fire (see PC-3 above).

PC-5: Manual Removal and Girdling of Douglas Fir

While prescribed burns (which is a long term management activity) would be effective at killing Douglas fir seedlings and saplings, larger trees however would survive all but the most intense fires. Therefore, larger saplings and poles able to survive prescribed burns will be felled, and still larger, mature Douglas fir will be girdled. Projects to manually remove or girdle Douglas fir on the Preserve would be restricted to the time period between August and January, in order to minimize disturbance to nesting birds in the area.

In the event that prescribed burns are not permitted or not considered a viable option on the Preserve over the long-term, manual methods for removing Douglas fir would be implemented. The Oregon White Oak Woodlands shall be prioritized for a Douglas fir removal program, due to the limited area of this habitat as well as the recruitment problems endemic to this habitat (District 2016).

PC-6: Selective Tree Removal and Pruning of Oaks

Diseased or otherwise dying oaks adjacent to existing or potential trails or other areas of likely human congregation or infrastructure on the Preserve (e.g., picnic areas or parking lots) would be felled in order to reduce the hazard from falling trees or limbs. The boles of felled trees should be cut into small pieces and branches and leaves chipped if possible, then left scattered in a sunny, open location on site, in order to dry out the wood. Rapid drying of the woody material is important to eliminate the presence of the Sudden Oak Death (SOD) pathogen. Felled California bay trees should be similarly cut into small sections and/or chipped, and then scattered in a localized, dry, sunny location (UCD ANR 2011). Any equipment used to cut potentially infected trees should be sprayed and wiped down with Lysol or a ten percent bleach solution in order to avoid transmitting the pathogen to other locations (District 2016).

PC-7: Train Land Managers on Symptoms of SOD

Land managers would be trained in identifying the symptoms of SOD and would monitor the Preserve to the degree possible.

PC-8: Healthy Ecosystem Management

Like many introduced pathogens, *Phytophthora ramorum* does not preferentially target stressed trees, however, good forest health is recommended to reduce conditions favorable to the spread of SOD. While coast live oaks tend to be stressed by shady, crowded conditions, California bay (the most significant infectious host on the Preserve), regenerates and grows well in such conditions, as evidenced by its dominance in the understory of Douglas fir on portions of the site. Aside from benefiting from closely spaced bay trees (multiple, accessible foliar hosts), *P. ramorum* is thought to thrive in the higher relative moisture of such shaded environments (District 2016).

Forest stand conditions where species vulnerable to Sudden Oak Death (i.e., coast live oak, tanoak, madrone, etc.) are more susceptible to infection will be identified. Then a stand management prescription (forest thinning) will be implemented that will increase spacing between stems of these vulnerable species and reduce immediate contact with known carrier species like California bay trees. This treatment should be applied in areas where SOD has been documented and the potential to spread is high due to forest stand conditions (closed canopy, high moisture (i.e., north slope), poor circulation, suppressed trees, high basal area of California bay near vulnerable species.

PC-9: Public Education on SOD Best Practices

Forest professionals, land managers, and the general public would be educated on how to prevent the spread of SOD by informing them of SOD best management practices developed by researchers and regulatory agencies. Land managers could publicize such information, in the form of trail signs, pamphlets, seasonal website notices, and other media (District 2016).

PC-10: Restore Impacted Oak Areas

In order to reduce the net loss of coast live oak habitat on the site, the areas where significant numbers of oaks have been lost due to SOD would be re-planted with coast live oak trees, preferably with individuals shown to be resistant or immune to *P. ramorum* (District 2016).

PC-11: Establish Shaded Fuelbreaks

A shaded fuelbreak is a linear landscape feature of variable width within a forest where the fuel profile has been altered. In forests, shaded fuelbreaks have lower surface fuel load, higher canopy base height, and often reduced canopy bulk density in comparison to the adjacent forest. Sufficient forest canopy is retained such that surface fuel is shaded and exhibits slightly higher fuel moisture content and lower eye-level wind speed than open areas with no canopy cover. Shaded fuelbreaks vary in width from 100 feet to 1,200 feet (See Agee and others 2000, Green 1977, and Schimke and Green 1970 for further discussion).

A shaded fuelbreak can fulfill multiple purposes on the Preserve, including fire prevention, reduction of douglas fir encroachment, and SOD amelioration.

This action would include identifying and implementing sites where shaded fuel breaks can be established to reduce the impacts of wildfire and improve the defensible space along strategically important corridors when attempting to combat wildfires on the property. Shaded fuelbreaks increase the spacing between stems and eliminates fuel ladders within a given corridor – such as along ranch roads or along ridge tops. Systematic thinning of the designated forest stands or corridors and pruning all low-hanging branches will allow fires to pass through the forest, but it remains on the forest floor burning at a relatively cool temperature and reducing the risk of spreading into the canopy and becoming much more difficult to control and causing more significant damage to the surviving plants and animals.

Sensitive Habitats (SH)

The Preserve's sensitive habitats are threatened by invasive plant species (especially Himalayan blackberry), sedimentation from erosion, human water diversions, potential alterations in canopy cover and woody debris (e.g., from SOD-induced oak mortality), human trampling of plants, sedimentation, encroachment of Douglas fir, build-up of fuel ladders, wild turkey foraging, and competition between seedlings and tall, dense grasses, lack of fire to induce seed germination, and encroachment of tree species. The following management activities are proposed to address these issues.

SHM-1: Prepare Riparian Corridor Management Plan

A Riparian Corridor Management Plan would be developed to incorporate the following measures:

- Reduce existing cover of Himalayan blackberry (*Rubus armeniacus)* and minimize future spread of this and other invasive plants (see *IPM-1* through *IPM-15* for details).
- Address principal road network concerns as described in **Table C-1 (Appendix C)** to minimize erosion and sediment transport to streams.
- If livestock are reintroduced to the Preserve, prevent or limit access to stream riparian corridors.
- Prevent diversion of water resources, except as required for livestock management which will require monitoring to ensure sufficient water remains in the creek corridor.
- Regulate human access to riparian habitat. Maintain vigilance in preventing reestablishment of marijuana plantations and prohibit fishing, collecting, littering, and pet access (see *HT-1* for details) (District 2016).

SHM-2: Prepare Riparian Corridor Enhancement Plan

A Riparian Corridor Enhancement Plan would be developed to identify a strategy for re-establishing oaks and other trees in areas of significant SOD mortality and would determine the long-term potential to enhance stream habitat complexity by native plant revegetation or by introducing large diameter woody material into the stream channel (District 2016).

SHM-3: Invasive Weed Control

See *IPM-1* through *IPM-15* below for details.

SHM-4: Protect from Human Trampling

Protect spring and seep wetlands from human trampling by routing trails away from wetlands or spanning them (e.g., boardwalks, bridges) (see *HT-1* for details) (District 2016).

SHM-5: Avoid Diverting Water Flow

Diversion of total water flow would be avoided from any spring developed for livestock grazing (if reintroduced to the Preserve) (District 2016).

SHM-6: Avoid Soil Disturbance

Soil disturbance would be avoided at any spring by eliminating direct access by livestock and creating appropriate watering stations for grazing livestock (if reintroduced to the Preserve) (District 2016).

SHM-7: SOD Best Management Practices (see PC-6 through PC-10)

Best management practices would be implemented to prevent the spread of SOD. To the extent feasible:

- Identify and remove dead or dying oaks as well as surrounding California bay trees, particularly in more dense woodland to reduce SOD and improve ecosystem health.

- Thin additional bay trees within dense, non-riparian woodland, preferentially from areas adjacent to high acorn-producing oaks in order to improve overall ecosystem health.

- Proactively cut or prune California bay trees around particularly desirable "heritage" coast live oaks, and/or those that may pose a hazard to people and/or infrastructure if infected by SOD (District 2016).

- Identify forest stand conditions where species vulnerable to Sudden Oak Death (i.e., coast live oak, tanoak, madrone, etc.) are more susceptible to infection. Implement a stand management prescription that will increase spacing between stems of these vulnerable species and reduce immediate contact with known carrier species like California bay trees. This treatment should be applied in areas where SOD has been documented and potential for spread is high due to forest stand conditions (closed canopy, high moisture (i.e., north slope), poor circulation, suppressed trees, high basal area of California bay near vulnerable species.

SHM-8: Manage Douglas Fir Encroachment

To the extent feasible, larger Douglas fir saplings and poles would be manually removed and mature Douglas fir stems would be girdled within and immediately surrounding oak woodlands. The Oregon Oak Woodland would be prioritized due to limited acreage and lower recruitment on the Preserve (see *PC-5*) (District 2016).

SHM-9: Manage Invasive Wildlife

Reduce or eliminate the wild turkey population within the Preserve (see *IAM-1* below).

SHM-10: Restore Oaks

Restoration of oaks within heavily degraded habitats would be initiated. Acorns, seedlings, or saplings (depending on budget) may be planted within open woodland habitat to replace dead oaks or to augment recruitment in areas of primarily senescent trees. The genetic stock used in

restoration would be collected from trees found within the Calabazas Creek watershed, and for coast live oaks, from stands apparently unaffected by SOD. Tubing or cages should be installed around the planted oaks, to protect from browsing and trampling of animals, especially if livestock is reintroduced to the Preserve, and weed mats should be installed and maintained to minimize competition. Acorn collection and planting methods should follow guidelines established in oak restoration manuals (District 2016).

SHM-11: Manage Himalayan Blackberry and Other Invasive Plants (specific strategies can be found in IPM-1 to IPM-15)

Establishment of Himalayan blackberry and other potentially invasive plants would be prevented along stream terraces and adjacent hill slopes (District 2016).

SHM-12: Monitor Douglas Fir/Redwood Density

Douglas fir/redwood density and spacing would be monitored to determine if Redwood stand health is adversely impacted by competition (see *PC-5*) (District 2016).

SHM-13: Manage Sudden Oak Death (SOD – see *PC-6* to *PC-10*)

Proactively prevent the spread of *Phytophthora* pathogens on to the Preserve by following best management practices outlined in *PC-6* through *PC-10*. With regard to *Phytophthora* pathogens, the most effective management strategy is to proactively try to avoid infection of manzanitas, as there is no "cure" only treatment of individual shrubs using fungicide phosphonate. Ideally, a sanitary station for cleaning soils and plant debris should be installed at the staging area and/or trailhead, and visitors should be notified of the presence of potential pathogens in the area, and of the importance of sanitation measures in preventing their spread (see *PC-7* through *PC-9*) (District 2016).

SHM-14: Discourage Illicit Marijuana Cultivation

Implement efforts to detect the presence of human trespassers to discourage illicit marijuana cultivation and other human activities that could impact manzanitas (see *HT-1*) (District 2016).

SHM-15: Prescribed Burns

Prescribed burns would be implemented, if determined to be feasible, to reduce or eliminate tree encroachment and stimulate seed germination among targeted manzanitas, specifically the manzanita Chaparral habitats. Fire would simultaneously eliminate encroaching trees (larger trees may need to be manually cut or girdled) and stimulate the germination of the seeds of the three obligate seeder manzanitas, thus revitalizing their eponymous special-status habitats.

Prescribed burns and propane-flaming activities would be conducted periodically when it is evident that trees are encroaching. The best time for prescribed burns is during the summer, subsequent to the peak reproductive season for most sensitive plants and animals in the chaparral. Required pre-burn actions may include the construction of a firebreak and/or thinning of brush as appropriate. Any prescribed burns would be planned and executed by trained fire professionals from CDF or consulting fire ecologists. Measures would be taken to prevent erosion following prescribed burns (District 2016).

Special Plant Management (SPM)

Special-status plants on the Preserve include Narrow-flowered California brodiaea, Napa false indigo, Napa Biscuitroot, and Biolett's erigeron. These plants are threatened by human trampling along edge of existing roads/trails; competition from invasive plants (including purple false brome (*Brachypodium distachyon*), red brome (*Bromus rubens*), and cheat grass (*Bromus tectorum*), Himalayan blackberry, and French broom (*Genista monspessulana*); degradation of chaparral habitat due to lack of fire; the use of pesticides and herbicides in illegal marijuana cultivation; and compaction of soil due to trampling and trail maintenance along edges of existing or future roads/trails. The following management activities are proposed to address these issues.

SPM-1: Protect Shrubs along Existing and Future Trails

Avoid impacts to shrubs, particularly Napa false indigo or other special-status plants, along edge of existing and future trails. Possibly use permanent flagging or tags to demarcate shrubs adjacent to roads/trails. Color metal tags could be a practical method of demarcating shrubs along existing or potential trails (District 2016).

SPM-2: Control Invasive Plants in sites where Napa false indigo is present

Prevent encroachment of Himalayan blackberry, French broom, and other potential invasive plants. See *IPM-1* through *IPM-15* below for details (District 2016).

SPM-3: Protect Special Status Plants along Existing and Proposed Trails and Roads

Avoid trampling or other human impacts (e.g., road/trail improvement) along the edges of trails and roads. In the event that these access routes require grading or maintenance, the rare plants should be temporarily flagged and, to the degree possible, protected from any potentially damaging activities (District 2016).

SPM-4: Manage Invasive Plants in Chaparral Habitat

To the extent feasible, prevent the encroachment of invasive plants, such as purple false brome, red brome, and cheat grass, into stands of rare plants (see *IPM-1* through *IPM-15*) (District 2016).

Invasive Plants Management (IPM)

Five invasive plants are of particular concern on the Preserve. These include cheat grass[2], French broom, Harding grass (*Phalaris aquatica*), Himalayan blackberry, and yellow starthistle (*Centaurea solstitialis*). These species are displacing native plants and animals and threatening natural ecosystems. The following management activities are proposed to address these issues.

[2] Cheat grass is limited in population and area, and is not known to cause significant problems in the area, and thus is a weed of secondary concern.

IPM-1: Cheat grass

Since the populations of cheat grass, shown in **Figure 4, Ecological Management Issues,** are currently limited and given their setting, the most effective management method may be hand pulling. This should be done in early spring before seeds are ripe but after the plants have germinated and matured to ensure additional germination does not occur after the treatment. Viable seeds can remain for two to three years in the soil so the hand pulling would need to be repeated for at least three consecutive years (District 2016).

IPM-2: French broom

Due to the current sparse and localized infestation of French broom shown in **Figure 4**, eradication is feasible with focused effort. Mechanical removal using a weed wrench is the most effective method. Soil disturbance should be limited to prevent viable seeds from penetrating more deeply into the ground. Typically plants with stems less than 1 inch diameter can be easily removed in the spring. An integrated approach could be used that involves herbicide treatment to kill shrubs, followed by cutting and burning of the shrubs, and continuing herbicide treatment or cutting of new sprouts for several years until the seed bank has been exhausted. Eradication efforts should focus first on the small, incipient stands in order to prevent these stands from becoming less manageable. Surveys should be conducted to identify any additional unmapped stands (District 2016).

IPM-3: Assess Other Treatments for French broom

If manual removal of French broom is unsuccessful, treatments such as propane flaming could be tested, which does not disturb the soil, to kill seedlings of this and other broad-leaf invasive plants. The technique uses heat which is used to destroy the cell walls of cotyledons or leaves of very young seedlings. The technique does need to be employed during or shortly after a rain event, in order to eliminate the chance of accidently starting a fire. If conducted several years in a row, flaming can be highly effective in eliminating species such as French broom (District 2016).

IPM-4: Mechanical Removal of Himalayan blackberry

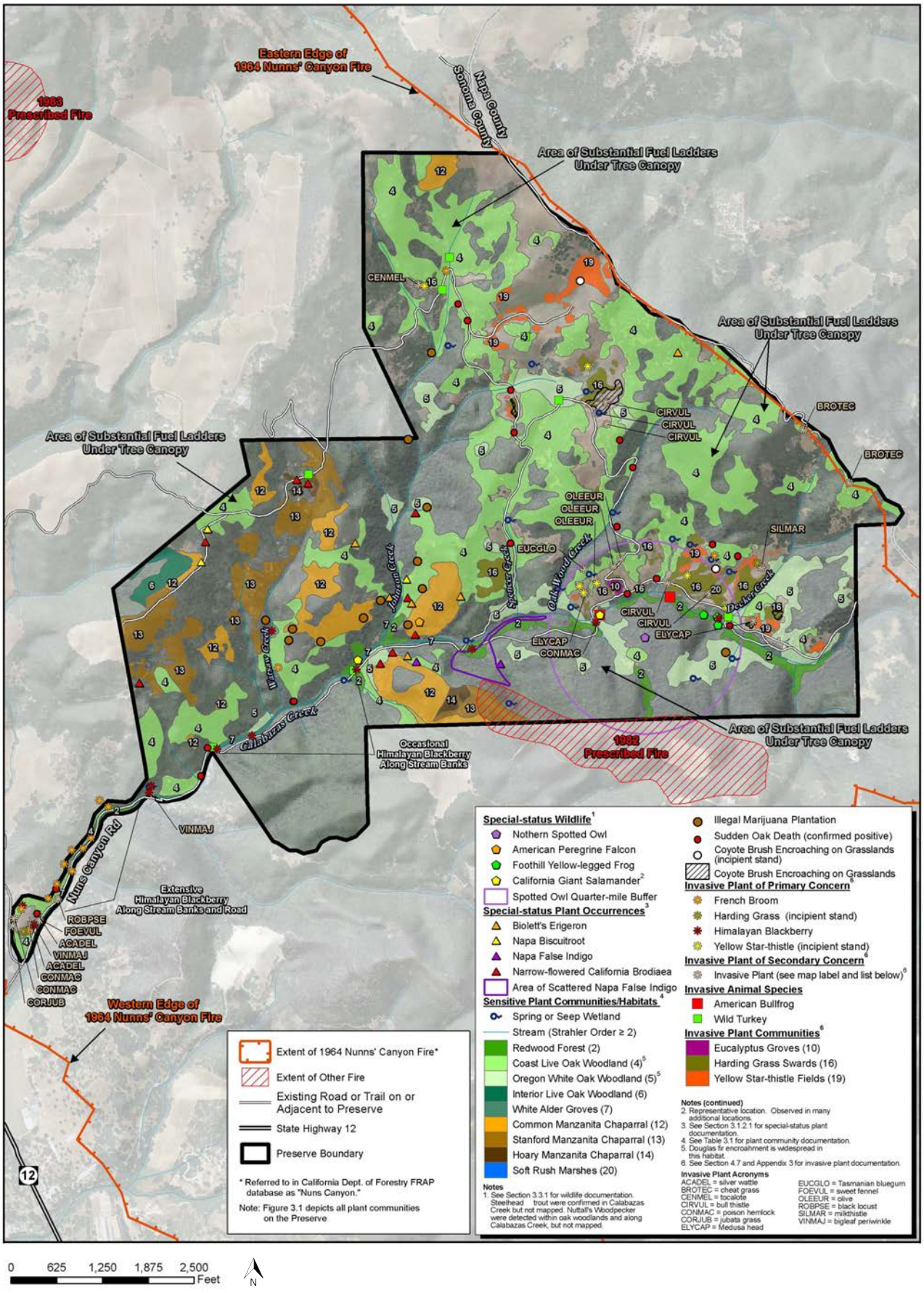
Where the stands of Himalayan blackberry are small, shown in **Figure 4**, hand pulling or limited mechanical removal of blackberry shrubs is recommended. Removal efforts would focus first adjacent to and above the stream (District 2016).

IPM-5: Herbicide Treatment for Himalayan blackberry

Larger thickets of Himalayan blackberry may require more intensive mechanical treatment coupled with herbicide application. The selected herbicide needs to be safe and approved for application adjacent to water (District 2016).

IPM-6: Plant Native Riparian Shrubs

Treatment areas would be planted with native shrubs in order to reduce erosion as well as to shade out the Himalayan blackberry. Thimbleberry would be a good option as this species currently grows in similar habitat on the site and could compete with the blackberry. If possible,



SOURCE: Sonoma County Agricultural Preservation and Open Space District

FIGURE **4**

larger, more mature shrubs would be planted within treatment areas. All plants would need to be protected from herbivores for the first two years of establishment phase (District 2016).

IPM-7: Mechanical Removal of Purple Pampas Grass

Due to the limited extent of purple pampas grass, shown in **Figure 4**, mechanical control using mechanical equipment (i.e., backhoe) may be the most effective treatment option to ensure complete removal of the entire plant. Removal would be conducted before seeds develop to prevent spreading of seeds during the removal process. Follow up monitoring and removal of any seedlings would occur to ensure that this plant is eradicated from the site (District 2016).

IPM-8: Mechanical Removal of Sweet Fennel

Mechanical removal by digging out individual sweet fennel (*Foeniculum vulgare*) plants, shown in **Figure 4,** and slashing just before flowering are the most effective physical methods available when infestations are locally restricted. Repeated removal and slashing of re-growth as necessary (District 2016).

IPM-9: Review Yellow Starthistle (YST) Management Guide

The Yellow Starthistle Management Guide, written by DiTomaso et al. in 2006, is an excellent publication addressing YST ecology, impacts, and management. The Preserve manager would review this publication as part of developing and implementing management actions (District 2016).

IPM-10: Develop YST Long-Term Integrated Management Plan

A Long-Term Integrated Management Plan would be developed that assesses the effectiveness of existing YST treatments on the Preserve and makes a long-term management recommendation, taking into account such factors as the current infestation, topography, access and environmental sensitivities of the infestation sites, restrictions on herbicide use, and funding limitations. In the long-term, livestock grazing, herbicide treatment, and seeding of replacement species are recommended on the Preserve given the size and nature of the infestation and the generally moderate to steep terrain where infestations occur. The District would assess and identify the best options for controlling YST, including:

- Assess mowing, mechanical removal, and chemical treatments. Short-term options for controlling YST include mowing, mechanical removal, and herbicide treatment, due to the logistical challenges of grazing and fire in the short-term. The District would continue to conduct thorough annual surveys and mapping of all significant YST infestations. If herbicide treatment is used, chemical treatments would need to be conducted for two to four consecutive years (depending on effectiveness as determined through annual monitoring). The specific herbicides to be used and the timing of applications would be developed in consultation with a licensed Qualified Applicator.

- All treatment areas would be seeded with replacement species, such as the annual grass species present on the site, to discourage re-establishment of YST. It is unlikely that YST will ever be fully eradicated from the site so the on-going efforts would need to be conducted in perpetuity.

- Herbicides can be applied using a backpack sprayer or boom mounted on an ATV depending on the terrain. The stands on steep terrain can only be accessed on foot. Four-wheel drive vehicles could also be used for access provided the existing roads are sufficiently improved. Following their use in habitats infested with YST, ATVs should be thoroughly washed down to prevent unintentional transport of seeds to areas without YST infestations.

- Assess Long-Term Livestock Grazing. Cattle or sheep grazing can be an effective control mechanism though it is usually not sufficient when used alone but must be integrated with other methods. The plan should assess the feasibility of incorporating grazing onto the Preserve. Grazing needs to be conducted in manner that targets YST at a vulnerable stage, specifically after the plants have bolted in mid- to late-spring but before they have begun flowering. To be effective, the livestock can either be grazed throughout the spring and early summer or they can be corralled within specific stands using temporary electric fencing. The larger stands would be better grazed using the latter method, given the widespread distribution of the stands and the relatively small number of animals likely needed for the site. The specific grazing prescriptions for YST would be included within the grazing plan developed for the Preserve and used by the grazing operator.

- Assess Long-Term use of Prescribed Burns. Three consecutive years of prescribed burns conducted in early to mid-summer has been shown to greatly reduce the species, and this is recommended if feasible as a long-term management strategy (District 2016).

IPM-11: Soil Disturbance Should Be Minimized and Exposed Soils Immediately Seeded with Native Plant Stock

Should future trail building or road network improvements disturb soil or remove vegetation, all exposed soils would need to be treated immediately to establish native plants in order to out-compete YST and prevent a population of YST from being established (District 2016).

IPM-12: Mechanical Removal of Bigleaf periwinkle

Manual weeding is the recommended management approach for bigleaf periwinkle (*Vinca major*) shown in **Figure 4,** given the limited extent of the infestation. Hand pulling requires complete removal of all stems, nodes, and stolons. Repeated treatment and follow up monitoring would be necessary to successfully eradicate this plant (District 2016).

IPM-13: Herbicide Treatment for Bigleaf periwinkle

Chemical treatments with a non-selective herbicide like glyphosate, conducted by a licensed Qualified Applicator, can also provide effective control of bigleaf periwinkle, especially after stem cutting (District 2016).

IPM-14: Develop a Harding Grass Long-Term Integrated Management Plan

Control of Harding grass on the site, shown in **Figure 4,** would likely require a combination of treatments. A Long-Term Integrated Management Plan would be developed that assesses and incorporates the following:

- Mowing. Mowing is feasible on many of the stands given their proximity to the main access road. Mowing would be conducted in mid spring after most growth has occurred but before the plants have flowered.

- Livestock Grazing. Livestock grazing can also be used to remove biomass, but cattle would likely need to be confined within temporary electric fencing to be effective. Grazing can be conducted throughout the winter and spring.

- Herbicide Treatments. The goal of both mowing and grazing is to reduce biomass, prevent or minimize flowering, and stimulate new growth that can then be treated with follow-up herbicide treatments. Post-emergent herbicides must be applied to actively growing plants to be effective. Pre-emergent herbicides can also be used, and would be applied to soils. While grass-selective herbicides are available, they are not registered for use in natural areas. Collateral impacts to native species can be reduced through application of the chemical with a rope wiper. Herbicide treatments should be developed in consultation with a licensed Pest Control Advisor.

- Seeding. Areas where Harding grass has been reduced or eliminated would be seeded with replacement species to limit re-growth (District 2016).

IPM-15: Monitor and Control Existing Blue Gum Stand

The existing blue gum stand has been treated in the past to reduce its spread. Hand pulling or use of a weed wrench can be used to remove small seedlings, saplings and small trees, taking care to remove the entire root to prevent stump sprouting. These can also be cut off at ground level and covered in plastic or treated with an herbicide as discussed above (District 2016).

Special-status Animals (SSA)

A number of special-status fish, amphibian, reptile, mammal, and bird species occur on the Preserve. The species and their habitats are threatened by water diversions; potential sedimentation from erosion; potential reductions in canopy cover (e.g., from SOD-induced oak mortality and increase in water temperatures); excessive noise that could affect nesting success; potential displacement, competition and predation by non-native species; and reduction of basking/foraging habitat due to invasive plants. The following management practices are proposed to address these threats.

SAM-1: Eliminate Bullfrog Populations

To the extent possible, American bullfrog (*Lithobates catesbeianus*) populations, shown in **Figure 4,** would be controlled on and around the Preserve (see *IAM-1* through *IAM-6* below) (District 2016).

SAM-2: Habitat Protection

The habitat of the steelhead trout, foothill yellow-legged frog, and California giant salamander on the Preserve would be protected by eliminating illegal water diversions, minimizing stream bank and upland erosion and sediment transport, and ensuring a healthy riparian forest canopy to

maintain shade with moderate canopy gaps. Measures pertaining to watershed and riparian habitat management are described above under *PR-1* and *PR-2*. See *HT-1* for details on eliminating illegal water diversions (District 2016).

SAM-3: Manage Human Activities

Human activities would be controlled to prevent direct and indirect disturbances to riparian habitat, including trampling and unleashed dogs in riparian areas (See *HT-1* for details). Activities such as collecting, fishing, rock throwing, or other disturbance activities are strictly prohibited within the stream zones and would not be allowed. Signage or another method of communication to indicate these guidelines would be developed (District 2016).

SAM-4: Manage Noise

Noisy activities would be prohibited during the nesting season (from February to July) to prevent disturbance to nesting birds, particularly Northern spotted owl, American peregrine falcon, and Nuttall's woodpecker (District 2016).

SAM-5: Manage Human Activities

Rock climbing in peregrine habitat would be strictly prohibited in nesting areas during the nesting season (February 1 to July 15) so as not to disturb peregrine falcons. Any other activity along the trail would be limited during the nesting season or signage would posted along the trail requesting silence within several hundred yards of identified nests (District 2016).

SAM-6: Manage and Enhance Habitat

For Northern spotted owl, the District would maintain habitat matrix consisting of mature Douglas fir/coast redwood forest for nesting and other habitats such as oak woodlands for foraging. For other raptors, the District would maintain open grassland habitat for foraging. For Nuttall's woodpecker, oak woodland habitats would be managed and enhanced (e.g., reduce SOD and woody fuels buildup and prevent encroachment of Douglas fir). The District would manage ladder fuels and prevent the conversion of oak woodlands and other habitats to Douglas Fir Forest (District 2016).

SAM-7: Manage Invasive Species

Colonization of the Preserve by barred owls would be prevented (see *IAM-1* through *IAM-6* below) (District 2016).

Critical Habitat Corridors (HC)

To protect habitat corridors used by wildlife, the Resource Management Plan includes the following activities.

HC-1: Map Habitat Corridors on Preserve

Based on a study of wildlife habitat and corridors in the region (see Management Recommendation HC-2), a Trail Plan would be developed to address future trails or heavy human activity along the most critical habitat corridors to protect wildlife, including mountain lion, gray fox, and bobcat (District 2016).

HC-2: Identify Regional Habitat Corridors and Protection Strategies

A study of the wildlife habitat and corridors in the region and additional wildlife camera studies along potential corridors on and adjacent to the Preserve would be conducted and strategies for protection would be developed and implemented (District 2016).

Invasive Animal Management (IAM)

Bullfrogs and wild turkey (*Meleagris gallopavo)* are the two main invasive wildlife species that occur on the Preserve. Wild pigs and barred owl are invasive wildlife species that are known to occur on the Preserve but were not detected. Bullfrogs prey upon and compete with foothill yellow-legged frog and other amphibians. Wild turkeys compete with native ground-feeding birds (e.g., quail), consume large amounts of oak acorns (thus potentially reducing oak recruitment), and disturb surface soils, thus potentially facilitating the spread of invasive plant species.

IAM-1: Bullfrog Eradication

Should annual monitoring identify bullfrogs, eradication efforts would be implemented, if feasible. Capturing or killing any wildlife requires a CDFW permit and/or hunting license. A sport fishing license would be required to kill bullfrogs, however, there are no restrictions on the timing or capture/kill number for the American bullfrog, and they may be taken by hand, dip net, hook and line, lights, spears, gigs, grabs, paddles, bow and arrow, or fishing tackle. It is unlawful to use any method or means of collecting that involves breaking apart of rocks, granite flakes, logs, or other shelters in or under which amphibians may be found (District 2016).

IAM-2: Exclusion Measures to Control Bullfrog Population

If bullfrog populations appear to be increasing, exclusion measures such as wildlife exclusion fencing may be the most efficient means of reducing the impact of bullfrogs. If it is determined that exclusion is needed to exclude bullfrogs, surveys would be performed to locate the source of migrating bullfrogs, and fencing would be installed only along the edges of the property that borders the source population. Drift fencing may facilitate the identification of the source population, since frogs tend to travel in straight lines. The District would also make efforts to identify the source population and coordinate with landowners of properties to initiate control measures (District 2016).

IAM-3: Monitor Wild Turkey Population

The Land Manager would monitor the wild turkey population and record any indications of their presence on the Preserve. The populations and impacts of wild turkeys on the Preserve would be

monitored, concurrently with annual oak habitat monitoring (see *SHM-7* through *SHM-10*), since these habitats are most occupied and impacted by turkeys (District 2016).

IAM-4: Control Measures

If monitoring shows an increase in the wild turkey population, the District would consider coordinating with the CDFW to implement turkey eradication measures such as hunting and/or trapping control measures to reduce or eradicate the species on the property (District 2016).

IAM-5: Monitor Wild Pig and Barred Owl Populations

The District would monitor the wild pig and barred owl population on the Preserve (District 2016).

IAM-6: Consider Control Measures

If wild pigs or barred owl populations are detected, the most effective means of extermination on the Preserve would likely be to contract a professional hunter. A hunting license would be required to eradicate wild pigs, though there are no seasonal constraints or bag limits on pig hunting. The District will need to coordinate with the USFWS in any efforts to eradicate barred owls, as depredation permits will not be issued by the CDFW, due to the fact that the bird is protected by the Migratory Bird Treaty Act (District 2016).

Human Trespass (HT)

Human trespass has numerous environmental impacts, including stream water diversion, toxic chemical dispersion, severe erosion, and habitat disturbance, all of which can adversely affect the habitats and resources on the Preserve. The following management activities are included in the Resource Management Plan to address this issue.

HT-1: Education and Enforcement Plan

An Education and Enforcement Plan would be developed to address illegal activities on the site. For any illegal activities on site, the primary management tools are education and enforcement, including:

- Bilingual signs that articulate the rules governing public access on the Preserve should be available at the quarry staging area.

- Implement consistent monitoring and cleanup of the sites by volunteer patrol members and management staff to decrease the frequency of illegal activities such as poaching, dumping, camping, or collecting.

- Develop an inter-agency approach with the Sonoma County Sheriff's Office and other law enforcement agencies for reporting, removing, and reclaiming *cannabis* grow sites. At the beginning of the grow season, the District and volunteer patrols would patrol the primary drainages where grow sites have been found in the past and look for hoses or other irrigation infrastructure. A one day patrol on Johnson, Spencer, and Warsaw Creeks should quickly assess whether or not new grow sites have been established or old

ones reoccupied. Fund the Sheriff or other entity to conduct consistent flyovers during peak growing season.

- Remove all of the site infrastructure and equipment. This includes destruction of water impoundments or cisterns and any other feature that would encourage and support continued reoccupation of particular sites (District 2016).

Cultural Resources (CR)

Cultural resources have been recorded on the Preserve. Damage to cultural resources can be caused by natural processes (e.g., erosion), project-related action (e.g., trail improvement), and vandalism and souvenir hunting. The following management activities are proposed to ensure that cultural resources are adequately protected.

CR-1: Partnerships

Develop partnerships with interested organizations to help District staff manage cultural resources (District 2016).

CR-2: Interpretation Plan

Work with professional archaeologists and tribes to determine which resources may be appropriate to interpret to visitors (District 2016).

CR-3: Cultural Resources Protection Plan

A Cultural Resources Protection Plan would be developed that incorporates the following:

- Establish a list of activities such as erosion control, prescribed burn, and other significant ground disturbances that require Cultural Resource Assessment prior to initiation.

- Recommend specific measures to ensure that new construction and on-going maintenance do not harm cultural resources.

- Establish a parallel list of exemptions to requirements for cultural resources assessment such as: thinning and pruning along roads, road surface maintenance within existing corridor, previously inventoried areas, etc.

- Establish protocols to guide the identification, evaluation, and treatment of cultural resources (District 2016).

2.6 Plan Implementation

Table 3, Recommended Management Activities, below presents a summary of the proposed management activities. The timing of each management activity is also presented in the table below. Each recommended management activity is assigned one of three priority categories: short-term (1-5 years), medium-term (6-10 years), and/or long-term (11+ years). Short-term activities are the top-priority management activities for the District, while the medium-term and

long-term activities are recommendations for future preserve management entities and other partners involved with management of the Preserve over the long-term.

Table 3
Recommended Management Activities

Resource	Recommended Management Activities [1]	Timing [2]	Level of Analysis [3]
Physical Resources (PR)			
Sediment Erosion	PR-1: Finalize and Implement Erosion Control and Prevention Plan	Short-Term	Project
Water Resources	PR-2: Erosion Control and Prevent Sediment Deposition	Short-Term	Project
Plant Communities (PC)			
Grasslands	PC-1: Invasive Weed Control (see *IPM-9* through *IPM-11* plus other relevant IPM measures)	Short-Term	Project
	PC-2: Update and formalize Grazing Management Plan PC-3: Grassland Fire Management Plan	Medium-Term	Program
Chaparral	PC-4: Chaparral Management Plan	Medium-Term	NA
Forests and Woodlands	PC-5: Manual Removal and Girdling of Douglas Fir PC-6: Selective Tree Removal and Pruning of Oaks	Short-Term	Project
	PC-7: Train Land Managers on Symptoms of SOD	Medium-Term	NA
	PC-8: Healthy Ecosystem Management	Medium-Term	Project
	PC-9: Public Education on SOD Best Practices	Medium-Term	NA
	PC-10: Restore Impacted Oak Areas	Long-Term	Program
	PC-11: Establish Shaded Fuelbreaks	Short-Term	Project
Sensitive Habitats Management (SHM)			
Streams/Riparian Habitat	SHM-1: Prepare Riparian Corridor Management Plan	Medium-Term	NA
	SHM-2: Prepare Riparian Corridor Enhancement Plan	Medium-Term	NA
Spring and Seep Wetlands	SHM-3: Invasive Weed Control (see *IPM-4* through *IPM-6* plus other relevant IPM measures) SHM-4: Protect from Human Trampling SHM-5: Avoid Diverting Water Flow SHM-6: Avoid Soil Disturbance	Medium-Term	Project
Oak Habitats	SHM-7: SOD Best Practices (see *PC-6* through *PC-10*) SHM-8: Manage Douglas Fir Encroachment (see *PC-5*) SHM-9: Manage Invasive Wildlife (see *IAM-1*)	Medium-Term	Project
	SHM-10: Restore Oaks	Medium to Long-Term	Project
Redwood Forest	SHM-11: Manage Himalayan Blackberry and Other Invasive Plants (see *IPM 4-6* plus other relevant plus other relevant IPM measures)	Short-Term	Project
	SHM-12: Monitor Douglas Fir/Redwood Density	Long-Term	Project
Special-Status Manzanita Habitat	SHM-13: Manage SOD (see *PC-6* through *PC-10*) SHM-14: Discourage Illicit Marijuana Cultivation (see *HT-1*)	Short-Term	Project
	SHM-15: Prescribed Burns	Long-Term	Program
Special-Status Plants Management (SPM)			
Napa False Indigo	SPM-1: Protect Shrubs along Existing and Future Trails SPM -2: Control Invasive Plants in sites where Napa false indigo is present. (see *IPM-2, IPM-4* through *IPM-6* and other relevant IPM measures)	Short-Term	Project

Resource	Recommended Management Activities [1]	Timing [2]	Level of Analysis[3]
Special-Status Plants of Chaparral Habitats	SPM-3: Protect Special Status Plants along Existing and Proposed Trails and Roads	Medium-Term	Project
	SPM-4: Manage Invasive Plants in Chaparral Habitat (see *IPM-1* and other relevant IPM measures)	Short-Term	Project
Invasive Plants Management (IPM) [4]			
Cheat Grass	IPM-1: Cheat grass	Medium-Term	Project
French Broom	IPM-2: French broom	Short-Term	Project
	IPM-3: Assess Other Treatments for French broom	Medium-Term	Program
Himalayan Blackberry	IPM-4: Mechanical Removal of Himalayan blackberry IPM-5: Herbicide Treatment for Himalayan blackberry IPM-6: Plant Native Riparian Shrubs	Short-Term	Project
Purple Pampas Grass	IPM-7: Mechanical Removal of Purple pampas grass	Short-Term	Project
Sweet Fennel	IPM-8: Mechanical Removal of sweet fennel	Short-Term	Project
Yellow Starthistle	IPM-9: Review YST Management Guide	Short-Term	Project
	IPM-10: Develop Long-Term Integrated Management Plan	Medium-Term	Project
	IPM-11: Soil Disturbance Should be Minimized and Exposed Soils Immediately Seeded with Native Plant Stock	Short-Term	Project
Bigleaf Periwinkle	IPM-12: Mechanical Removal of Bigleaf periwinkle IPM-13: Herbicide Treatment for Bigleaf periwinkle	Short-Term	Project
Harding Grass	IPM-14: Develop a Harding Grass Long-Term Integrated Management Plan	Medium-Term	NA
Blue Gum	IPM-15: Monitor and Control Existing Blue Gum Stand	Long-Term	Project
Special-Status Animals (SAM)			
Fish and Amphibians	SAM-1: Eliminate Bullfrog Populations	Short-Term	Project
	SAM-2: Habitat Protection	Medium-Term	Project
	SAM-3: Manage Human Activities	Medium-Term	NA
Birds	SAM-4: Manage Noise	Short-Term	Project
	SAM-5: Manage Human Activities	Medium-Term	Project
	SAM-6: Manage and Enhance Habitat	Medium-Term	Project
	SAM-7: Manage Invasive Species	Short-Term	Project
Critical Habitat Corridors (HC)			
	HC-1: Map Habitat Corridors on the Preserve	Short-Term	Project
	HC-2: Identify Regional Habitat Corridors and Protection Strategies	Medium-Term	NA
Invasive Animals Management (IAM)			
American Bullfrog	IAM-1: Bullfrog Eradication	Short-Term	Project

Resource	Recommended Management Activities [1]	Timing [2]	Level of Analysis[3]
	IAM-2: Exclusion Measures to Control Bullfrog Population	Medium-Term	NA
Wild Turkey	IAM-3: Monitor Wild Turkey Population IAM-4: Control Measures	Medium-Term	Project
Other Invasive Species	IAM-5: Monitor Wild Pig and Barred Owl Populations IAM-6: Consider Control Measures	Medium-Term	Project
Human Trespass (HT)			
	HT-1: Education and Enforcement Plan	Short-Term	NA
Cultural Resources (CR)			
	CR-1: Partnerships	Short-Term	NA
	CR-2: Interpretation Plan	Medium-Term	NA
	CR-3: Cultural Resources Protection Plan	Medium-Term	NA

Source: District 2016

[1] Recommended Management Activities have been grouped according to the threatened resource, habitat type, or species that is being addressed. The numbering of each proposed activity uses a letter system highlighting the threatened habitat or species, for instance, PC-1 refers to Plant Communities Activity #1.

[2] Timing: Short-Term (Years 1-5); Medium-Term (Years 6-10); and Long-Term (Years 11+).

[3]NA (Not Analyzed): Implementation of activities categorized as NA would have no impact on the Preserve's environmental resources. As such no further analysis of these activities is provided below.

*[4] These are the most widespread and/or problematic invasive plant species on the Preserve. For a list of all invasive plant species with potential to be problematic, along with management recommendations, see **Section 4.6** and **Appendix D**.*

SOD-Sudden Oak Death

2.7 Responsible and Trustee Agencies

In addition to approval from the District as a CEQA lead agency, the project may require permits and approvals from the following agencies:

- US Army Corps of Engineers
- San Francisco Regional Water Quality Control Board
- California Department of Fish and Wildlife
- Bay Area Air Quality Management District

3. SUMMARY OF ENVIRONMENTAL EFFECTS

The proposed project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

❑ Aesthetics	❑ Agriculture and Forestry Resources	❑ Air Quality
❑ Biological Resources	❑ Cultural Resources, including Tribal Cultural Resources	❑ Geology / Soils
❑ Greenhouse Gas Emissions	❑ Hazards & Hazardous Materials	❑ Hydrology / Water Quality
❑ Land Use / Planning	❑ Mineral Resources	❑ Noise
❑ Population / Housing	❑ Public Services	❑ Recreation
❑ Transportation / Traffic	❑ Utilities / Service Systems	❑ Mandatory Findings of Significance

4. DETERMINATION

On the basis of this initial evaluation:

☐ The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☑ Although the proposed project COULD have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ The proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.

[redacted] 6/16/16

William J. Keene, General Manager — Date
Sonoma County Agricultural Preservation and Open Space District

5. EVALUATION OF ENVIRONMENTAL EFFECTS

All items on the Initial Study Checklist that have been checked "Less Than Significant Impact" or "No Impact" indicate that, upon evaluation, the District has determined that the proposed project could not have a significant adverse environmental effect relating to that issue. For items that have been checked "Less Than Significant with Mitigation," the District has determined that the proposed project would not have a significant adverse environmental effect provided that the mitigation measures presented in **Appendix A** of this document are implemented. For each checklist item, the evaluation has considered the impacts of the project both individually and cumulatively.

As discussed in **Section 2.6** and shown in **Table 3**, not all the Resource Management Plan activities have the potential to affect the environment. Based on a detailed review of all activities listed in the Resource Management Plan, the nine groups of management activities were identified as having the potential for environmental impacts. Having identified these nine groups of activities, they were further classified into two categories: project-level and program-level. "Project-level" activities are those activities that have been developed at a sufficient level of detail and thoroughly described in the Resource Management Plan so that their impacts can be evaluated fully at this time. The environmental impacts of these activities are analyzed at a project level in the sections that follow. A few management activities have not yet been developed to the same level of detail. Those activities are classified as program-level, and are analyzed at a programmatic level for their environmental impacts in the sections that follow.

Project Level Activities

- Erosion and sedimentation control projects (PR-1 and PR-2)
- Removal of invasive plant species (PC-1, PC-4, PC-5, SHM-1, SHM-3, SHM-8, SHM-11, SHM-12, SPM-2, SPM-4, IPM-1, IPM-2, IPM-4, IPM-5, IPM-7, IPM-8, IPM-10, IPM-12, IPM-13, IPM-14, and IPM-15)
- Removal of Douglas fir (SAM-6, SHM-8, PC-5,)
- Pruning of oaks and measures to address Sudden Oak Death (PC-6, PC-10, SHM-2, SHM-7, SHM-10, SHM-13)
- Control of invasive wildlife, including bull frog, wild turkey, wild pig, and barred owl (IAM -1 through 6, and SAM 1 through 7)
- Manage forest conditions to improve spacing, reduce competition and lower risk of SOD (PC-8)
- Establish a system of shaded fuelbreaks in forested areas (PC-11)

Program Level Activities

- Prescribed burns (PC-3, SMH-15, and IPM-10)
- Reintroduction of grazing livestock (PC-2, SHM-1, SHM-5, IPM-10, and IPM-14)

- Restoration and replanting of oak woodlands (SHM-10, PC-10)
- Eradication of French broom through propane-flaming activities (IPM-3)

5.1 Aesthetics

5.1.1 Background

The 1,285-acre Preserve, located in Sonoma County, extends from the low-lying eastern edge of Sonoma Valley upward toward a prominent ridge top of the southern Mayacamas Mountains, near the longitudinal center of California's Coast Ranges geomorphic province. The Preserve elevation ranges from 380 to 2,047 feet msl and the varied topography consists of steep to moderate slopes with scattered rocky outcrops, ridges, deeply cut valleys, and occasional flats mostly bordering stream courses. Calabazas Creek runs through the Preserve. Aside from the prominent north-south trending ridge that defines the site's eastern edge, Calabazas Creek and its tributaries have carved out deep, steeply sloping valleys along the lower Mayacamas hill slopes. There are several habitat types on the Preserve that support a wide variety of plant and wildlife species. Grasslands occur in the northern and eastern portions of the Preserve in open stands surrounded by scrub, woodland, and/or forest types. Forests and woodlands are among the dominant plant communities on the Preserve with numerous individual alliances identified and mapped.

The Preserve is bordered on the west by a former rock quarry at the bottom of Sonoma Valley, on the east by the top of the Calabazas Creek watershed and the Sonoma-Napa county line. Large landholdings with residential homes and some agriculture (a former turkey farm) and an active rock quarry form the southern border. There is extensive vineyard development north and west of the Preserve along with scattered rural residential development. There are several ranch style homes in the vicinity of the Preserve, primarily along Nunns' Canyon Road and the northern portion of the Preserve. Due to the varied topography across the Preserve and the surrounding intervening topography and mature vegetation, public long-range views of the Preserve are intermittently available from segments of nearby roadways, including State Route 12 (SR-12), Nuns' Canyon Road, and Nelligan Road.

5.1.2 Environmental Checklist and Discussion

AESTHETICS Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	❑	❑	☑	❑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	❑	❑	☑	❑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	❑	❑	☑	❑

d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. A scenic vista is defined as a publicly accessible viewpoint that provides expansive views of a highly valued landscape. As discussed above, publically accessible long-range views of the project site are available from segments of nearby roadways with intermittent obstruction due to intervening topography and vegetation. Several of the proposed project-level activities would not result in any changes to scenic vistas. However, views of the project site would change with implementation of some of the proposed project-level activities, including the selective tree removal of diseased or dying oaks and pruning of overgrown oaks. In addition, the manual removal of invasive plant species, including the girdling of Douglas firs, which are encroaching onto the surrounding oak woodlands and valued plant communities, would also have the potential to alter public views of the site.

However, the change in views would not be substantial because trees would be removed selectively and over a period of time. Furthermore, while diseased or otherwise dying oaks would be felled in order to reduce the hazard from falling trees or limbs, in order to reduce the net loss of Coast Live Oak habitat on the site, areas where significant numbers of oaks have been lost due to SOD would be re-planted with Coast Live Oak saplings, preferably with individuals shown to be resistant or immune to *Phytophthora ramorum*. Thus, over time the newly planted Coast Live Oak saplings would mature into full grown trees and would help to restore the existing public views of the project site. The establishment of a shaded fuelbreak system would require some stem removal and thinning of the underground but the tree canopies would not be trimmed and therefore, this activity would not result in an adverse impact on scenic vistas of the Preserve. Implementation of the Resource Management Plan project-level activities would have a *less than significant* impact on scenic vistas.

b. The portion of SR-12, located directly west of the project site, is a state-designated scenic highway. Rock outcrops and mature trees (including oaks and Douglas firs) are scattered throughout the project site. Implementation of the project-level activities would not damage the existing rock outcroppings located on the site. However, implementation of the project-level activities designed to protect the existing sensitive habitats would result in the manual removal and girdling of Douglas firs, as well as the felling of diseased and dying oak trees and pruning of overgrown oak trees, in the vicinity of a state-designated scenic highway. As discussed above, only diseased and dying oak trees, including those that are found to have SOD, would be removed. Further, as the District has determined the Douglas fir trees are encroaching on and threatening the existing oak woodlands and other valued plant communities, these trees would be removed to prevent further damage to the existing native plant species. Areas where significant numbers of oaks are removed would be re-planted with Coast Live Oak saplings, and thus, the existing public views of the project site would be restored. Therefore, the Resource Management Plan's project-level activities would have *a less than significant* impact on scenic resources within a scenic highway.

c. The project-level activities, including the removal of encroaching Douglas fir trees and oak trees suffering from SOD, as well as erosion control activities along Preserve roads, would require the use of heavy machinery, including construction haul trucks and wood chippers. Use of the heavy machinery would have the potential temporarily degrade the existing visual character of the project site. However, the impact on the visual character would be short term and limited to the areas on the Preserve susceptible to erosion as well as areas where Douglas fir trees, overgrown oak trees, and diseased and dying oak trees are located. Furthermore, some of work sites would not be visible from public roadways due to intervening topography and vegetation. As mentioned above, a shaded fuelbreak system would not require the tree canopies to be trimmed and therefore, this activity would not result in an adverse impact on visual character of the Preserve. Impacts from the Resource Management Plan's project-level activities on the visual character of the project site and its surroundings would be *less than significant.*

d. Implementation of the project-level activities would not result in the installation of permanent or temporary lighting. Invasive plant and tree removal, the pruning of overgrown oak trees, the installation of erosion control features, and invasive wildlife control would be implemented during the daytime and would not require any lighting. Therefore, implementation of the project-level activities included in the Resource Management Plan would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. There would be *no impact*.

Program Level Impacts

a.-c. Implementation of the Resource Management Plan's program-level activities would include the reintroduction of grazing livestock, the restoration and replanting of oak woodlands, the exercise of prescribed burns, and the eradication of French broom through the application of propane-flaming activities. The reintroduction of grazing livestock would not adversely impact publically accessible views of the site, degrade the project site's visual character, or damage scenic resources located on the project site. The restoration and replanting of oak woodlands damaged by SOD and encroaching Douglas fir trees would be beneficial to the site's overall visual character as well as the publically accessible scenic vistas of the site. Prescribed burns and propane-flaming activities would be carried out to reduce invasive plant species, including French broom. Although neither activity would result in the disturbance of soils on the project site, prescribed burns and propane-flaming activities would burn (and remove) the existing invasive plant species located on the project site. Short-term impacts would include portions of the project site being scorched. However, long-term impacts would be beneficial as it will result in the growth of native vegetation and restoration of a healthy ecosystem. Therefore, implementation of the Resource Management Plan's program-level activities would have a *less than significant* impact on publically accessible scenic vistas, visual resources, and visual character of the Preserve.

d. Implementation of the program-level activities would not create a new source of light or glare which would adversely affect day or nighttime views in the area. Program-level activities would take place during the daytime and would not require temporary or permanent lighting. There would be *no impact*.

5.2 Agricultural and Forestry Resources

5.2.1 Background

The project site is currently managed as an open space preserve. Consistent with this use, the Farmland Mapping and Monitoring Program (FMMP) identifies the entire site as Other Land[3] (California Department of Conservation 2012).

The project site is bordered on the west by a former rock quarry at the bottom of Sonoma Valley, on the east by the top of the Calabazas Creek watershed and the Sonoma-Napa county line. Large landholdings with residential homes and some agriculture (a former turkey farm) and an active rock quarry form the southern border. There is extensive vineyard development north and west of the project site along with scattered rural residential development. Calabazas Creek runs through the Preserve. There are several ranch style homes in the vicinity of the project site, primarily along Nunns' Canyon Road and the northern portion of the Preserve.

5.2.2 Environmental Checklist and Discussion

AGRICULTURAL AND FORESTRY RESOURCES Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526)?	☐	☐	☐	☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☑	☐

[3] The other land classification is not included in any other FMMP mapping category. Examples include low density rural developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing, confined livestock, poultry, or aquaculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as other land.

e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. The project site is designated as Other Land by the FMMP. Implementation of project-level activities included in the Resource Management Plan would not involve any change in land use on the Preserve and would not result in the conversion of land designated either as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. There would be *no impact*.

b. The project site is not under a Williamson Act contract. The project site is zoned Resources and Rural Development and no agricultural practices occur on the project site (Sonoma County General Plan 2020 Land Use Map). Project-level activities would occur on the site and would not impact the surrounding agricultural uses. There would be *no impact* from the Resource Management Plan project-level activities on land under a Williamson Act contract and/or zoned for agricultural use.

c., d. Timberland is defined in PRC Section 4526 as "land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees." The project site is a 1,285-acre Open Space Preserve. There is no mapped timberland on the project site, and there would be *no impact* on timberland from implementation of the project-level activities.

Forest land is defined in PRC Section 12220(g) as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." The project site meets this definition because approximately 82 percent of the Preserve is under oak woodlands, Pacific Madrone, California bay, Douglas fir or Redwood forest plant communities. The oak woodlands include several distinctive oak habitats (alliances) that are widely distributed throughout the Preserve. By far the most widespread oak habitat is Coast Live Oak Woodland (*Quercus agrifolia* Woodland Alliance). Although project-level activities would include the girdling of existing Douglas fir trees and felling of diseased and dying oak trees, oak saplings would be planted in areas where a large number of trees are removed in order to restore the oak woodlands. Furthermore, the project-level activities do not require any rezoning of forest land nor would they convert any forest land to other uses. Therefore, implementation of the project-level activities would not result in the loss of or conversion of forest land to non-forest use. Implementation of the Resource Management Plan project-level activities would have a *less than significant* impact on forest land.

e. The proposed project would manage, enhance, and protect the resources within the Preserve. Implementation of the project-level activities would not involve any activity that could result in

the conversion of Farmland to non-agricultural use or the conversion of forest land to non-forest use. There would be *no impact*.

Program Level Impacts

a., b., e. For the same reasons presented above for project-level activities, the implementation of the proposed program-level activities would not adversely impact Farmland, including the conversion of Farmland to non-agricultural land, or the conversion of land under a Williamson Act contract. There would be *no impact* on Farmland associated with implementation of the proposed program-level activities. Further, as there is no mapped timberland on the project site there would be *no impact* on timberland from implementation of the program-level activities.

c., d. Although one of the proposed program-level activities would include the removal of Douglas fir trees and felling of diseased and dying oak trees, program-level activities would include the planting of oak saplings to restore the oak woodlands. Furthermore, the program-level activities do not require any rezoning of forest land nor would they convert any forest land to other uses. Therefore, implementation of the proposed program-level activities would not result in the loss of or conversion of forest land to non-forest use and the impact would be *less than significant*.

5.3 Air Quality

5.3.1 Background

The project area is subject to air quality planning programs developed in response to both the Federal Clean Air Act (CAA) and the California Clean Air Act (CCAA). Within the San Francisco Bay Area, air quality is monitored, evaluated, and regulated by the US Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Bay Area Air Quality Management District (BAAQMD).

The Preserve is located in south-central Sonoma County, which, along with eight other counties, is within the San Francisco Bay Area Air Basin (SFBAAB or Air Basin).

Air pollutants are emitted by a variety of sources, including mobile sources such as automobiles; stationary sources such as manufacturing facilities, power plants, and laboratories; and area sources such as homes and commercial buildings. While some of the air pollutants that are emitted need to be examined at the local level, others are predominantly an issue at the regional level. For instance, ozone (O3) is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NOx) and reactive organic gases (ROG). Because these reactions are broad-scale in effects, the effects of ozone typically are analyzed at the regional level (i.e., in the Air Basin) rather than the local level. On the other hand, other air pollutants such as sulfur dioxide (SO2), respirable particulate matter (PM10), fine particulate matter (PM2.5), carbon monoxide (CO), lead (Pb), and toxic air contaminants (TAC) are a potential concern in the immediate vicinity of the pollutant source because the pollutants are emitted directly or are formed close to the source. TACs are also known as hazardous air pollutants. Therefore, the study area for emissions of SO2, PM10, PM2.5, CO, Pb, and TAC is the local area nearest the source, such as in the vicinity of construction sites, whereas the study area for regional pollutants such as NOx and ROG is the entire Air Basin.

Air pollutants typically are categorized as criteria pollutants or TACs. The criteria pollutants are those regulated at the federal level by US EPA and at the state and regional level by CARB and BAAQMD, respectively. These include O3, PM10, PM2.5, CO, nitrogen dioxide (NO2), SO2, and Pb. O3 is a secondary pollutant formed during photochemical reactions with precursor pollutants. As such, O3 is measured by assessing emissions of its precursors, ROG and NO2. TACs are airborne pollutants for which there are no air quality standards, but are known to have adverse human health effects and therefore are regulated. TACs are generated by a number of sources, including stationary sources, mobile sources such as automobiles and heavy-duty construction equipment, particularly diesel-fueled vehicles.

Air quality in the Air Basin is monitored by the BAAQMD and CARB. Based on pollutant concentrations measured at monitoring stations within the Air Basin, the SFBAAB is classified as being either in attainment or non-attainment of federal and state air quality standards. The Air Basin is designated nonattainment for the federal O3 8-hour standard, the state O3 1-hour standard, the state PM10 standard, and the state and federal PM2.5 standards. For all other federal and state standards, the Air Basin is in attainment or unclassified.

Some groups of people are considered more sensitive to adverse effects from air pollution than the general population. These groups are termed "sensitive receptors." Sensitive receptors

include children, the elderly, and people with existing health problems, who are more often susceptible to respiratory infections and other air quality-related health problems. Locations where these groups of people are found, such as schools, childcare centers, hospitals, and nursing homes, are all considered sensitive receptors. Air pollution impacts are assessed, in part, based on potential effects on sensitive receptors. The nearest sensitive receptors are two rural residences located at approximately 500 and 1,400 feet to the east of Nuns Canyon Road near the southeastern boundary of the Preserve.

5.3.2 Environmental Checklist and Discussion

AIR QUALITY Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	❑	❑	☑	❑
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	❑	☑	❑	❑
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	❑	❑	☑	❑
d) Expose sensitive receptors to substantial pollutant concentrations?	❑	❑	☑[2]	☑[1]
e) Create objectionable odors affecting a substantial number of people?	❑	❑	❑	☑

Notes:
[1] Project-level conclusion
[2] Program-level conclusion

DISCUSSION:

Project Level Impacts

a. A project would be considered to conflict with or obstruct implementation of the regional air quality plans if it would be inconsistent with the emissions inventories contained in the regional air quality plans. Emission inventories are developed based on projected increases in population and vehicle miles traveled (VMT) within the region. Project-generated increases in population or VMT could, therefore, potentially conflict with regional air quality attainment plans. Implementation of the proposed project-level activities in the Resource Management Plan would not result in increased population or related increases in vehicle miles traveled within the region. As a result, implementation of the project-level activities would not be anticipated to conflict with

existing or future air quality planning efforts. The proposed project would have a *less than significant* impact.

b. Implementation of the proposed project-level activities would result in short-term emissions associated with ground disturbance and use of construction equipment and vehicles, equipment used in trimming for shaded fuelbreaks, and the removal of unwanted and/or dead trees. Minimal emissions are anticipated after the activities are completed, for reasons presented below.

Construction

Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but have the potential to result in a significant air quality impact. The construction of the proposed erosion control projects would result in temporary emissions associated with site grading and motor-vehicle exhaust from construction equipment and worker trips, as well as the movement of construction equipment especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities.

Emissions from the disturbance of the erosion control sites, Preserve roads, and some limited ground disturbance associated with tree felling and removal were estimated using the CalEEMod model. Based on the Road Assessment prepared by Pacific Watershed Associates Inc., work on the erosion control sites was assumed to take place over a 36-day period (PWA 2014). The estimated construction emissions are provided below in **Table 4, Estimated Construction Emissions**.

Table 4
Estimated Construction Emissions (lbs per day)

	CO	NOx	ROG	PM (fugitive dust)	PM10 (Exhaust)	PM2.5 (Exhaust)
Project	10.8	14.6	1.3	85.9	0.66	0.61
Significance Thresholds	**None**	**54**	**54**	**None**	**82**	**54**
Exceedance?	No	No	No	No	No	No

*Modeling output is included in **Appendix B.***

As shown in **Table 4**, if all the erosion control projects are implemented within the time period analyzed, the proposed erosion control activities would result in emissions that would not exceed the applicable BAAQMD thresholds of significance for criteria pollutants. The impact from air pollutant emissions during the construction-phase of the project-level activities would be *less than significant.*

As mentioned above, movement of construction equipment especially on unpaved surfaces during erosion control activities could temporarily generate fugitive dust, including PM10 and PM2.5 emissions. Unless properly controlled, vehicles leaving the site would deposit mud on

local highways, which could be an additional source of airborne dust after it dries. Fugitive dust emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. Fugitive dust emissions would also depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site. The *CEQA Air Quality Guidelines* consider the impact from a project's construction-phase dust emissions to be less than significant if best management practices listed in the guidelines are implemented. Without these BMPs, the impact from fugitive dust emissions would be potentially significant. Thus, to further ensure that construction-phase emissions are controlled and minimized, **Mitigation Measure AIR-1** is included which requires that dust control and other BMPs put forth by the BAAQMD are implemented by the proposed project.

Mitigation Measure AIR-1:

The construction contractor(s) shall implement the following BMPs during project construction:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible and feasible. Building pads shall be laid as soon as possible and feasible after grading, unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

In addition to an evaluation of the potential impacts from a project's construction-phase emissions of criteria pollutant and fugitive dust, the BAAQMD CEQA Guidelines recommend an evaluation of potential community health risk and hazards from a project's construction emissions of toxic air contaminants. The Guidelines also note that for assessing community risks and hazards, a 1,000 foot radius is recommended around the project property boundary. There is only one sensitive receptor within 1,000 feet of any of the project-level activities. The scale and nature of the erosion control repairs would be implemented near this receptors would be small, would involve a small number of construction equipment, and the duration of work in the vicinity of this receptor would be very short. Furthermore, **Mitigation Measure AIR-1** would be implemented to minimize pollutant emissions. As a result, the project's project-level activities would result in a *less than significant community health risk*.

Operation

Operational air emission impacts are associated with any change in permanent use of the project site as a land use change can add new on-site stationary or area sources to the project site or increase the number of vehicles trips to and from the project site. No change in land use is proposed as part of the project-level activities in the Resource Management Plan. No permanent increase in vehicle trips to the Preserve would result due to the proposed project-level activities. The small number of vehicle trips associated with the annual biological monitoring and maintenance activities would not significantly increase VMT. Therefore, operational emissions associated with the proposed project would not change substantially from existing conditions, and would not exceed the applicable BAAQMD thresholds of significance for operational emissions. The impact from air pollutant emissions during Preserve operation would be *less than significant*.

c. As described above in Response 5.3.b, the proposed project-level activities would not result in temporary increases in air pollutant emissions that would exceed the applicable BAAQMD thresholds of significance for construction emissions of criteria pollutants. In addition, BMPs would be implemented to control fugitive dust and other construction-phase emissions. The proposed project-level activities would also not result in a substantial amount of air pollutant emissions during Preserve operation. As a result, increases of temporary and long-term air pollutant emissions would not result in a cumulatively considerable net increase of any of the pollutants for which the project region is in nonattainment status for federal or state ambient air quality standards. This impact would be *less than significant*.

d. Sensitive receptors are facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as young children, the elderly, and people with illnesses. There are no sensitive receptors in close proximity of the sites where the project-level activities, especially erosion control projects, would occur. There would be *no impact*.

e. There are no project-level activities included in the Resource Management Plan that would result in odors. There would be *no impact.*

Program Level Impacts

a. Implementation of the Resource Management Plan's program-level activities would include the reintroduction of grazing livestock, the restoration and replanting of oak woodlands, the exercise

of prescribed burns, and the eradication of French broom through the application of propane-flaming activities. Implementation of the proposed program-level activities would not result in increased population or related increases in vehicle miles traveled within the region. Although visitation of the Preserve by visitors could increase, a substantial increase is not expected until the existing trails on the Preserve are improved and/or new trails are constructed. Addition of new trails would not occur as part of the current Resource Management Plan but at a later point in time as and when a trail plan is prepared and adopted. As a result, implementation of the proposed program-level activities would not result in an increase in VMT, and would not be anticipated to conflict with existing or future air quality planning efforts. The proposed project would have a *less than significant* impact.

b. Implementation of the proposed program-level activities could result in short-term emissions associated with the use of construction equipment and vehicles during the implementation of the proposed program-level activities. In addition, the program-level activities include prescribed burns, which can temporarily affect air quality. Minimal emissions are anticipated after the activities are completed, for reasons presented below.

Construction

Implementation of the proposed program-level activities would not result in any substantial ground disturbance. However, temporary emissions would result from the limited construction equipment used in tree planting, the small number of trucks associated with grazing activities, and implementation of prescribed burns and removal of French broom using propane flaming. Due to their nature and scale, the proposed program-level activities would not result in emissions that would exceed the applicable BAAQMD thresholds of significance for construction emissions. The impact from air pollutant emissions during the construction-phase of the proposed program-level activities would be *less than significant.*

Prescribed Burns and Propane-Flaming Activities

The program-level activities include prescribed burns and propane-flaming activities. Both activities would temporarily affect air quality. Required pre-burn actions (for both prescribed burns and propane-flaming activities) may include the construction of a firebreak and/or thinning of brush as appropriate. Any prescribed burns would be planned and executed by trained fire professionals from CDF or consulting fire ecologists. Minimal emissions are anticipated after the activities are completed, for reasons presented below.

Prescribed burning produces smoke, which is a complex mixture of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, and trace minerals. Smoke composition depends on multiple factors, including the fuel type and moisture content, the fire temperature, wind conditions and other weather-related influences, and other variables. Different types of wood and vegetation are composed of varying amounts of cellulose, lignin, tannins and other polyphenols, oils, fats, resins, waxes, and starches, which produce different compounds when burned (California Air Resources Board, Wildfire Smoke A Guide for Public Health Officials 2008).

The main concerns with smoke are reduced visibility and respiratory impairment. If not carefully managed, smoke can be a nuisance to residents and businesses, and it can adversely impact

community health. However, to minimize smoke impacts and protect public health, the entity/individual conducting the burn (burner) and air regulator work together to match burning with appropriate atmospheric conditions (CARB Fact Sheet 2003).

According to CARB, before obtaining air district permission to burn, a burner must complete the following planning steps: (1) Register the burn with the air district; (2) Obtain an air district and/or fire agency burn permit; (3) Submit a smoke management plan (SMP) to the air district; and (4) Obtain air district approval of the SMP (CARB Fact Sheet 2003).

The SMP specifies the "smoke prescription," which is a set of air quality, meteorological, and fuel conditions needed before burn ignition may be allowed. Depending on the size and complexity of the burn, the SMP will contain some or all of the following information:

- Burner name and contact information
- Location and size of the burn
- Burn method and fuel type
- Expected air emissions
- Nearby population centers
- Smoke travel projections – including maps
- Planned burn time
- Duration of the burn
- Acceptable burn ignition conditions
- Smoke minimization techniques
- Contingency planning
- Description of alternatives to burning
- Burn monitoring procedures
- Public notification procedures

After the air district approves all the burn planning requirements, including the permit and smoke management plan, the burner may begin making the final preparations to carry out the burn. This includes putting into place the resources needed to conduct the burn, notifying the public about the planned timing and specifics of the burn, and obtaining a final air district authorization to burn. The burner may contact the air district up to 96 hours prior to the desired burn time to obtain ARB or air district forecasts of meteorology and air quality needed to safely conduct the burn. The burner will continue to work with the air district and the ARB until the day of the burn to update the forecast information. Air district authorization to conduct a

prescribed burn is provided to the burner no more than 24 hours prior to the burn. The individual granted authority to burn (burn manager) is responsible for assuring that all conditions in the SMP and burn permit are met throughout the burn. Once the fire has been ignited, burners must make all reasonable efforts to assure the burn stays within its smoke plan prescription. If a burn goes out of its prescription, or adverse smoke impacts are observed, the burn manager will implement smoke mitigation measures as described in the SMP (CARB Fact Sheet 2003). More information on permitted prescribed burning for wildland vegetation management is contained in the BAAQMD's Regulation 5.

Should the District opt to use prescribed burns to manage wildland vegetation on the Preserve in the mid to long term, it will need to comply with the BAAQMD regulations and obtain appropriate burn permits and develop and implement a SMP. As a result of compliance with the BAAQMD requirements, the potential impact on air quality from prescribed burns would be *less than significant.*

Operation

No change in land use is proposed as part of the program-level activities in the Resource Management Plan. No permanent increase in vehicle trips to the Preserve would result due to the proposed program-level activities. The small number of vehicle trips associated with the annual monitoring and maintenance activities would not significantly increase VMT. Therefore, operational emissions associated with the proposed program-level activities would not change substantially from existing conditions, and would not exceed the applicable BAAQMD thresholds of significance for operational emissions. The impact from air pollutant emissions during Preserve operation would be *less than significant*.

c. For reasons presented above, increases in temporary and long-term air pollutant emissions would not result in a cumulatively considerable net increase of any of the pollutants for which the project region is in nonattainment status for federal or state ambient air quality standards. This impact would be *less than significant*.

d. There are no sensitive receptors in close proximity of the sites where the program-level activities (the reintroduction of grazing livestock, the restoration and replanting of oak woodlands, the exercise of prescribed burns, and the eradication of French broom through the application of propane-flaming) would occur. Although smoke from prescribed burns can affect receptors in a wider area, because of the controls that will be implemented to comply with the burn permit, prescribed burns would not expose receptors to substantial pollutant concentrations. The impact would be *less than significant.*

e. There are no program-level activities included in the Resource Management Plan that would result in objectionable odors. There would be *no impact.*

5.4 Biological Resources

5.4.1 Background

There is a range of habitat types on the project site that support a variety of plant and animal species. The majority of the site is forests and woodlands followed by a substantial amount of grasslands and chaparral as listed in **Table 1**. Calabazas Creek intersects the Preserve flowing from the northeast to the southwest towards Highway 12. Seven tributaries flow into Calabazas Creek from within the Preserve.

Oak woodlands are composed of several distinctive oak habitats (alliances) that are widely distributed throughout the Preserve. By far the most widespread oak habitat is Coast Live Oak Woodland (*Quercus agrifolia* Woodland Alliance) followed by Oregon White Oak Woodland, and Interior Live Oak Woodland (*Quercus wislizeni* Woodland Alliance). Other oak species commonly occur throughout portions of the Preserve but do not form stands of at least one acre (the minimum mapping unit (MMU)) that meet the percent cover value requirements of the Manual of California Vegetation (MCV) for the species. These include: black oak (*Q. kelloggii*), which occurs as scattered individuals within the mixed evergreen forest and in Coast Live Oak Woodland; canyon oak (*Quercus chrysolepis*), which occurs primarily along the northeastern and southern ridge tops along with mixed evergreen forest and chaparral; valley oak (*Q. lobata*), which occasionally occurs along the larger stream courses; and blue oak (*Q. douglasii*), which occurs as only a few trees at the north-central portion of the project within an area mapped as Neroly Sandstone geology, surrounded by Chamise Chaparral and Coast Live Oak Woodland (a stand of Blue Oak Woodland occurs just west of the Preserve boundary).

Grasslands occur in the northern and eastern portions of the Preserve in open stands surrounded by scrub, woodland, and/or forest types. The grasslands are predominantly introduced annual grasslands dominated by non-native bromes [primarily soft chess (*Bromus hardeaceus*) and ripgut (*Bromus diandrus*)], Italian ryegrass (*Festuca perennis*), and, in pockets, slender wild oats (*Avena barbata*). The non-native perennial Harding grass (*Phalaris aquatica*) occurs in localized dense stands on moister soils within the grasslands just north of Calabazas Creek. There are also a few small stands of medusahead (*Elymus caput-medusae*) in this area, restricted to moister soils at the base of hill slopes. There are small stands and scattered individuals of several native grass species within these grasslands, including purple needlegrass (*Stipa pulchra*) in more open areas, and tufted hairgrass (*Deschampsia cespitosa*) and blue wildrye generally along shaded areas bordering forest or woodland margins. Few of these stands are large enough or dense enough to be mapped as stands.

Chamise (*Adenostoma fasciculatum*) is the most abundant chaparral species on the Preserve, forming Chamise Chaparral on about 99 acres. As is typical for Chamise Chaparral, the habitat on the Preserve occurs primarily on shallow, rocky soils along steep, often south-facing hill slopes. Associate shrubs within the habitat include all of the manzanita species occurring on the Preserve, as well as buckbrush, scrub oak, and occasional California coffeeberry (*Frangula californica* ssp. *californica*). Immature chamise shrubs are present as well. The herb *stratum* is dominated by ladies' tobacco (*Pseudognaphalium californicum*), nude buckwheat (*Eriogonum nudum* var. *nudum*), purple false brome, and rattail sixweeks grass (*Festuca myuros*). Scattered emergent coast live oaks, interior live oak, and California bay are present as well along more gentle slopes.

Extensive field surveys have been conducted on the Preserve for special-status plant and wildlife species as well as vegetation and wetland mapping, floristic inventories, rare plant surveys, amphibian and aquatic invertebrate surveys within streams, bird inventories, nesting bird surveys, and camera station surveys for larger wildlife. Several special-status plant and wildlife species have been identified on the project site as shown in **Figure 5** and **Figure 6**. Additionally, potential habitat for a variety of other species is found in the project area. **Table 5** and **Table 6** present the special-status plant and wildlife species known to occur on or in the vicinity of the Preserve.

Special-status Plants

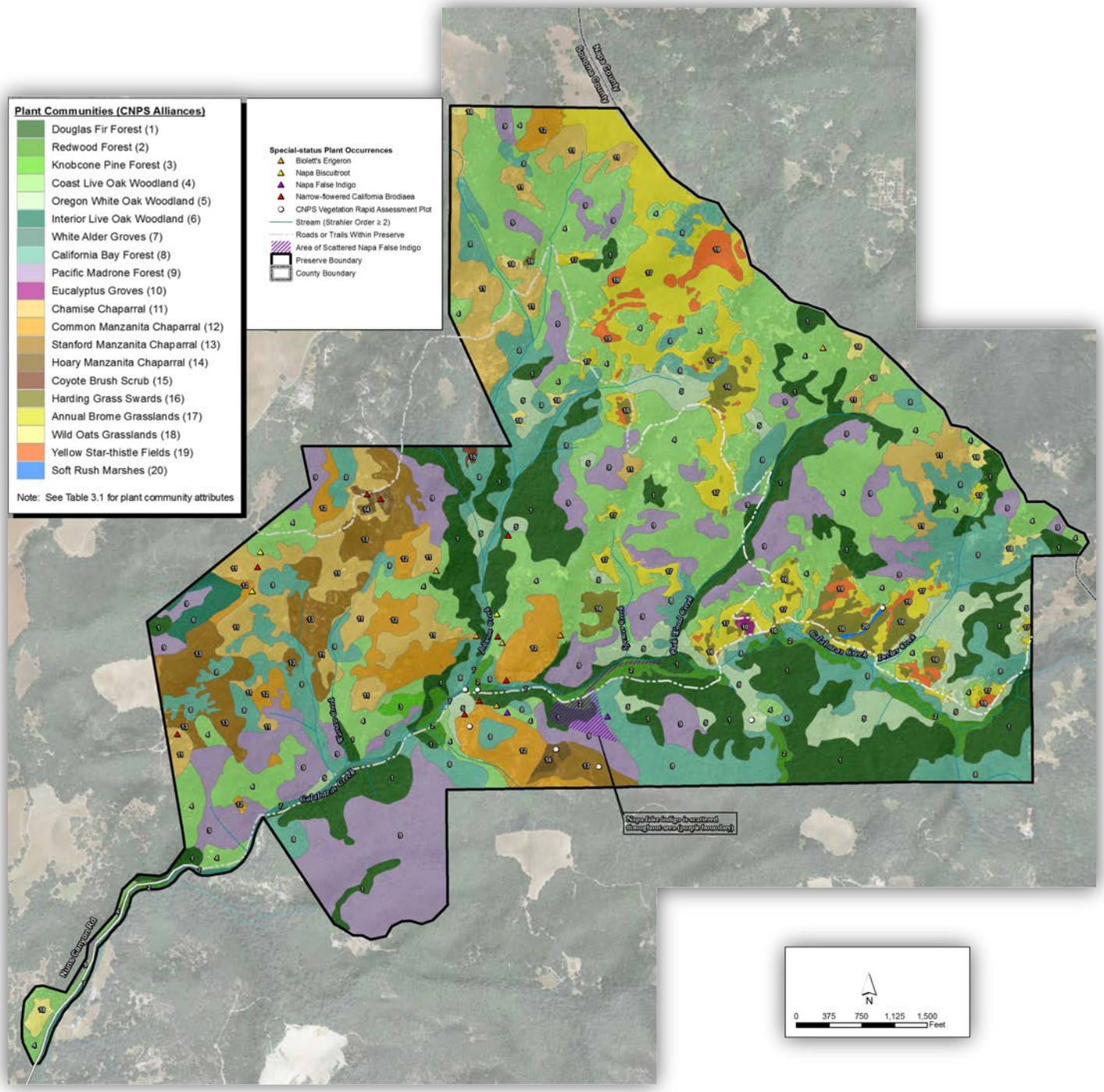
Four special-status plant species were identified on the Preserve during field surveys conducted in 2013. Information regarding these four species is detailed below.

Narrow-flowered California brodiaea (*Brodiaea leptandra*) were found in nine populations on the Preserve within rocky chaparral in the central and northwestern areas. The species is fairly widespread in several areas and it is expected that additional unmapped populations are present on the Preserve, especially given the inaccessibility of much of its preferred habitat (rocky slopes within chaparral). Soils supporting the populations are very shallow and rocky and are derived from rhyolitic flows and andesitic to basaltic flows as well as ash flow tuff, both of which are derived from Western Sonoma Volcanics (District 2016).

Napa false indigo (*Amorpha californica var. napensis*) occurs along north-facing slopes and adjacent to Calabazas Creek, near the longitudinal center of the Preserve. Napa false indigo inhabits the central-southern portion of the preserve along steep north facing slopes and a broad stream terrace. Soils supporting the populations are derived from rhyolitic flows of and andesitic to basaltic flows of Western Sonoma Volcanics, and are slightly acidic (District 2016).

Napa biscuitroot (*Lomatium repostum*) were found in three populations on the Preserve, two in the far northwest, and on near the center of the site. Each population consisted of only a few plants over a small area. Soils supporting the species were very shallow, rocky, and apparently high in oxidized iron (red in color) (District 2016).

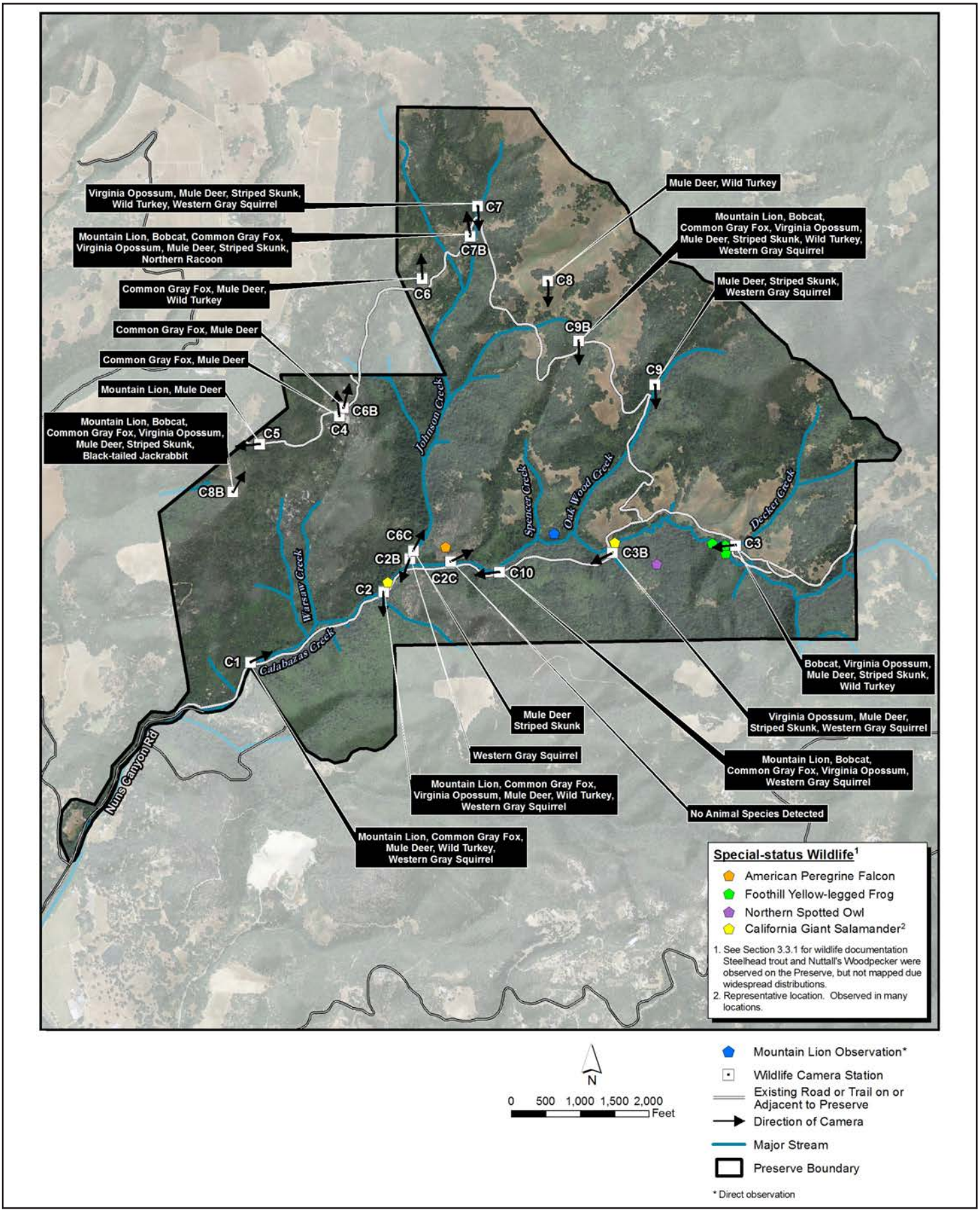
Biolett's erigeron (*Erigeron biolettii*) were found in six populations on the Preserve, primarily near the center of the property. Populations ranged from a few individuals to up to 100. Soils supporting the species are derived from rhyolitic flows as well as andesitic to basaltic flows of Western Sonoma Volcanics and are very shallow and rocky. Nearly all plants were observed on large rock outcrops adjacent to the principle drainages (District 2016).



SOURCE: Sonoma County Agricultural Preservation and Open Space District

FIGURE **5**

Special Status Plant Species



SOURCE: Sonoma County Agricultural Preservation and Open Space District

FIGURE **6**

Special Status Wildlife Species

Table 5
Special-Status Plant Species with Potential to Occur in Project Vicinity

Scientific Name (Common Name)	Status[1] Federal/ State/ CRPR	Habitat, Elevation and Bloom Period	Potential for Occurrence
Allium peninsulare var. *franciscanum* (Franciscan onion)	--/--/ 1B.2	Cismontane woodland, Valley and foothill grassland/clay, volcanic, often serpentinite; 52-300 feet; May-Jun	Marginal habitat present. Not observed during 2013 surveys.
Alopecurus aequalis var. *sonomensis* (Sonoma alopecurus)	E/--/ 1B.1	Marshes (freshwater), Riparian scrub; 5-365 feet; May-Jul	No suitable habitat present. Not observed during 2013 surveys.
Amorpha californica var. *napensis Napa* (Napa false indigo)	--/--/ 1B.2	Broadleafed upland forest(openings), Chaparral, Cismontane woodland; 120-2,000 feet; Apr-Jul	Suitable habitat present**. Observed during 2013 surveys.**
Arctostaphylos bakeri ssp. *bakeri* (Baker's manzanita)	--/ R/ 1B.1	Broadleafed upland forest, Chaparral/often serpentinite; 75-300 feet; Feb-Apr	Suitable habitat present. Not observed during 2013 surveys.
Arctostaphylos canescens ssp. *sonomensis* (Sonoma canescent manzanita)	--/--/ 1B.2	Chaparral, Lower montane coniferous forest/sometimes serpentinite; 180-1,675 feet; Jan-Jun	Suitable habitat present. Not observed during 2013 surveys.
Arctostaphylos stanfordiana ssp. *decumbens* (Rincon Ridge manzanita)	--/--/ 1B.1	Chaparral(rhyolitic), Cismontane woodland; 75-370 feet; Feb-Apr(May),	Suitable habitat present. Not observed during 2013 surveys.
Astragalus claranus (Clara Hunt's milk-vetch)	E/ T/ 1B.1	Chaparral(openings), Cismontane woodland, Valley and foothill grassland/serpentinite or volcanic, rocky, clay; 75-275 feet; Mar-May	Suitable habitat present. Not observed during 2013 surveys.
Blennosperma bakeri (Sonoma sunshine)	E/ E/ 1B.1	Valley and foothill grassland(mesic), Vernal pools; 10-110 feet; Mar-May	No suitable habitat present. Not observed during 2013 surveys.
Brodiaea leptandra (narrow-flowered California brodiaea)	--/--/ 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland/volcanic; 110-915 feet; May-Jul	Suitable habitat present. **Observed during 2013 surveys.**
Ceanothus confusus (Rincon Ridge Ceanothus)	--/--/ 1B.1	Closed-cone coniferous forest, Chaparral, Cismontane woodland/volcanic or serpentinite; 75-1,065 feet; Feb-Jun	Suitable habitat present. Not observed during 2013 surveys.
Ceanothus divergens (Calistoga Ceanothus)	--/--/ 1B.2	Chaparral(serpentinite or volcanic, rocky); 170-950 feet; Feb-Apr	Suitable habitat present. Not observed during 2013 surveys.
Ceanothus purpureus (holly-leaved Ceanothus)	--/--/ 1B.2	Chaparral, Cismontane woodland/volcanic, rocky; 120-640 feet; Feb-Jun	Suitable habitat present. Not observed during 2013 surveys.
Ceanothus sonomensis (Sonoma Ceanothus)	--/--/ 1B.2	Chaparral(sandy, serpentinite or volcanic); 215-800 feet; Feb-Apr	Suitable habitat present. Not observed during 2013 surveys.
Downingia pusilla (dwarf Downingia)	--/--/2.2	Valley and foothill grassland(mesic), Vernal pools; 1-445 feet; Mar-May	No suitable habitat present. Not observed during 2013 surveys.
Erigeron biolettii (Biolett's erigeron)	--/--/3	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest/rocky, mesic; 30-1,100 feet; Jun-Oct	Suitable habitat present. **Observed during 2013 surveys.**

Scientific Name (Common Name)	Status[1] Federal/ State/ CRPR	Habitat, Elevation and Bloom Period	Potential for Occurrence
Erigeron greenei (Greene's narrow-leaved daisy)	--/--/ 1B.2	Chaparral(serpentinite or volcanic); 80-1,005 feet; May-Sep	Suitable habitat present. Not observed during 2013 surveys.
Fritillaria liliacea (fragrant fritillary)	--/--/ 1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland/Often serpentinite; 3-410 feet; Feb-Apr	Marginal habitat present. Not observed during 2013 surveys.
Hemizonia congesta ssp. *congesta* (white seaside tarplant)	--/--/ 1B.2	Valley and foothill grassland/sometimes roadsides; 20-560 feet; Apr-Nov	Marginal habitat present. Not observed during 2013 surveys.
Horkelia tenuiloba (thin-lobed horkelia)	--/--/ 1B.2	Broadleafed upland forest, Chaparral, Valley and foothill grassland/mesic openings, sandy; 50-500 feet; May-Jul(Aug),	Suitable habitat present. Not observed during 2013 surveys.
Leptosiphon jepsonii (Jepson's Leptosiphon)	--/--/ 1B.2	Chaparral, Cismontane woodland/usually volcanic; 100-500 feet; Mar-May	Suitable habitat present. Not observed during 2013 surveys.
Lessingia hololeuca (woolly-headed Lessingia)	--/--/3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland/clay, serpentinite; 15-305 feet; Jun-Oct	Marginal habitat present. Not observed during 2013 surveys.
Lomatium repostum (Napa biscuitroot)	--/--/4.3	Chaparral, Cismontane woodland/serpentinite; 300-2,700 feet; Mar-June	Suitable habitat present. **Observed during 2013 surveys.**
Lupinus sericatus (Cobb Mountain lupine)	--/--/ 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest; 275-1,525 feet; Mar-Jun	Suitable habitat present. Not observed during 2013 surveys.
Micropus amphibolus (Mt. Diablo cottonweed)	--/--/3.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Valley and foothill grassland/rocky; 45-825 feet; Mar-May	Suitable habitat present. Not observed during 2013 surveys.
Navarretia leucocephala ssp. *bakeri* (Baker's navarretia)	--/--/ 1B.1	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools/Mesic; 5-1,740 feet; Apr-Jul	No suitable habitat present. Not observed during 2013 surveys.
Penstemon newberryi var. *sonomensis* (Sonoma beardtongue)	--/--/ 1B.3	Chaparral(rocky); 700-1,370 feet; Apr-Aug	Suitable habitat present. Not observed during 2013 surveys.
Sidalcea oregana ssp. *valida* (Kenwood Marsh checkerbloom)	E/ E/ 1B.1	Marshes and swamps(freshwater); 115-150 feet; Jun-Sep	No suitable habitat present. Not observed during 2013 surveys.
Trifolium amoenum (Showy Indian clover)	E/E/1 B.1	Coastal bluff scrub; 20-1,300 feet; Apr-Jun	No suitable habitat present. Not observed during 2013 surveys.
Viburnum ellipticum (oval-leaved viburnum)	--/--/2.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; 215-1,400 feet; May-Jun	Suitable habitat present. Not observed during 2013 surveys.

Source: Vollmar Natural Lands Consulting, 2013. Special-status Vascular Plant Taxa Documented in the Vicinity of the Calabazas Creek Open Space Preserve, Sonoma County, California.

Note: nomenclature corresponds to the most recent Jepson Interchange (December 2013)
Bold entries indicated observed during 2013 botanical surveys

State or federal listing: E = endangered; T = threatened
California Rare Plant Rank (CRPR)
CRPR: 'List 1B' = Plants rare, threatened or endangered in CA and elsewhere; 'List 4' = Plants of limited distribution, a watch list
CRPR: '.2' = Fairly threatened in CA; '.3' = Not very threatened in CA
Most CRPR List 4 are not included in CNPS nine-quad search option

Special-status Wildlife Species

Several special-status wildlife species were documented on the Preserve during reconnaissance wildlife surveys conducted in 2013. In addition, other species have been observed on other occasions and suitable habitat for additional species occurs on the Preserve. Information regarding special-status species known to occur on the Preserve is detailed below and presented in **Table 6**.

Birds

A pair of Northern spotted owls (*Strix occidentalis caurina*) was observed near the eastern edge of the Preserve vocalizing and appeared to be setting up a platform nest in a large Douglas fir tree. The Preserve provides optimal nesting habitat for the species in many respects, including the presence of its preferred nesting trees (mature coast redwood and Douglas fir), an abundance of one of its preferred prey species, the dusky-footed woodrat and an apparent lack of Barred owls. Therefore it is expected that, assuming they are nesting, the observed pair of owls are likely return to the location in the foreseeable future (District 2016).

A breeding pair of American peregrine falcons (*Falco peregrinus anatum*) was documented on the Preserve. Their nest is located on a rock outcrop perched on a tall cliff near the center of the Preserve along Calabazas Creek (District 2016).

The Preserve also contains suitable foraging and nesting habitat for white-tailed kit (*Elanus leucurus*).

Amphibians and Fish

Steelhead trout (*Oncorhynchus mykiss*) and chinook salmon (*Oncorhynchus tshawytscha*) have been documented in Calabazas Creek (District 2016).

Three individual foothill yellow-legged frogs (*Rana boylii*), all recently metamorphosed, were observed in stream pools of the eastern-most stretch of Calabazas Creek (District 2016). The Preserve also contains suitable habitat for California red-legged frog.

Mammals

Two special-status mammal species have the potential to occur on the Preserve: pallid bat (*Antrozous pallidus*) and Yuma mountain lion (*Puma Concolor browni*).

Other Species of Interest

California giant salamander[4] (*Dicamptodon ensatus*) was observed within numerous stream pools within Calabazas Creek, as well as within Johnson Creek and Warsaw Creek. Both larva and adults were observed within and adjacent to the pools. The species' use of Calabazas Creek is most concentrated in the steeper upper reaches of the stream, with very few salamander larvae inhabiting the lower-gradient parts of the stream.

A moderate number of Nuttall's woodpeckers (*Picoides nuttallii*) were detected throughout the oak woodlands on the Preserve, but were most abundant along the Calabazas Creek riparian corridor (within non-oak riparian as well as oak habitats). The species occurs relatively commonly, in low to moderate numbers, in the general vicinity of the Preserve (District 2016).

Table 6
Special-Status Wildlife Species with Potential to Occur in Project Vicinity

Common/ Scientific Name	Status[3]	Preferred Habitat	Potential for Occurrence
Invertebrates			
California freshwater shrimp (*Syncaris pacifica*)	FE SE	Perennial creeks and streams with slow moving water and intermittent pools.	Not expected: Potential habitat occurs onsite. Surveys in August 2013 did not detect the species.
Delta smelt (*Hypomesus transpacificus)*	FT	Freshwater side of mixing zone between salt and freshwater.	Not expected: Potential habitat does not occur onsite.
coho Salmon (*Oncorhynchus kisutch*)	FE	Freshwater, nearshore, and offshore environments.	Not expected.[1]
Central California coastal Steelhead (*Oncorhynchus mykiss*)	FT	Freshwater, nearshore, and offshore environments.	Steelhead spawning has been observed in several tributaries of the Sonoma Creek watershed.[2]
Central California coastal chinook salmon (*Oncorhynchus tshawytscha*)	FT	Freshwater, nearshore, and offshore environments.	Chinook spawning has been observed in Calabazas Creek.[2]
Spring-run chinook salmon (*Oncorhynchus tshawytscha*)	FT	Freshwater, nearshore, and offshore environments.	Chinook spawning has been observed in Calabazas Creek.[2]
Winter-run chinook salmon (*Oncorhynchus tshawytscha*)	FE	Freshwater, nearshore, and offshore environments.	Chinook spawning has been observed in Calabazas Creek.[2]
Amphibians			
foothill yellow-legged frog (*Rana boylii*)	CSSC	Breeds in slow moving streams; prefers rocky substrate.	***Observed:*** One occurrence observed in Calabazas creek during amphibian surveys.
California red-legged frog (*Rana draytonii*)	FT CSSC	Breeds in perennial and seasonal ponds and sluggish streams; shelters in adjacent uplands.	*Potential:* Potential habitat exists on site, but no occurrences were detected during amphibian surveys.
California tiger salamander (*Ambystoma californiense*)	FT ST	Burrows of small mammals; wetland breeding ponds.	Not expected: Potential habitat does not occur onsite.

[4] Although the California giant salamander (CGS) is currently not a special-status species, it appears likely that CGS will be listed as a Species of Special Concern in the near future, and this report treats it accordingly.

Common/ Scientific Name	Status[3]	Preferred Habitat	Potential for Occurrence
Birds			
California Least Tern (*Sternula antillarum browni*)	FE SE	Breeds on exposed tidal flats and beaches	Not expected: Potential habitat does not occur onsite.
Northern spotted owl (*Strix occidentalis caurina*)	FT CSSC	Nests in old growth forests with multiple canopy layers, snags, and woody debris.	***Observed:*** Pair observed May 15, 2013
American peregrine falcon (*Falco peregrinus anatum*)	CFP	Nests on cliffs and steep banks, preferably near water.	***Observed:*** Nesting individual observed on multiple surveys, aggressive territorial behavior displayed.
White-tailed Kite (*Elanus leucurus*)	CFP	Nests in trees, often in isolated stands, surrounded by open foraging habitat.	*Potential:* Suitable nesting and foraging habitat present; not observed on the site but known to nest in the area.
Mammals			
Pallid bat (*Antrozous pallidus*)	CSSC	Oak savanna, coast redwoods, coniferous forest.	*Potential*. Suitable foraging habitat present.
Yuma mountain lion *(Puma Concolor browni)*	CSSC	Oak woodlands	*Potential*. Suitable habitat present.
Salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE SE	Salt and brackish marshes.	Not expected: Potential habitat does not occur onsite.
Species of Interest (Not Federally or State listed)			
California giant salamander (*Dicamptodon ensatus*)	None	Breeds in creeks, streams and channels. Shelters and forages in adjacent forest uplands.	***Observed:*** Individuals detected in several locations in Calabazas creek.
Nuttall's woodpecker (*Picoides nuttallii*)	BMC	Nesting cavities are excavated from dead trunk limbs, mostly in riparian habitat.	***Observed:*** Individual observed foraging in riparian habitat.

Source: Vollmar Natural Lands Consulting, 2013. Special Status Animal Species and Animal Species of Interest Occurring or Potentially Occurring on the Calabazas Open Space Preserve, Sonoma County, California.

[1] Leidy, R. A., G. Becker, et al. (2005). "Historical status of coho salmon in streams of the urbanized San Francisco estuary, California." California Fish and Game 91(4): 219

[2] Sonoma Ecology Center: Understanding Sonoma Valley Watersheds, Steelhead and Salmon (based on a model provided by the Napa County Resource Conservation District).

[3] Sensitivity Status: FE = Federally listed as Endangered; FT = Federally listed as Threatened; SE = State listed as Endangered; ST = State listed as Threatened; CSSC = California Species of Special Concern; CFP = California Fully Protected Species; BMC = Fish and Wildlife Service Birds of Management Concern

5.4.2 Environmental Checklist and Discussion

BIOLOGICAL RESOURCES Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	❑	☑	❑	❑
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	❑	☑	❑	❑
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	❑	☑[1]	☑[2]	❑
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	❑	☑	❑	❑
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	❑	❑	☑[1]	☑[2]
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	❑	❑	❑	☑

Notes:
[1] Project-level conclusion
[2] Program-level conclusion

DISCUSSION:

Project Level Impacts

a. Special-status Plants

Based on surveys of the Preserve site, the Preserve contains habitat for four special-status plant species. Several populations of narrow-flowered California brodiaea (CRPR List 1B.2), Napa false indigo (CRPR List 1B.2), Napa biscuitroot (CRPR List 4.3), and Biolett's erigeron (CRPR List 3) were found primarily in the central portion of the Preserve. Of these special-status plant species, narrow-flowered California brodiaea and Napa false indigo occur up slope from Calabazas Creek.

Of the proposed project-level activities, two activities, erosion control projects and removal of invasive species, have the potential to affect special-status plant species. The proposed sediment and erosion control activities are planned to occur along the roads within the Preserve, particularly Nunns' Canyon Road, as shown in **Figure 3**. Similarly, invasive species removal activities would also occur along Nunns' Canyon Road where the stands and communities of invasive species primarily are located with a couple of stands located elsewhere on the Preserve. The majority of the identified special-status plant populations are not located near erosion control project sites or in the area of invasive species stands. Furthermore, as stated in SPM-3 which applies to access route maintenance, if access routes require grading or maintenance, the rare plants would be temporarily flagged and, to the degree possible, protected from any potentially damaging activities. In addition, treatment areas, where Himalayan blackberry shrubs are removed, would be planted with native shrubs in order to reduce erosion as well as to shade out the Himalayan blackberry. Nonetheless, in the event that a substantial stand of special-status plants is removed during the implementation of any of project-level activities, the impact would be considered potentially significant. **Mitigation Measure BIO-1** is proposed which would reduce the impact to special-status plant species. The impact would be *less than significant* with mitigation.

Mitigation Measure BIO-1:

A qualified biologist will conduct a pre-construction survey of the areas that will be disturbed in order to control erosion and sedimentation and invasive plant species. If substantial stands of special-status plants are detected, the area will be fenced with environmentally sensitive area (ESA) fencing and will not be disturbed. If Napa false indigo or narrow-flowered California brodiaea are identified, they shall be relocated if necessary.

Special-status Amphibians and Fish

As noted above, individual foothill yellow-legged frogs (State listed Species of Special Concern), chinook salmon, and steelhead trout (Federally Threatened) have been documented in Calabazas Creek which runs through the Preserve. California red-legged frog also has the potential to occur in the creek. Several locations with invasive species stands and planned erosion control activities are in the proximity of Calabazas Creek. Invasive weed removal would be conducted on dry land and is not expected to affect fish species. Most of the erosion control work sites are located alongside the roads and not in the creek, although some culvert replacements and armored ford

crossings are proposed within and adjacent to Calabazas Creek. Culvert replacements and ford crossings would be constructed during the dry season, and appropriate precautions would be taken to avoid release of sediment from the work sites into the creek. Therefore, these activities would not affect the fish species. Nonetheless, to ensure that the fish species are not affected, **Mitigation Measure BIO-2** is proposed.

Amphibian species could be present within the areas that are disturbed for erosion control and could be affected when the activities are conducted. Additionally, bullfrog control activities may impact the two special-status frog species primary due to misidentification during hunting. **Mitigation Measures BIO-3 and BIO-4** would reduce the impact to special-status amphibian species. The impact would be *less than significant* with mitigation.

Mitigation Measure BIO-2:

Erosion control projects that could affect the bed and bank of Calabazas Creek shall be completed during the dry season and sediment control measures shall be implemented to ensure that sediment from the work sites is not discharged into the creek.

Mitigation Measure BIO-3:

A qualified biologist shall survey the area to be disturbed during erosion control work and shall guide the installation of drift fences to ensure that the amphibian species do not enter the work area.

Mitigation Measure BIO-4:

Qualified biologists shall conduct bullfrog hunting during control activities and targeted, close-range hunting methods such as gigging or air gun shall be used.

Special-status Birds

As noted above, a pair of Northern spotted owls (Federally Threatened; candidate for State listing) and American peregrine falcons (California Fully Protected Species) have been observed nesting and foraging on the Preserve. In addition, the Preserve contains suitable habitat for white-tailed kit (California Fully Protected Species). In addition, although not specifically protected under CEQA, several Nuttall's woodpeckers (USFWS Bird of Management Concern) have been observed on the Preserve particularly along Calabazas Creek. Control activities for invasive wild turkeys on the Preserve may cause noise impacts on the listed and fully protected species and the use of lead bullets may cause contamination. **Mitigation Measure BIO-5** would be implemented to prevent impacts from hunting wild turkeys. Many of the proposed erosion control activities are along Nunns' Canyon Road which is adjacent to Calabazas Creek. In addition, invasive plant removal activities would occur along Nunns' Canyon Road. Although the foraging areas of the special-status bird species, particularly Nuttall's woodpecker, would be temporarily affected by invasive plant removal or erosion control activities, because adequate habitat would still be available, and upon completion of these project-level activities, the disturbed habitats would become available to the bird species again, the impact on foraging habitat would be short term and *less than significant*. For potential impacts on nesting birds, see response 5.4.d below.

Mitigation Measure BIO-5:

Control activities for invasive wild turkeys should be conducted during the non-breeding season (between September 1 and January 30) for special-status birds. Lead bullets should not be utilized for invasive species control activities.

Special-status Mammals

As noted above, two special-status mammal species have a potential to occur on the Preserve. The proposed project-level activities would not affect mountain lions as they would move out of the area where the activities are underway. With regard to pallid bats, they roost in caves and crevices. The proposed project-level activities would not affect their habitat. There would be no impact.

b. Calabazas Creek intersects the southern portion of the Preserve and traverses from the northeast to the southwest. There are seasonal tributaries, several of which support perennial pools and riparian vegetation along much of their lengths, as well as ephemeral swales, springs, and seeps. Several areas adjacent to Calabazas Creek and other areas with riparian habitat are proposed for invasive plant removal and erosion control activities. Some riparian habitat may be temporarily disturbed by invasive plant removal and/or erosion control activities, but would benefit in the long run from such habitat enhancing actions.

Additionally, all of the oak communities on the Preserve are a sensitive natural community under the Oak Woodlands Protection Act. Although some oak removal would occur, however a number of management activities in the plan, specifically SHM-2, SHM-7, SHM-10, SHM-13 and PC-6 through PC-10 are focused on improving oak woodlands on the Preserve. The overall impact would therefore be beneficial.

c. There are jurisdictional waters on the Preserve, including Calabazas Creek, connected tributaries, and wetlands. Erosion control activities, particularly culvert replacements and armored ford crossings, are proposed within and adjacent to Calabazas Creek and other waters of the U.S. Removal of invasive species may also occur in areas where jurisdictional wetlands or seasonal tributaries are located. These project-level activities on the Preserve could result in the placement of fill in jurisdictional waters, and work within a streambed or a bank. Therefore, the impact to jurisdictional waters would be potentially significant. **Mitigation Measure BIO-6** would reduce the impact to jurisdictional waters. The impact would be *less than significant with mitigation.*

Mitigation Measure BIO-6:

Before commencing any activities that would place fill in jurisdictional waters or work within a stream, the District will obtain appropriate federal and state permits and comply with the provisions of the permits.

d. There are forests and woodlands on the project site with numerous tree species that provide nesting habitat for special-status and non-special-status migratory birds. A pair of peregrine falcons has been observed nesting and a pair of Northern spotted owls has been observed on the Preserve and probably nests some years. The Preserve is considered "occupied" Northern spotted owl habitat. The Preserve also contains suitable habitat for white-tailed kite. Several management activities involve the removal of dead, infected and/or encroaching trees that could

contain active bird nests. Management Activity PC-5 requires that projects to manually remove or girdle Douglas fir on the Preserve be restricted to the time period between September 1 and January 30, in order to minimize disturbance to nesting birds in the area, nonetheless other tree removal activities could affect nesting birds. In addition, if construction associated with project-level activities were to occur during nesting season, noise generated by construction on the project site could disturb special-status and non-special-status migratory bird nests adjacent to the project site, including Northern spotted owl, American peregrine falcon, white-tailed kite, and Nuttall's woodpecker. Therefore, the proposed activities could result in direct and indirect impacts on nesting birds, and the impact would be considered potentially significant. **Mitigation Measure BIO-7** would reduce the impact to special-status and non-special-status migratory birds. The impact would be *less than significant with mitigation.*

Mitigation Measure BIO-7:

If feasible, all project-related activities, including (but not limited to) tree and shrub removal, other vegetation clearing, grading, or other ground-disturbing and noise-generating activities shall be conducted during the non-breeding season (between August 16 and February 14[5]) for special-status and non-special-status migratory birds and raptors. If any activities are scheduled to occur during the breeding season, a qualified avian biologist, with knowledge of the species, shall be retained to conduct focused nesting surveys within 15 days of the start of ground-disturbing or noise-generating construction activities within the appropriate habitat.

Specifically, tree, shrub, and ground nesting surveys for special-status birds (including Northern spotted owl, American peregrine falcon, white-tailed kite, and Nuttall's woodpecker), and other migratory birds and raptors shall be conducted before any disturbances occur in or near suitable nesting habitat within 500 feet of the construction work area between August 16 and February 14.

If a site has been subjected to protocol-level surveys and non-nesting is confirmed (therefore a non-nesting year), potentially disruptive activity can begin by July 10th. However, non-nesting must be documented by 2 consecutive years of protocol-level surveys.

If an active nest is located on or within 500 feet of the project area, the California Department of Fish and Wildlife (CDFW) shall be consulted to determine an appropriate no-disturbance buffer around the nest until the nest is no longer active and the young have fledged or the nest has failed. No disturbance shall be allowed within this exclusion area without consulting with the CDFW. A wildlife biologist shall monitor the nest site during construction at least once a week, or at a frequency determined by the CDFW, to ensure that the nest site is not disturbed and the buffer is maintained.

e. Sonoma County has a Tree Cutting Ordinance (Section 26-88-010(m) of the County Code) for the protection of trees within the County. The provisions of the ordinance are administered by the Sonoma County PRMD. Douglas fir trees have a tendency to outcompete oak trees and can overtake oak woodland communities. Removal of Douglas fir by felling or girdling is also a

[5] The non-nesting period for Northern spotted owl is September 1 thru February 1.

project-level activity in the Resource Management Plan. Additionally, there are California bay forests throughout the Preserve adjacent to oak woodlands. California bay trees are considered to be highly infectious hosts of the SOD pathogen that infects and kills oak trees. There are several management activities that involve the removal of invasive and diseased or disease carrying trees on the Preserve which could potentially invoke the conditions requiring prior approval in accordance with the County tree ordinance. The District would acquire a tree removal permit and comply with mitigative actions in accordance with the Sonoma County Tree Cutting Ordinance. In addition, areas where a large number of oaks have been lost due to SOD would be re-planted with coast live oak trees, preferably with individuals shown to be resistant or immune to *P. ramorum*. As the proposed project would comply with the ordinance and also replant trees, there would be no conflict, and the impact would be *less than significant.*

f. The project site is not located within the area covered by an adopted habitat conservation plan or natural community conservation plan. There would be *no impact*.

Program Level Impacts

Program level activities include re-introduction of grazing, prescribed burns, use of propane-flaming to control French broom. Prescribed burns may be conducted periodically when it is evident that Douglas fir trees are encroaching on oak woodlands. In addition, propane-flaming activities may be used to eradicate French broom. The best time for these activities is during the summer, subsequent to the peak reproductive season for most sensitive plants and animals in the chaparral. Required pre-burn actions may include the construction of a firebreak and/or thinning of brush as appropriate. Any prescribed burns and propane-flaming activities would be planned and executed by trained fire professionals from CDF or consulting fire ecologists. Measures would be taken to prevent erosion following prescribed burns (District 2016). The potential for these program-level activities to affect biological resources is evaluated below.

a. Special-status Plants

As stated above, based on surveys of the Preserve, the site provides habitat for four special-status plant species. As with the project-level activities, program-level activities including the reintroduction of livestock, the use of prescribed burns, and propane-flaming activities would also have the potential to remove special status-plant species. The impact would be considered potentially significant. **Mitigation Measure BIO-8** is proposed which would reduce the impact to special-status plant species. The impact would be *less than significant with mitigation.*

Mitigation Measure BIO-8:

A qualified biologist will conduct a pre-project survey of the areas that will be disturbed by any of the program-level activities. If special-status plants are detected, the area will be fenced with environmentally sensitive area (ESA) fencing and will not be disturbed. Similarly, areas with substantial stands of special-status plant species will be identified and excluded from the burn areas.

Special-status Amphibians and Fish

As noted above, special-status amphibians and fish species have been observed on the Preserve during surveys and habitat is also present for other special-status species that were not observed during surveys. Special-status amphibians and fish have the potential to be temporarily impacted

by propane-flaming activities and prescribed burns. Propane-flaming activities would involve torching cotyledons (very small seed leaves), so visibility should be very high. Thus, there would no sheltering amphibians due to lack of shelter. Prescribed burns would generally take place outside the riparian zone, away from the special-status fish and amphibians, so the primary concern for burns is erosion, which could affect water quality. Although burns should ideally not remove all vegetation (much of the herbs in the targeted areas are perennials with substantial roots), measures should be implemented to reduce indirect impacts from erosion following burns. **Mitigation Measure BIO-9** would reduce the impact to special-status amphibian and fish species from program-level activities. The impact would be *less than significant with mitigation.*

Mitigation Measure BIO-9:

To reduce impacts from erosion, (1) burns shall be conducted during the dry season, and (2) measures including installation of straw wattles across steep slopes, silt fencing installed near streams and creeks, native seed broadcasted across exposed soils, and jute netting installed in areas vulnerable to erosion shall accompany prescribed burns in less vegetated areas.

Special-status Birds

As noted above, a number of special-status bird species have been observed nesting and foraging on the Preserve, particularly along Calabazas Creek. Although the foraging areas of the special-status bird species could be temporarily affected by the program-level activities, because adequate habitat would still be available, and upon completion of these activities, the disturbed habitats would become available to the bird species, the impact on foraging habitat would be temporary and *less than significant*.

Special-status Mammals

As noted above, two special-status mammal species have a potential to occur on the Preserve. The proposed program-level activities would not affect mountain lions as they would move out of the area where the activities are underway. With regard to pallid bats, they roost in caves and crevices. The proposed program-level activities would not affect their habitat. There would be no impact.

b. Riparian habitat along Calabazas Creek would not be adversely impacted by the reintroduction of livestock for grazing or the restoration and replanting of oak woodlands. If livestock that are reintroduced to the Preserve, infrastructure would be put in place to manage their access to stream riparian corridors, seeps, and springs. However, as described above, riparian habitat and other sensitive natural communities present on the Preserve could be temporarily affected by the application of prescribed burns. Implementation of **Mitigation Measure BIO-9** would reduce the impact to these sensitive natural communities. The impact would be *less than significant with mitigation*.

c. As discussed above, there are jurisdictional waters on the Preserve, including Calabazas Creek, its tributaries, and wetlands. The proposed program-level activities would not involve any ground disturbing activities and would not fill any jurisdictional waters. The impact would be *less than significant.*

d. As noted above, there are forests and woodlands on the project site with numerous tree species that would provide nesting habitat for special-status and non-special-status migratory birds. Should the proposed program-level activities occur during nesting season, noise generated by the activities could disturb special-status and non-special-status migratory bird nests adjacent to the project site, including Northern spotted owl, American peregrine falcon, white-tailed kite, and Nuttall's woodpecker. In addition, propane-flaming activities and prescribed burns could result in the removal of active nests. Therefore, the impact of program-level activities on nesting birds would be potentially significant. **Mitigation Measure BIO-10** would reduce the impact to special-status and non-special-status migratory birds. The impact would be *less than significant with mitigation.*

Mitigation Measure BIO-10:

If feasible, all program-related activities including (but not limited to) tree and shrub removal, other vegetation clearing, propane-flaming activities, and prescribed burns shall be conducted during the non-breeding season (between August 16 and February 14) for special-status and non-special-status migratory birds and raptors. If any activities are scheduled to occur during the breeding season, a qualified avian biologist, with knowledge of the species, shall be retained to conduct focused nesting surveys within 15 days of the start of ground-disturbing or construction activities and within the appropriate habitat.

Specifically, tree, shrub, and ground nesting surveys for special-status birds (including Northern spotted owl, American peregrine falcon, white-tailed kite, and Nuttall's woodpecker), and other migratory birds and raptors shall be conducted before any disturbances occur in or near suitable nesting habitat within 500 feet of the work area between February 15 and August 15.

If an active nest is located on or within 500 feet of the work area, the California Department of Fish and Wildlife (CDFW) shall be consulted to determine an appropriate no-disturbance buffer around the nest until the nest is no longer active and the young have fledged. No disturbance shall be allowed within this exclusion area without consulting with the CDFW. A wildlife biologist shall monitor the nest site at least once a week, or at a frequency determined by the CDFW, to ensure that the nest site is not disturbed and the buffer is maintained.

CDFW shall be consulted before any prescribed burns are conducted to obtain guidance on minimizing impacts on special-status species.

e., f. Sonoma County has established a Tree Cutting Ordinance (Section 26-88-010(m) of the County Code) for the protection of trees within the County. The provisions of the ordinance are administered by the Sonoma County PRMD. There are stands where Douglas fir are encroaching on unique Manzanita and oak habitat and areas where SOD has affected oak trees on the Preserve. There are several proposed program-level management activities that involve the removal of encroaching Douglas fir and diseased or disease carrying trees on the Preserve which could potentially conflict with the County tree ordinance. However, the District would acquire a tree removal permit and comply with mitigative actions in accordance with the Sonoma County Tree Cutting Ordinance. The project site is not located within the area covered by an adopted habitat conservation plan or natural community conservation plan. *No impact* would occur.

5.5 Cultural Resources

5.5.1 Background

The 1,285-acre project site is varied from steep to moderate slopes and consists of grasslands, chaparral, forests, woodlands, and riparian habitat with no standing structures present. Calabazas Creek and several other tributaries are located on the Preserve.

A cultural resources survey of approximately 140 acres and 8 miles of potential trail alignments within the Preserve was conducted in May and June 2013. A total of 11 sites were identified during the survey: nine historic-era sites, one prehistoric site, and a single site had both pre-historic and historic-era components. In general, most of the archaeological sites contain a low density and diversity of materials, with only a handful of artifacts or associated features. The historic-era sites include the stone quarry operated during the 1950s, segments of Nunns' Canyon Road, several homestead sites, structural debris, and artifacts. Prehistoric resources include a bedrock mortar site and artifacts. There are additional unrecorded resources on the Preserve, including a mercury mine, graves, and other artifacts (ASC 2013). There are no known Native American human remains in the project site although the possibility exists that they may be present.

The Preserve is located on six soil series: Clear Lake, Goulding, Laniger, Raynor, Red Hill, and Rock Land. Clear Lake clay loam is usually confined to the Late to recent Holocene, indicating a possibility of subsurface archaeological deposits. The other series are not considered to be sensitive for buried archaeological resources (ASC 2013).

There are two geologic formations mapped on the Preserve – the Western Sonoma Volcanics that occur throughout most of the site, and a limited exposure of the older, underlying sedimentary Neroly Formation within the central and southeastern portions of the Preserve (District 2016). Paleontological resources have been found within the Sonoma Volcanics formation (Sonoma County 2006).

5.5.2 *Environmental Checklist and Discussion*

CULTURAL RESOURCES Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	❑	☑	❑	❑
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	❑	☑	❑	❑
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	❑	☑	❑	❑
d) Disturb any human remains, including those interred outside of formal cemeteries?	❑	☑	❑	❑
e) Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. There are eleven known archaeological resources in the project area: nine historic-era sites, one prehistoric site, and one multi-component site, as well as isolated artifacts and unrecorded resources (including homesteads) elsewhere on the Preserve. Certain segments of Nunns' Canyon Road are considered to also be of the historic era. The eleven sites were determined by the District to constitute historical resources for the purposes of CEQA pursuant to the CEQA Guidelines Section 15064.5(a)(3).

A number of erosion control activities are proposed for locations along Nunns' Canyon Road. Some of the erosion control projects would be implemented near eight known historic-era sites, as indicated in **Table C-1 (Appendix C).**

In the event that erosion control activities involve ground disturbance in the area of a known historic-era site, the activities could damage the resource. Additionally, several invasive tree and plant stands are located in areas within or adjacent to historic-era resources. Activities associated with the removal of these invasive species may disturb or damage historic-era resources on the

Preserve.[6] Furthermore, the establishment of a shaded fuelbreak system may also impact historic-era resources. **Mitigation Measure CUL-1** would be implemented to avoid and minimize potential impacts on significant historic-era resources to a *less than significant* level.

Mitigation Measure CUL-1:

Prior to development within erosion control sites and removal of invasive species, if a historic-era site is near the work site, the historic-era site shall be examined to determine whether the site is located within or outside of the area of disturbance. If the historic-era site is outside the area of disturbance or can be avoided, ESA fencing shall be placed around the site and the area shall not be disturbed.

If the historic-era site is located within the area of disturbance and cannot be avoided by construction or other project activities, a qualified archaeologist shall be retained to carry out test investigations to determine the potential of the site to yield important information. The resource will be subject to archaeological and/or historic research, as appropriate, in order to recover the site's important scientific data and realize its historical significance. This work may include archaeological data recovery, archival research, and oral interviews (as appropriate), and will be documented in a technical report to be filed at the Northwest Information Center of the California Historical Resources Information System. Sites of exceptional public interest may also be documented in interpretive products such as web pages, displays, and pamphlets.

b. One pre-historic site and a single site that contained both pre-historic and historic-era components were located during surveys of the Preserve. No direct impacts to the exclusively pre-historic site would occur as a result of the project-level management activities. However, the multi-component site could be impacted by erosion control activities (**Table C-1**) or removal of invasive species. Without proper care during the ground disturbing activities associated with erosion control projects or invasive plant removal on the Preserve, unknown historic-era and prehistoric archaeological resources could be damaged or destroyed. Additionally, given the presence of the identified artifacts and the presence of Calabazas Creek and other tributaries within the project site, the possibility exists for other unrecorded archaeological resources to be located on the Preserve. Portions of the project site are underlain by Clear Lake soil which has a potential for archaeological deposits. Therefore, project impacts to the multi-component site and previously unknown historic-era and prehistoric archaeological resources would be potentially significant. **Mitigation Measures CUL-2 and CUL-3** would reduce the impacts to the known multi-component site and previously unknown historic and prehistoric archaeological resources to a *less than significant* level.

Mitigation Measure CUL-2:

To address impacts to the multi-component archaeological site, **Mitigation Measure CUL-1** shall be implemented.

[6] Erosion sites that do require any treatment would not have an impact on historical resources within the vicinity.

Mitigation Measure CUL-3:

Prior to any construction or ground disturbing activities, construction personnel shall be informed of the potential for encountering significant prehistoric or historic-era cultural resources. All construction personnel shall be informed of the need to stop work if prehistoric or historic-era cultural materials are encountered during construction or other project activities. All work in the immediate vicinity will halt until a qualified archaeologist can evaluate the find in consultation with the affiliated Native American tribe and make recommendations to the District. Construction personnel will also be informed of the requirements that unauthorized collection resources are prohibited.

c. A majority of the project site is underlain by the Western Sonoma Volcanics formation, which has a high potential to contain paleontological resources. As defined in CEQA, when a paleontological resource meets eligibility criteria of a "unique paleontological resource," any disturbance to or removal of the resource would constitute a significant impact. Grading on the Preserve could potentially inadvertently unearth and damage paleontological resources. Without proper care during the grading on the project site, paleontological resources could be unearthed, damaged, or destroyed. Therefore, project impacts to paleontological resources would be potentially significant. **Mitigation Measure CUL-4** would reduce the impacts to paleontological resources to *less than significant.*

Mitigation Measure CUL-4:

Prior to any construction or ground disturbing activities, construction personnel will be informed of the potential for encountering significant paleontological. All construction personnel will be informed of the need to stop work in the vicinity of a potential discovery until a qualified paleontologist has been provided the opportunity to assess the significance of the find and implement appropriate measures to protect, scientifically remove, or otherwise treat the find. Construction personnel will also be informed that all resources are the property of the District and that unauthorized collection of resources is prohibited.

d. Ground disturbing work related to erosion control projects or invasive plant removal could potentially unearth and damage buried human remains that were not identified during field surveys. Without proper care, human remains could be unearthed, damaged, or destroyed. Inadvertent project impacts to human remains encountered during grading or other activities would be potentially significant. **Mitigation Measure CUL-5** would reduce the impacts to human remains to a *less than significant* level.

Mitigation Measure CUL-5:

The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the project site shall comply with applicable State laws. This shall include immediate notification of the District and Sonoma County coroner.

In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission is required, who shall appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98).

The District and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The California Public Resources Code allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow Public Resources Code Section 5097.98(b) which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

e. Assembly Bill (AB) 52, which came into effect on July 1, 2015, requires that lead agencies consider the effects of projects on tribal cultural resources and conduct consultation with federally and non-federally recognized Native American tribes early in the environmental review process. According to AB 52, it is the responsibility of the tribes to formally request of a lead agency that they be notified of projects in the lead agency's jurisdiction so that they may request consultation. Although at this time, no tribes have contacted the District requesting notification regarding projects proposed by the District, the District proactively contacted the Native American Heritage Commission (NAHC) to obtain a list of Native American individuals and organizations that may have knowledge of or interest in tribal cultural resources in the project area. In October of 2015, the District sent out letters to Native American tribes notifying them of the proposed project. Ya Ka Ama responded that the organization has no comments on the project. The Federated Indians of Graton Rancheria (FIGR) requested consultation with the District regarding potential tribal cultural resources on the project site. The District sent a response to their request on February 22, 2016 and followed up with a phone call 3-5 weeks later. As of the date of publication of this Initial Study, the District has not received any further communications from the Tribe. The District has determined that with the mitigation measures outlined above, the proposed project would not affect any previously unknown tribal cultural resources in the area. The impact would be less than significant.

Program Level Impacts

a.-d. Implementation of the Resource Management Plan's program-level activities would include the reintroduction of grazing livestock, the restoration and replanting of oak woodlands, the exercise of prescribed burns, and the eradication of French broom through the application of propane-flaming activities. Implementation of the proposed program-level activities would not involve substantial ground disturbance (e.g., the replanting of oak saplings would result in minimal ground disturbance), therefore no impacts to known historic-era sites and multi-component site on the Preserve would occur. As noted above, several historic-era and prehistoric artifacts and homesteads have been identified and recorded on the Preserve. The eradication of invasive plant species through the use of prescribed burns and propane-flaming activities would have the potential to significantly affect artifacts and homesteads in the event that the burns are conducted near these resources. **Mitigation Measure CUL-6** would reduce the impacts to artifacts and homesteads currently located on the project site to a *less than significant* level.

Mitigation Measure CUL-6:

Prior to the use of prescribed burns and/or propane-flaming activities, a qualified archaeologist shall confirm and mark on the ground the location of all archaeological resources in the eradication area. The location of these cultural resources would be disclosed to the wildland fire officials to ensure prescribed burns and/or propane-flaming and support activities are not permitted in these areas.

e. See Response e above under **Project Level Impacts**.

5.6 Geology and Soils

5.6.1 Background

There are two geologic formations mapped on the Preserve – the Western Sonoma Volcanics (WSV) that occur throughout most of the Preserve, and a limited exposure of the older, underlying sedimentary Neroly Formation within the central and southeastern portions of the Preserve. The soils are primarily clay loams and loams. Most of the Preserve consists of moderate to steep slopes, where the soils are typically shallow, highly weathered and relatively infertile due to the characteristics of the parent material and lack of accumulation of topsoil and organic matter. In more level areas, the soils are typically deeper and richer. All of the soils on the Preserve are rated as having "Moderate" or "Severe" erosion potential.

5.6.2 Environmental Checklist and Discussion

GEOLOGY and SOILS Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	❑	❑	❑	☑
ii) Strong seismic ground shaking?	❑	❑	❑	☑
iii) Seismic-related ground failure, including liquefaction?	❑	❑	❑	☑
iv) Landslides?	❑	❑	❑	☑
b) Result in substantial soil erosion or the loss of topsoil?	❑	❑	☑	❑
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	❑	❑	❑	☑
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	❑	❑	❑	☑

e)	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. i-iv**.** The Preserve is not located on any known earthquake fault. The project site is located within the vicinity of the Rodgers Creek fault, Redwood Hill fault and Maacama fault and could be subject to considerable ground-shaking and seismic related ground failure due to seismic activity on one of the nearby faults. The Preserve consists of steep to moderate slopes with scattered rocky outcrops, ridges, deeply cut valleys, and occasional flats mostly bordering stream courses. The project site's topography varies and contains areas where landslides have been mapped. However, erosion control activities would not disturb or be adversely affected by landslides within the Preserve. Although the Preserve would experience considerable ground shaking due to a seismic event on one of the regional faults, project-level activities would not involve the construction of any buildings nor result in the addition of people to the project site that could be affected by seismic hazards or ground failure. Therefore, there would be *no impact*.

b. The project site soils are primarily clay loams and loams. Most of the site consists of moderate to steep slopes, where the soils are typically shallow, highly weathered and relatively infertile due to the characteristics of the parent material and lack of accumulation of topsoil and organic matter. In more level areas, the soils are typically deeper and richer. All of the soils on the project site are rated as having "Moderate" or "Severe" erosion potential.

Implementation of project-level activities would include the installation of erosion and sedimentation control infrastructure. The erosion and sedimentation control infrastructure would minimize erosion and soil loss compared to existing conditions on the project site. Although the removal of invasive plant species would temporarily create areas of exposed soil, these areas would immediately be reseeded with native vegetation to minimize soil loss. For these reasons, the impact with regard to erosion would be *less than significant*.

c., d. As mentioned above, the project site topography consists of steep to moderate slopes with scattered rocky outcrops, ridges, deeply cut valleys, and occasional flats mostly bordering stream courses. Erosion control activities would not disturb or be adversely affected by landslides within the Preserve. The soil on the project site is primarily clay loams and loams which are not known for expansion. Furthermore, no structures would be constructed on site. There would be *no impact*.

e. No septic tanks or alternative wastewater disposal systems are included in the proposed project, and there would be *no impact*.

Program Level Impacts

a. i-iv. The existing seismic and associated conditions on and near the Preserve are described above. Implementation of the Resource Management Plan's program-level activities would include the

reintroduction of grazing livestock, the restoration and replanting of oak woodlands, the exercise of prescribed burns, and the eradication of French broom through the application of propane-flaming activities. Implementation of the program-level activities would not involve the construction of any buildings or result in the addition of people to the project site that could be affected by seismic hazards or ground failure. Therefore, there would be *no impact*.

b. The soil conditions on the Preserve are described above. The removal of invasive plant species through the use of prescribed burns and propane-flaming level activities may result in areas of exposed soil on the project site. Measures including installation of straw wattles across steep slopes, silt fencing installed near streams and creeks, native seed broadcasted across exposed soils, jute netting installed in areas vulnerable to erosion, among others may be implemented to prevent erosion following prescribed burns and propane-flaming activities (**Mitigation Measure BIO-9**). Impact with regard to erosion would be *less than significant*.

c.-e. As mentioned above, the project site topography consists of steep to moderate slopes with scattered rocky outcrops, ridges, deeply cut valleys, and occasional flats mostly bordering stream courses. Erosion control activities would not disturb or be adversely affected by landslides within the Preserve. The soil on the project site is primarily clay loams and loams which are not known for expansion. Furthermore, no structures or infrastructure (including alternative wastewater disposal systems or septic tanks) would be constructed on site under the program-level activities. There would be *no impact*.

5.7 Greenhouse Gas Emissions

5.7.1 Background

General

Global climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind, lasting for an extended period (i.e., decades or longer) (US EPA 2014). Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of greenhouse gas (GHG) and other gases to the atmosphere from volcanic eruptions); and
- human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The primary change in global climate has been a rise in the average global tropospheric temperature of 0.2 degree Celsius per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur, which would induce further changes in the global climate system during the current century (IPCC 2007). Changes to the global climate system and ecosystems, and to California, could include declining sea ice and mountain snowpack levels, rising average global sea levels, and many other potentially severe problems (IPCC 2007).

The natural process through which heat is retained in the troposphere[7] is called the "greenhouse effect." The greenhouse effect traps heat in the troposphere through a threefold process as follows: (1) short-wave radiation in the form of visible light emitted by the Sun is absorbed by the Earth as heat; (2) long-wave radiation is re-emitted by the Earth; and (3) GHGs in the upper atmosphere absorb or trap the long-wave radiation and re-emit it back towards the Earth and into space. This third process is the focus of current climate change actions.

While water vapor and carbon dioxide (CO_2) are the most abundant GHGs, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation. To gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-emit long-wave radiation over a specific period. The GWP of a gas is determined using CO_2 as the reference gas, which has a GWP of 1 over 100 years (IPCC 1996).[8] For example, a gas with a GWP of 10 is 10 times more potent than CO_2 over 100 years. The use of GWP allows GHG emissions to be reported using CO_2 as a baseline. The sum of each GHG

7 The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers).

8 All Global Warming Potentials are given as 100-year values.

multiplied by its associated GWP is referred to as "carbon dioxide equivalents" (CO_2e). This essentially means that 1 metric ton of a GHG with a GWP of 10 has the same climate change impacts as 10 metric tons of CO_2.

Regulatory Setting

In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 $MMTCO_2e$); by 2020, reduce emissions to 1990 levels (estimated at 427 $MMTCO_2e$); and by 2050 reduce statewide GHG emissions to 80 percent below 1990 levels (approximately 85 $MMTCO_2e$).

In response, the California legislature passed Assembly Bill No. 32 in 2006 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction from forecast emission levels) (OPR 2008).

Pursuant to AB 32, ARB adopted a Scoping Plan in December 2008, outlining measures to meet the 2020 GHG reduction limits. The Assembly Bill 32 (AB 32) *Climate Change Scoping Plan* to indicate how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. The AB 32 Scoping Plan recommendations are intended to curb projected business-as-usual growth in GHG emissions and reduce those emissions to 1990 levels.

5.7.2 Environmental Checklist and Discussion

GREENHOUSE GAS EMISSIONS Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	❑	❑	☑	❑
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose or reducing the emissions of greenhouse gases?	❑	❑	☑	❑

DISCUSSION:

Project Level Impacts

a. Implementation of the proposed project-level activities would result in small increases of GHG emissions that are associated with global climate change. Estimated GHG emissions attributable to the proposed project would be primarily associated with increases of CO_2 from mobile sources including construction haul trucks, and equipment used during the construction of the erosion

control projects and invasive species control. There would be minimal operational GHG emissions for reasons presented below.

Construction

During construction of the proposed erosion control projects, GHGs would be emitted from the operation of construction equipment and from worker and material transport vehicles to the Preserve. GHG emissions during construction were estimated using the CalEEMod model. Based on CalEEMod, construction activities on the project site would generate approximately 22 $MTCO_2e$ in 2016 (Calculations are presented in **Appendix B**). There are no quantitative thresholds put forth by the BAAQMD for the evaluation of the significance of a project's construction emissions. However, these estimated one-time emissions are lower than the 1,100 $MTCO_2e$ threshold that is put forth by the BAAQMD for the evaluation of the impact from a project's operation emissions. Therefore, the emissions are considered too small to result in a significant change in global climate change. The impact from the construction phase GHG emissions associated with the project-level activities would be *less than significant*.

Operation

At the present time, a small number of periodic vehicle trips are made to the Preserve for maintenance of fences, roads, invasive plant management, volunteer patrols and in conjunction with docent-led tours. Due to the proposed project-level activities, there would be a small number of additional vehicle trips to and from the site a year for monitoring and maintenance compared to existing conditions. This increase in vehicle trips would be minimal and would not substantially increase GHG emissions. The impact from operational emissions would be *less than significant*.

b. The proposed project would result in a minimal increase in GHG emissions, as described above. Therefore, the proposed project would not conflict with AB 32 or other state laws and regulations related to GHG emissions and the impact would be *less than significant*.

Program Level Impacts

a. Implementation of the proposed program-level activities would also result in small increases of GHG emissions that are associated with global climate change.

Construction

Temporary emissions of GHGs would result from the limited construction equipment used in tree planting and the small number of trucks associated with grazing activities, implementation of prescribed burns, and removal of French broom using propane flaming. Due to their nature and scale, the emissions would be low and it would be reasonable to conclude that the emissions would be too small to result in a significant change in global climate change. The impact from the construction phase GHG emissions associated with the program-level activities would be *less than significant*.

The program-level activities include the potential use of prescribed burns and propane-flaming activities to remove invasive species. These activities would result in the emissions of carbon dioxide, with the quantities varying depending on the area subjected to the burn and the types of

vegetation that is burned. Although prescribed burns and the propane-flaming activities would add substantial amounts of CO_2, to the atmosphere, the ultimate effect of these emissions on global climate cannot be reasonably ascertained without speculation. The impact remains *speculative.*

Operation

As described above, at the present time, a small number of periodic vehicle trips are made to the Preserve for maintenance of fences, roads, invasive plant management, volunteer patrols, and in conjunction with docent-led tours. The program-level activities would not add a large number of daily trips to the Preserve. As the increase in vehicle trips would be minimal, the program-level activities would not substantially increase GHG emissions compared to existing conditions. The impact from operational emissions would be *less than significant*.

b. The proposed program-level activities would result in a minimal increase in GHG emissions, as described above. Therefore, the proposed project would not conflict with AB 32 or other state laws and regulations related to GHG emissions and the impact would be *less than significant*.

5.8 Hazards and Hazardous Materials

5.8.1 Background

The project site is a 1,285-acre Open Space Preserve, and consists entirely of undeveloped land. Existing hazardous materials use on the Preserve is limited to the use of certain herbicides to control invasive species (including application of Roundup to eucalyptus stumps to prevent resprouting), and use of fuel in vehicles used to access the various portions of the Preserve.

5.8.2 Environmental Checklist and Discussion

HAZARDS & HAZARDOUS MATERIALS Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☑	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a., b. There are no known environmental hazards on the project site. The proposed project-level activities would not involve routine use, storage, transport, and disposal of hazardous materials in any significant quantities. Small quantities of hazardous materials, including fuel for construction equipment, would be used on-site during specific project-level activities such as the felling of dying and diseased oak trees and girdling of Douglas fir trees. In the event that illicit marijuana growing areas are discovered during monitoring activities, hazardous chemicals could be encountered at the sites. However all hazardous materials that are found would be properly handled and disposed of off-site. In addition, herbicide treatment would be used to remove invasive plants, including the Himalayan blackberry. The herbicide used would be approved by the District for application next to any sources of water to ensure hazardous materials do not contaminate the ground or water. Chemical treatments with a non-selective herbicide (e.g., glyphosate), conducted by a licensed Qualified Applicator, would be applied to effectively remove Bigleaf periwinkle. As the project-level activities would comply with state and federal hazard and hazardous material regulations, the risk associated with the routine transport, use, and disposal of hazardous materials would be minimal. Impacts would be *less than significant*.

c. The Preserve is not located within 0.25 mile of an existing school. The nearest school is located approximately one mile northwest of the Preserve. The proposed project-level activities would not involve handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. There would be *no impact*.

d. The Preserve is not located on a property associated with a hazardous site listed under Government Code Section 65962.5, also known as the Cortese List. As a result, the proposed project-level activities would not create a significant hazard to the public or the environment associated with a hazardous site listed under Government Code Section 65962.5. There would be *no impact*.

e., f. The Preserve is not located within 2 miles of a public or private airport. The closest airport is the Petaluma Municipal Airport located approximately 20 miles southwest of the Preserve. No structures are proposed as part of the project. There would be *no impact*.

g. Implementation of the proposed project would have no effect on emergency evacuation plans for the surrounding area. The project site is a 1,285-acre Open Space Preserve. The surrounding area is primarily agricultural, low density residential, and open space. Project-level activities would slightly increase the number of vehicle trips to the area but would not significantly affect emergency access to or from the site.

Additional project-level activities include the implementation of erosion and sedimentation control infrastructure. Roadway treatments, including culvert replacement, trash racks, creation of critical dips, rock armoring, soil excavation, rolling dips, cross road drains, road outsloping, and road surface rocking, would be installed along approximately 4 miles of roadway throughout the Preserve. Installation of these treatments could result in temporary roadway closures on the Preserve. However, the roadways are internal to the Preserve and do not provide access to other areas outside of the Preserve. No closure of Nunn's Canyon Road would be required. Therefore the proposed project-level activities would not interfere with an adopted emergency response or evacuation plan. There would be *no impact*.

h. The project site is located in a Very High Fire Hazard Severity Zone area and is designated as a State Responsibility Area.[9, 10] Implementation of the project-level activities would not result in the construction of structures on the project site or increase the site's overall fire hazard severity. Alternatively, project-level activities such as the removal of invasive plant species, the felling of diseased and dying oak trees, the girdling of encroaching Douglas fir trees, and the monitoring of the Douglas fir and Redwood trees density would reduce existing fire hazards throughout the project site. In addition, the establishment of shaded fuelbreaks would be designed to manage vegetation conditions that will break the momentum of a wildfire in the region and improve emergency response teams' ability to suppress fires within the Preserve. Consequently the risk to the public from wildfires would not increase. Implementation of the Resource Management Plan project-level activities would have *no impact* on fire protection services.

Program Level Impacts

a., b. Implementation of the Resource Management Plan's program-level activities would include the reintroduction of grazing livestock, the restoration and replanting of oak woodlands, the exercise of prescribed burns, and the eradication of French broom through the application of propane-flaming activities. Program-level activities would not require the daily use, disposal or transportation of hazardous materials. Fuel would be transported and used on the project site during prescribed burns and propane-flaming activities. Any prescribed burns and propane-flaming activities would be planned and executed by trained fire professionals from CDF or consulting fire ecologists. Measures would be taken to prevent hazardous conditions which could adversely affect the public and surrounding environment. Impacts would be *less than significant*.

c. The project site is a 1,285 acre Open-space Preserve and is not located on a property associated with a hazardous site listed under Government Code Section 65962.5, within 0.25 mile of an existing school, or within two miles of a public or private airport. There would be *no impact.*

d. The Preserve is not located on a property associated with a hazardous site listed under Government Code Section 65962.5, also known as the Cortese List. As a result, the proposed program-level activities would not create a significant hazard to the public or the environment

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9 CalFire Sonoma County Fire Hazard Severity Zone Map, State Responsibility Area, http://www.fire.ca.gov/fire_prevention/fhsz_maps_sonoma.php, accessed August 19, 2015

10 Wildland fire management efforts are the primary responsibility of the California Department of Forestry and Fire Protection (CalFire) in a designated State Responsibility Area.

associated with a hazardous site listed under Government Code Section 65962.5. There would be *no impact*.

e., f. The Preserve is not located within 2 miles of a public or private airport. The closest airport is the Petaluma Municipal Airport located approximately 20 miles southwest of the Preserve. No structures are proposed as part of the project. There would be *no impact*.

g. Implementation of the proposed program-level activities would have no effect on emergency evacuation plans for the surrounding area. No prescribed burns would be conducted in the portions of the Preserve near Nunns' Canyon Road and no closures of the road would be required. Implementation of the program-level activities would not interfere with an adopted emergency response or evacuation plan. There would be *no impact*.

h. Implementation of the program-level activities would not result in the construction of structures on the project site or increase the site's overall fire hazard severity. Alternatively, program-level activities such as prescribed burns and propane-flaming activities would reduce or eliminate tree encroachment and stimulate native vegetation growth. Therefore, the program-level activities would reduce existing fire hazards throughout the project site. Consequently the risk to the public from wildfires would not increase. Implementation of the program-level activities would have *no impact* on fire protection services.

5.9 Hydrology and Water Quality

5.9.1 Background

Calabazas Creek and its tributaries have carved out deep, steeply sloping valleys along the lower Mayacamas hill slopes. Calabazas Creek traverses the southern portion of the property, flows westward from the Napa/Sonoma County divide into Sonoma Creek. The headwaters of the creek are located on the Preserve. All of the surface waters on the Preserve, from ephemeral swales to seasonal tributaries, drain into Calabazas Creek, such that a self-contained sub-watershed is contained within the Preserve boundaries. In addition to Calabazas Creek, the Preserve encompasses seven named seasonal streams, several of which support perennial pools and riparian vegetation along much of their lengths, as well as many more un-named seasonal streams and ephemeral drainages.

The project site is located in FEMA Flood Zone X, an area with minimal flood hazard with a 0.2 percent annual-chance of flood.[11]

5.9.2 Environmental Checklist and Discussion

HYDROLOGY & WATER QUALITY Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	❑	❑	☑	❑
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	❑	❑	❑	☑
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	❑	❑	☑	❑

[11] FEMA National Flood Hazard ArcGIS Layer, August 2015.

d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	❑	❑	☑ 2	☑ 1
e)	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	❑	❑	☑ 2	☑ 1
f)	Otherwise substantially degrade water quality?	❑	❑	☑ 2	☑ 1
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	❑	❑	❑	☑
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	❑	❑	❑	☑
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	❑	❑	❑	☑
j)	Inundation by seiche, tsunami, or mudflow?	❑	❑	❑	☑

Notes:
1 Project level conclusion
2 Program level conclusion

DISCUSSION:

Project Level Impacts

a. Project-level activities included in the Resource Management Plan would not generate any polluted stormwater runoff. As no polluted runoff would be generated, the project-level activities would not cause an exceedance of the North Coast Regional Water Quality Control Board's (RWQCB) water quality standards. The removal of invasive plant and tree species would create areas of exposed soil and could increase erosion on the project site, adversely impacting the water quality. However, temporary erosion control measures (e.g. the use of sandbags, straw wattle, jute netting, silt fencing, erosion control blankets) would be implemented in areas with exposed soil to reduce the likelihood of sediment flowing into nearby tributaries and drainage areas. Further, implementation of the erosion and sedimentation control infrastructure (a project-level activity) would reduce erosion on the project site compared to existing conditions. As the proposed erosion control activities would prevent sediment deposition into stream courses, discourage soil disturbance, avoid diverting water flow (unless needed for livestock), and improve water quality and the aquatic habitat. Impacts to water quality would be *less than significant.*

b. Implementation of project-level activities would not result in any groundwater extraction. Additionally, the project-level activities would not increase impervious surfaces on the project site, and therefore would not interfere with groundwater recharge. There would be *no impact.*

c. Project-level activities would not alter the existing drainage patterns of the site or the surrounding area, and would not affect the course of Calabazas Creek or small tributaries located on the Preserve. Soil that is exposed from the removal of invasive plant species would immediately be reseeded with native plant stock. As discussed above, the installation of the erosion and sedimentation control infrastructure would further reduce the likelihood of erosion on the Preserve. The impact related to soil erosion would be *less than significant.*

d,-f. Implementation of project-level activities would not impact the Calabazas Creek, small tributaries or alter the existing drainage patterns on the Preserve. No development would occur on the Preserve which would increase the volume of stormwater runoff, result in polluted runoff, or degrade water quality. The project site is located in FEMA Flood Zone X, an area with minimal flood hazard with a 0.2 percent annual-chance of flood.[12] There would be no change in conditions related to flooding as a result of the project-level activities. There would be *no impact*.

g.-j. The Preserve is not located within a federally designated 100-year flood hazard area or an area that could be inundated by a seiche, tsunami, or mudflow. The proposed project-level activities would not place housing or structures within a federally designated 100-year flood hazard area. There would be *no impact*.

Program Level Impacts

a. Similar to the project-level activities, implementation of the program-level activities would not generate polluted stormwater runoff. While prescribed burns and propane-flaming activities would result in areas of expose soil, measures including (e.g. the use of straw wattle, jute netting, silt fencing, native reseeding and cover, etc.), would be implemented to prevent erosion following these activities. Impacts to water quality would be *less than significant.*

b. Program-level activities would not deplete groundwater supplies or interfere with groundwater recharge activities. There would be *no impact* to groundwater supplies associated with implementation of the program-level activities.

c.-f. Program-level activities would not affect the Calabazas Creek, small tributaries or alter the existing drainage patterns on the project site. No development would occur on the Preserve which would increase the volume of stormwater runoff, result in polluted runoff, or degrade the water quality. Although employment of prescribed burns and propane-flaming activities may result in areas of exposed soil, as required by **Mitigation Measure BIO-9**, measures including the use of straw wattle, jute netting, silt fencing, erosion control blankets, native reseeding would be implemented to prevent erosion following prescribed burns and propane-flaming activities. The project site is located in FEMA Flood Zone X, an area with minimal flood hazard with a 0.2

[12] FEMA National Flood Hazard ArcGIS Layer, August 2015.

percent annual-chance of flood.[13] There would be no change in conditions related to flooding as a result of the program-level activities. Impacts would be *less than significant*.

g.-j. The project site is not located within a federally designated 100-year flood hazard area or in an area that could be inundated by a seiche, tsunami, or mudflow. No structures would be constructed on the Preserve. There would be *no impact*.

[13] FEMA National Flood Hazard ArcGIS Layer, August 2015.

5.10 Land Use and Planning

5.10.1 Background

In 2004, the District purchased 1,285 acres of a 1,600-acre property from Beltane Incorporated. Soon after the purchase, the District renamed the property Calabazas Creek Open Space Preserve and since has managed the property as an open space preserve. The Preserve is located in southeastern Sonoma County along the western slope of the Mayacamas Mountains and the northeastern portion of Sonoma Valley (also known as Valley of the Moon), approximately seven miles north of the town of Sonoma and 10 miles southeast of the city of Santa Rosa.

Nearby uses are primarily low density residential homes, agricultural, open space, and vineyard development. The Preserve is designated as Resources and Rural Development in the Sonoma County General Plan.

5.10.2 Environmental Checklist and Discussion

LAND USE & PLANNING Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Physically divide an established community?	❑	❑	❑	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	❑	❑	❑	☑
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. There is no established community located on the Preserve. There would be *no impact.*

b. As discussed above, the project site is designated as Other Land by the FMMP. Sonoma County has designated the project site as Resources and Rural Development. Implementation of the project-level activities would not conflict with the County or FMMP's designated land use, or any jurisdictional land use plan, policy or regulation. Therefore, there would be *no impact.*

c. The proposed project is the adoption and implementation of the Resource Management Plan which would be used to manage and enhance the existing habitats and natural resources on the project site. There is no adopted habitat conservation plan or natural community conservation

plan applicable to the project area. The adoption and implementation of the Resource Management Plan would not conflict with an adopted habitat conservation plan or natural community conservation plan. There would be *no impact*.

Program Level Impacts

a.-c. Implementation of the Resource Management Plan's program-level activities would include the reintroduction of grazing livestock, the restoration and replanting of oak woodlands, the exercise of prescribed burns, and the eradication of French broom through the application of propane-flaming activities. The proposed program-level activities would not divide an established community, conflict with the Preserve's designated land uses, and/or conflict with an adopted habitat conservation plan or natural community conservation plan. There would be *no impact.*

5.11 Mineral Resources

5.11.1 Background

Historically a wide variety of mineral resources were mined in Sonoma County. Current mining operations are exclusively related to the extraction and processing of rock, sand, and earth productions used for construction and landscaping. The County has adopted the Aggregate Resources Management Plan and classified aggregate resource areas within the County as MRZ-2.[14,15]

The Preserve is bordered on the west by a former rock quarry at the bottom of Sonoma Valley and on the south by an active rock quarry. There are no known mineral resource zones on the project site.

5.11.2 Environmental Checklist and Discussion

MINERAL RESOURCES Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑

DISCUSSION:

Project Level Impacts

a., b. The project site is a 1,285 acre Open Space Preserve. No mineral extraction occurs on the project site. A clay pit is known to have formerly occurred on the project site which contained kaolinite and opal. The project-level activities would not affect the former rock quarry to the west or interfere with the active rock quarry to the south. There would be *no impact*.

Program Level Impacts

a., b. There are no mineral resources on the project site and no mineral extraction occurs or is known to have occurred on the project site. The program-level activities would not affect the former rock quarry to the west or interfere with the active rock quarry to the south. There would be *no impact*.

[14] Sonoma County General Plan, Open Space Element

[15] MRZ-2 are areas that contain identified mineral resources.

5.12 Noise

5.12.1 Background

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet surroundings are an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include hospitals, convalescent facilities, parks, hotels, churches, libraries, and other uses where low interior noise levels are essential.

The project site is a 1,285-acre Open Space Preserve located in an undeveloped area of Sonoma County. No major stationary or transportation noise sources are located in the immediate vicinity of the project site. The closest highway, SR-12 is located approximately 1.3 miles west of the project site. There are large landholdings with residential homes located adjacent to the southern boundary of the project site as well as scattered rural residential development north and west of the project site. The nearest residence is located about 500 feet east of the Preserve.

5.12.2 Environmental Checklist and Discussion

NOISE Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	❑	❑	☑	❑
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	❑	❑	☑	❑
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	❑	❑	☑	❑
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	❑	❑	☑	❑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	❑	❑	❑	☑
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. Implementation of project-level activities would not include any substantial noise-generating activities. Project-level activities would require the use of chainsaws, wood chippers, and haul trucks and would be carried out during the daytime hours. Only one residence is located about 500 feet east of the Preserve, with the rest greater than 1,400 feet from where project activities would occur. Therefore, the minimal noise from project-level activities would not adversely impact the surrounding residences. While the number of vehicle trips would increase, depending on the specific project-level activity that is underway, the increase would be too small to substantially increase noise levels along Nunns' Canyon Road. The impact would be *less than significant.* For the potential impact on nesting birds and wildlife, see **Section 5.4**.

b. Project-level activities would not require pile-driving, blasting, or other activities that could cause substantial groundborne vibration or noise. Project-level activities would include chainsaws, construction haul trucks, and wood chippers which are not sources of significant groundborne vibration or noise. The impact would be *less than significant.*

c. Implementation of the project-level activities would not add any new sources of noise to the Preserve or result in an increase in daily traffic to the Preserve that would be substantial compared to existing conditions. Therefore, there would not be a substantial permanent increase in stationary or transportation-source noise levels. The impact would be *less than significant*.

d. Although existing noise levels on the Preserve are very low and construction activities associated with the erosion control projects or the activities associated with tree removal and invasive species removal would elevate noise levels in the immediate vicinity of the work site, the increase in noise levels would not affect any sensitive receptors. The impact would therefore be *less than significant*.

e., f. The project site is not located within 2 miles of a public or private airport. The closest airport is the Petaluma Municipal Airport located approximately 20 miles southwest of the project site. No structures are proposed as part of the project. There would be *no impact*.

Program Level Impacts

a. Implementation of program-level activities (including prescribed burns and propane-flaming activities, the restoration and replanting of oak woodlands, and the reintroduction of grazing livestock) would not include any substantial noise-generating activities. The proposed project does not include the construction of any structures and no sensitive receptors are located immediately adjacent to the Preserve. Therefore, the minimal noise from program-level activities would not adversely impact any sensitive receptors. While the number of vehicle trips would increase, depending on the specific activity, the increase would be too small to substantially increase noise levels along Nunn's Canyon Road. The impact would be *less than significant.*

b. Program-level activities would not require pile-driving, blasting, or other activities that could cause substantial groundborne vibration or noise. The impact would be *less than significant*.

c. Implementation of the program-level activities would not add any new sources of noise to the Preserve or result in an increase in daily traffic to the Preserve that would be substantial compared to existing conditions. Therefore, there would not be a substantial permanent increase in stationary or transportation-source noise levels. The impact would be *less than significant*.

d. Due to the nature of the proposed activities, implementation of the program-level activities would not result in a substantial temporary increase in ambient noise levels, compared to existing conditions. The impact would be *less than significant*.

e., f. The project site is not located within 2 miles of a public or private airport. The closest airport is the Petaluma Municipal Airport located approximately 20 miles southwest of the project site. No structures are proposed as part of the project. There would be *no impact*.

5.13 Population and Housing

5.13.1 Background

There are no residences or people living on the 1,285-acre Preserve. The Resource Management Plan presents an assessment of the types of resources present on the Preserve, their status, and threats to the resources. Having established the status of the resources and known threats to each resource requiring remediation, protection and/or enhancement, the Resource Management Plan presents recommended project and program level management activities to address these threats. Implementation of the project and/or program level activities would not include the construction of any habitable structures.

Large landholdings with residential homes and some agriculture (a former turkey farm) and an active rock quarry form the southern border. There is extensive vineyard development north and west of the Preserve along with scattered rural residential development. There are several ranch style homes in the vicinity of the Preserve, primarily along Nunns' Canyon Road and adjacent to the northern portion of the Preserve.

5.13.2 Environmental Checklist and Discussion

POPULATION & HOUSING Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	❑	❑	❑	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	❑	❑	❑	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. Project-level activities do not include the construction of homes and/or businesses. In addition, the project-level activities do not include the construction of new roads or infrastructure that could support future development. As a result, the proposed project-level activities would not induce substantial population growth in the area, either directly or indirectly. There would be *no impact*.

b., c. There are no residences on the project site or people currently living on the Preserve. Impacts from project-level activities would not affect the existing residences adjacent to the Preserve. As a result, the project-level activities would not displace any housing or people. There would be *no impact*.

Program Level Impacts

a.-c. Similar to project-level activities, implementation of program-level activities would not directly or indirectly increase population growth in the area. No structures, roadways, or infrastructure would be constructed with implementation of the program-level activities. Further, as there are no residences or people living on the project site, program-level activities would not displace any housing or people. There would be *no impact*.

5.14 Public Services

5.14.1 Background

The proposed project is the approval and implementation of project and program-level activities included in the Resource Management Plan. The Resource Management Plan presents an assessment of the types of resources present on the Preserve, their status, and threats to the resources. The project site is a 1,285-acre Preserve. There are no structures on the Preserve. Implementation of the project and program-level activities would not include the construction of any habitable structures.

5.14.2 Environmental Checklist and Discussion

PUBLIC SERVICES Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	❑	❑	☑ 2	☑ 1
ii) Police protection?	❑	❑	❑	☑
iii) Schools?	❑	❑	❑	☑
iv) Parks?	❑	❑	❑	☑
v) Other public facilities?	❑	❑	❑	☑

Notes:
1 Project level conclusion
2 Program level conclusion

DISCUSSION:

Project Level Impacts

a.i. Fire protection services in the project vicinity are provided by the Sonoma County Fire and Emergency Services Department. Implementation of the project-level activities would not increase population growth in the area, and thus would not affect the Sonoma County Fire and Emergency Services Department services or response time.

The Preserve is located in a Very High Fire Hazard Severity Zone area and is designated as a State Responsibility Area.[16,17] Implementation of the project-level activities would not result in the construction of structures on the project site or increase the site's overall fire hazard severity. Project-level activities, such as the removal of invasive plant species, establishing shaded fuelbreaks, the felling of diseased and dying oak trees, and the girdling of encroaching Douglas fir trees, would reduce existing fire hazards throughout the Preserve. Therefore, implementation of the project-level activities would have *no impact* on fire protection services.

a.ii.-v. Implementation of the project-level activities would not indirectly or directly increase the population on the project site. Police services are provided by the Sonoma County Sheriff's Department. Project-level activities would not impact existing Sheriff services or response time. Further, implementation of the project-level activities would not increase the need for school or park facilities, or other facilities such as public libraries. There would be *no impact*.

Program Level Impacts

a.i. Similar to the project-level activities, implementation of the program-level activities would not increase the population on or within the project vicinity. As there would be no construction of structures on the project site, implementation of the program-level activities would not affect the Sonoma County Fire Emergency Services Department services or response time. Program-level including prescribed burns and propane-flaming activities would have a positive effect on fire protection by reducing existing fire hazards located on the project site.

Prescribed burns would be conducted periodically when it is evident that trees are encroaching. The best time for prescribed burns is during the summer, subsequent to the peak reproductive season for most sensitive plants and animals in the chaparral. Required pre-burn actions may include the construction of a firebreak and/or thinning of brush as appropriate. Any prescribed burns would be planned and executed by trained fire professionals from CDF or consulting fire ecologists with appropriate permits to conduct the burns. Therefore, implementation of the program-level activities would have *less than significant impact* on fire protection services.

a.ii.-v. Implementation of the program-level activities would not indirectly or directly increase population on the project site. Police services are provided by the Sonoma County Sheriff's Department. Program-level activities would not impact existing Sheriff services and response time. Further, implementation of the program-level activities would not increase the need for school or park facilities, or other facilities such as public libraries. The program-level activities would not increase public use of the Preserve to a point that would adversely affect the existing public services. There would be *no impact*.

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16 CalFire Sonoma County Fire Hazard Severity Zone Map, State Responsibility Area, http://www.fire.ca.gov/fire_prevention/fhsz_maps_sonoma.php, accessed August 19, 2015

17 Wildland fire management efforts are the primary responsibility of the California Department of Forestry and Fire Protection (CalFire) in a designated State Responsibility Area.

5.15 Recreation

5.15.1 Background

The project site is a 1,285-acre Open Space Preserve. The District provides docent-led outings, and a dedicated volunteer patrol in combination with other partners has implemented a range of management practices, including trail maintenance, erosion control, invasive plant management, and removal of illegal marijuana grows. There are no structures on the project site.

Hood Mountain Regional Park is approximately four miles northwest of the Preserve; Sugarloaf Ridge State Park is approximately two miles north of the Preserve; and Annadel State Park is approximately eight miles northwest of the project site. There are no existing structures or recreational facilities directly adjacent to the site.

5.15.2 Environmental Checklist and Discussion

RECREATION Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	❑	❑	❑	☑
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a., b. Project-level activities would not induce population growth that would increase demand for recreational facilities. There would be no deterioration of recreational facilities (including the Preserve) due to implementation of the project-level activities. In fact, the project-level activities would improve the overall condition of the Preserve through removal of diseased and dying oak trees, invasive plant species (including encroaching Douglas fir trees), the establishment of a shaded fuelbreak system, and the installation of erosion and sedimentation of control infrastructure. There would be *no impact*.

Program Level Impacts

a., b. Program-level activities would not induce population growth that would increase demand for recreational facilities. There would be no deterioration of recreational facilities (including the Preserve) due to implementation of the program-level activities. Alternatively, the implementation of program-level activities would improve the overall condition of the Preserve

through restoration and replanting of oak woodlands, the reintroduction of grazing livestock, and the application of prescribed burns and propane-flaming activities. There would be *no impact*.

5.16 Transportation and Traffic

5.16.1 Background

Local access to the Preserve is provided from the southwest via Nuns Canyon Road. SR-12 is located west of the project site and provides regional access to the project site.

5.16.3 Environmental Checklist and Discussion

TRANSPORTATION & TRAFFIC Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	❑	❑	☑	❑
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards established by the county congestion management agency for designated roads and highways?	❑	❑	☑	❑
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	❑	❑	❑	☑
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	❑	❑	❑	☑
e) Result in inadequate emergency access?	❑	❑	❑	☑
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a., b. Implementation of the Resource Management Plan project-level activities would not induce population growth on the project site or in its vicinity such that new vehicle trips would be

generated. In addition, the proposed project would not construct any new roads or infrastructure that could support future development. However, several project-level activities could require the use of construction haul trucks and would temporarily increase the number of vehicles accessing the project site, and implementation of the erosion and sedimentation control infrastructure (a project-level activity) could result in temporary roadway closures on the project site. However, implementation of project-level activities would not conflict with applicable transportation plans, congestion management program, policies, or ordinances or result in congestion on Nunn's Canyon Road and SR-12. The impact would be *less than significant.*

c. Implementation of the project-level activities would not result in the construction of permanent structures and would have no effect on air traffic patterns and existing air traffic safety. There would be *no impact.*

d.-f. Implementation of the project-level activities would not result in the construction of roads or infrastructure. Project-level activities including the felling of diseased and dying oak trees and the girdling of invasive Douglas fir trees would be carried out by a professional tree service company. A certified professional would be responsible for operating the tree removal equipment (e.g., feller buncher, chainsaw, and/or wood chipper). There would be *no impact.*

Project-level activities would not adversely impact the nearby roadways. All project-level activities would take place on the project site. Emergency access to nearby residences as well as public transit, bicycle, and pedestrian facilities would not be impeded by implementation of the project-level activities. There would be *no impact.*

Program Level Impacts

a., b. Implementation of program-level activities would not conflict with applicable transportation plans, congestion management plan, policies, or ordinances. Due to the nature of the program - level activities, the number of vehicle trips per day from daily construction traffic would be low. The impact would be *less than significant.*

c. Implementation of the program-level activities would not result in the construction of permanent structures and would have no effect on air traffic patterns and existing air traffic safety. There would be *no impact.*

d.-f. Implementation of the program-level activities would not involve the construction or redesign of roadways. Program-level activities including prescribed burns and propane-flaming activities involve risk and could become hazardous if not properly controlled. These program-level activities would be carried out by fire experts and designated officials. The program-level activities would not adversely impact emergency access to the surrounding community, or the existing public transit, bicycle, and pedestrian facilities. There would be *no impact.*

5.17 Utilities and Service Systems

5.17.1 Background

The project site is a 1,285-acre Open Space Preserve. There are no existing buildings on the project site or utility infrastructure currently in use.

5.17.2 Environmental Checklist and Discussion

UTILITIES & SERVICE SYSTEMS Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☑
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments?	☐	☐	☐	☑
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☑

DISCUSSION:

Project Level Impacts

a.-e. Project-level activities included in the Resource Management Plan would not generate any wastewater or require access to local water facilities. Therefore, implementation of the project-

level activities would not result in any exceedances at a wastewater facility or exceed the North Coast Regional Water Quality Control Board (RWQCB) wastewater requirements. No new wastewater or water facilities would be required to serve the project site. In addition, the project-level activities would not increase impervious surfaces or stormwater runoff on the Preserve. Stormwater drainage facilities would not be installed on the project site as stormwater would either percolate into the ground, runoff the project site, or evaporate. Therefore, there would be *no impact* to wastewater, water, or stormwater facilities.

f., g. Implementation of the project-level activities including the removal of invasive plant species (e.g., cheat grass, French broom, purple pampas grass, sweet fennel, and Himalayan blackberry), the felling of diseased and dying oaks trees, the pruning of overgrown oak trees, and the girdling of Douglas fir trees would create green and wood waste.

The invasive vegetation would be contained onsite in a controlled pile to prevent dispersion and germination by wind or other factors. The vegetation would then be left to go through the processes of natural decay.

The boles of the diseased and dying felled oak trees would be cut into small pieces and branches and leaves chipped if possible, then left scattered in a sunny, open location on site, in order to dry out the wood. Rapid drying of the woody material is important to eliminate the presence of the Sudden Oak Death (SOD) pathogen. Felled California bay trees would be similarly cut into small sections and/or chipped, and then scattered in a localized, dry, sunny location. Large Douglas fir saplings and poles able to survive prescribed burns (a program level activity) would be felled, and still larger mature Douglas fir will be girdled. The Douglas fir trees will be chipped and scattered across the project site and allowed to naturally decompose and improve soil conditions. No trimmed woody material would be transported to a landfill. The impact to solid waste facilities would be *less than significant.*

Disposal of green and wood waste from the project-level activities would comply with federal, state, and local regulations. Therefore, there would be *no impact* to solid waste regulations.

Program Level Impacts

a.-e. Program-level activities included in the Resource Management Plan would not generate any wastewater or require access to local water facilities. Therefore, implementation of the program-level activities would not result in any exceedances at a wastewater facility or exceed the North Coast Regional Water Quality Control Board (RWQCB) wastewater requirements. Water resources located on the project site would be diverted to provide water to livestock that is reintroduced to the project site. As such, no new wastewater or water facilities would be required to serve the project site. In addition, the program-level activities would not increase impervious surfaces or stormwater runoff on the Preserve. Stormwater drainage facilities would not be installed on the project site as stormwater would either percolate into the ground, runoff the project site, or evaporate. Therefore, there would be *no impact* to wastewater, water, or stormwater facilities.

f., g. Implementation of the program-level activities would not result in the creation of a substantial amount of green and wood waste. The impact to solid waste facilities would be *less than significant.*

Disposal of green and wood waste from the program-level activities would comply with federal, state, and local regulations. Therefore, there would be *no impact* to solid waste regulations.

5.18 Mandatory Findings of Significance

MANDATORY FINDINGS OF SIGNIFICANCE Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	❑	☑	❑	❑
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	❑	❑	❑	☑
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	❑	❑	❑	☑

DISCUSSION:

Project Level Impacts

a. Project-level activities include the removal of invasive plant species including Douglas fir trees that are encroaching onto oak woodlands, the installation of erosion and sedimentation control infrastructure, the pruning of overgrown oak trees, the establishment of a shaded fuelbreak system, and removal of dying or diseased oak trees. As discussed above in **Sections 5.4** and **5.5, Mitigation Measures BIO-1** through **BIO-7** would reduce project-level impacts to the existing biological resources to a *less than significant* level. Further, implementation of **Mitigation Measures CUL-1** through **CUL-5** would reduce impacts to cultural resources to a *less than significant* level. The project would not degrade the quality of the environment.

b. Implementation of the project-level activities would not result in cumulative impacts. No structures are proposed under the project-level activities and the proposed project would not directly or indirectly induce population growth. Although construction vehicles would need to access the project site, the number of additional vehicle trips would not be high enough to result in impacts which are cumulatively considerable. Therefore *no significant cumulative impacts* from the proposed project have been identified.

c. Project-level activities would not directly or indirectly cause substantial adverse effects on human beings.

Program Level Impacts

a. Program-level activities include the replanting and restoration of oak woodlands, the reintroduction of grazing livestock, and the application of prescribed burns and propane-flaming activities. With implementation of **Mitigation Measures BIO-8** through **BIO-10,** program-level activities would not adversely impact the existing native habitats, wildlife, or plant species on the Preserve. Prescribe burns and propane-flaming activities would potentially damage the existing historic-era artifacts and homesteads located on the Preserve. However with implementation of **Mitigation Measure CUL-6,** impacts would be reduced to a *less than significant* level. The project would not degrade the quality of the environment.

b. Implementation of the program-level activities would not result in cumulative impacts. No structures are proposed under the program-level activities and the proposed project would not directly or indirectly induce population growth. Although construction vehicles would need to access the project site, the additional vehicle trips would not result in impacts which are cumulatively considerable. Therefore *no significant cumulative impacts* from the proposed project have been identified.

c. Program-level activities would not directly or indirectly cause substantial adverse effects on human beings.

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7. REPORT PREPARERS

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APPENDIX A

Proposed Mitigated Negative Declaration

PROPOSED MITIGATED NEGATIVE DECLARATION

Lead Agency: Sonoma County Agricultural Preservation and Open Space District

Project Proponent: Sonoma County Agricultural Preservation and Open Space District

Project Location: The 1,285-acre Preserve is located in southeastern Sonoma County, approximately 7 miles north of the town of Sonoma and 10 miles southeast of the city of Santa Rosa.

Project Description: In 2004, the Sonoma County Agricultural Preservation and Open Space District purchased 1,285 acres of a 1,600-acre property from Beltane Incorporated. Soon after the purchase, the District renamed the property Calabazas Creek Open Space Preserve and has been managing it as an open space preserve since then. In order to manage, enhance and protect the resources within the Preserve, the District proposes to adopt and implement the Calabazas Creek Open Space Preserve Resource Management Plan. The Resource Management Plan includes a variety of management activities that would be implemented by the District to protect and enhance the resources on the Preserve.

Mitigation Measures: All of the mitigation measures are applicable to and will be incorporated at project or program levels.

Mitigation Measure AIR-1:

The construction contractor(s) shall implement the following BMPs during project construction:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible and feasible. Building pads shall be laid as soon as possible and feasible after grading, unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off

when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measure BIO-1:

A qualified biologist will conduct a pre-construction survey of the areas that will be disturbed in order to control erosion and sedimentation and invasive plant species. If substantial stands of special-status plants are detected, the area will be fenced with environmentally sensitive area (ESA) fencing and will not be disturbed. If Napa false indigo or narrow-flowered California brodiaea are identified, they shall be relocated if necessary.

Mitigation Measure BIO-2:

Erosion control projects that could affect the bed and bank of Calabazas Creek shall be completed during the dry season and sediment control measures shall be implemented to ensure that sediment from the work sites is not discharged into the creek.

Mitigation Measure BIO-3:

A qualified biologist shall survey the area to be disturbed during erosion control work and shall guide the installation of drift fences to ensure that the amphibian species do not enter the work area.

Mitigation Measure BIO-4:

Qualified biologists shall conduct bullfrog hunting during control activities and targeted, close-range hunting methods such as gigging or air gun shall be used.

Mitigation Measure BIO-5:

Control activities for invasive wild turkeys should be conducted during the non-breeding season (between September 1 and January 30) for special-status birds. Lead bullets should not be utilized for invasive species control activities.

Mitigation Measure BIO-6:

Before commencing any activities that would place fill in jurisdictional waters or work within a stream, the District will obtain appropriate federal and state permits and comply with the provisions of the permits.

Mitigation Measure BIO-7:

If feasible, all project-related activities, including (but not limited to) tree and shrub removal, other vegetation clearing, grading, or other ground-disturbing and noise-generating activities shall be conducted during the non-breeding season (between August 16 and February 14[1]) for special-status and non-special-status migratory birds and raptors. If any activities are scheduled to occur during the breeding season, a qualified avian biologist, with knowledge of the species, shall be retained to conduct focused nesting surveys within 15 days of the start of ground-disturbing or noise-generating construction activities within the appropriate habitat.

Specifically, tree, shrub, and ground nesting surveys for special-status birds (including Northern spotted owl, American peregrine falcon, white-tailed kite, and Nuttall's woodpecker), and other migratory birds and raptors shall be conducted before any disturbances occur in or near suitable nesting habitat within 500 feet of the construction work area between August 16 and February 14.

If a site has been subjected to protocol-level surveys and non-nesting is confirmed (therefore a non-nesting year), potentially disruptive activity can begin by July 10th. However, non-nesting must be documented by 2 consecutive years of protocol-level surveys.

If an active nest is located on or within 500 feet of the project area, the California Department of Fish and Wildlife (CDFW) shall be consulted to

[1] The non-nesting period for NSO is September 1 thru February 1.

determine an appropriate no-disturbance buffer around the nest until the nest is no longer active and the young have fledged or the nest has failed. No disturbance shall be allowed within this exclusion area without consulting with the CDFW. A wildlife biologist shall monitor the nest site during construction at least once a week, or at a frequency determined by the CDFW, to ensure that the nest site is not disturbed and the buffer is maintained.

Mitigation Measure BIO-8:

A qualified biologist will conduct a pre-project survey of the areas that will be disturbed by any of the program-level activities. If special-status plants are detected, the area will be fenced with environmentally sensitive area (ESA) fencing and will not be disturbed. Similarly, areas with substantial stands of special-status plant species will be identified and excluded from the burn areas.

Mitigation Measure BIO-9:

To reduce impacts from erosion, (1) burns shall be conducted during the dry season, and (2) measures including installation of straw wattles across steep slopes, silt fencing installed near streams and creeks, native seed broadcasted across exposed soils, and jute netting installed in areas vulnerable to erosion shall accompany prescribed burns in less vegetated areas.

Mitigation Measure BIO-10:

If feasible, all program-related activities including (but not limited to) tree and shrub removal, other vegetation clearing, propane-flaming activities, and prescribed burns shall be conducted during the non-breeding season (between August 16 and February 14) for special-status and non-special-status migratory birds and raptors. If any activities are scheduled to occur during the breeding season, a qualified avian biologist, with knowledge of the species, shall be retained to conduct focused nesting surveys within 15 days of the start of ground-disturbing or construction activities and within the appropriate habitat.

Specifically, tree, shrub, and ground nesting surveys for special-status birds (including Northern spotted owl, American peregrine falcon, white-tailed kite, and Nuttall's woodpecker), and other migratory birds and raptors shall be conducted before any disturbances occur in or near suitable nesting habitat within 500 feet of the work area between February 15 and August 15.

If an active nest is located on or within 500 feet of the work area, the California Department of Fish and Wildlife (CDFW) shall be consulted to determine an appropriate no-disturbance buffer around the nest until the

nest is no longer active and the young have fledged. No disturbance shall be allowed within this exclusion area without consulting with the CDFW. A wildlife biologist shall monitor the nest site at least once a week, or at a frequency determined by the CDFW, to ensure that the nest site is not disturbed and the buffer is maintained.

CDFW shall be consulted before any prescribed burns are conducted to obtain guidance on minimizing impacts on special-status species.

Mitigation Measure CUL-1:

Prior to development within erosion control sites and removal of invasive species, if a historic-era site is near the work site, the historic-era site shall be examined to determine whether the site is located within or outside of the area of disturbance. If the historic-era site is outside the area of disturbance or can be avoided, ESA fencing shall be placed around the site and the area shall not be disturbed.

If the historic-era site is located within the area of disturbance and cannot be avoided by construction or other project activities, a qualified archaeologist shall be retained to carry out test investigations to determine the potential of the site to yield important information. The resource will be subject to archaeological and/or historic research, as appropriate, in order to recover the site's important scientific data and realize its historical significance. This work may include archaeological data recovery, archival research, and oral interviews (as appropriate), and will be documented in a technical report to be filed at the Northwest Information Center of the California Historical Resources Information System. Sites of exceptional public interest may also be documented in interpretive products such as web pages, displays, and pamphlets.

Mitigation Measure CUL-2:

To address impacts to the multi-component archaeological site, **Mitigation Measure CUL-1** shall be implemented**.**

Mitigation Measure CUL-3:

Prior to any construction or ground disturbing activities, construction personnel shall be informed of the potential for encountering significant prehistoric or historic-era cultural resources. All construction personnel shall be informed of the need to stop work if prehistoric or historic-era cultural materials are encountered during construction or other project activities. All work in the immediate vicinity will halt until a qualified archaeologist can evaluate the find in consultation with the affiliated Native American tribe and make recommendations to the District. Construction personnel will also be informed of the requirements that unauthorized collection resources are prohibited.

Mitigation Measure CUL-4:

Prior to any construction or ground disturbing activities, construction personnel will be informed of the potential for encountering significant paleontological. All construction personnel will be informed of the need to stop work in the vicinity of a potential discovery until a qualified paleontologist has been provided the opportunity to assess the significance of the find and implement appropriate measures to protect, scientifically remove, or otherwise treat the find. Construction personnel will also be informed that all resources are the property of the District and that unauthorized collection of resources is prohibited.

Mitigation Measure CUL-5:

The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the project site shall comply with applicable State laws. This shall include immediate notification of the District and Sonoma County coroner.

In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission is required, who shall appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98).

The District and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The California Public Resources Code allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow Public Resources Code Section 5097.98(b) which states

that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

Mitigation Measure CUL-6:

Prior to the use of prescribed burns and/or propane-flaming activities, a qualified archaeologist shall confirm and mark on the ground the location of all archaeological resources in the eradication area. The location of these cultural resources would be disclosed to the wildland fire officials to ensure prescribed burns and/or propane-flaming and support activities are not permitted in these areas.

Determination: In accordance with CEQA, a Draft Initial Study has been prepared by Sonoma County Agricultural Preservation and Open Space District that evaluates the environmental effects of the proposed project. On the basis of the project's Draft Initial Study, the District found that the proposed project could not have a significant effect on the environment.

Public Review: In accordance with Section 15073 of the *State CEQA Guidelines*, the Draft Initial Study for the project will be circulated for public and agency review from June 20, 2016 to July 20, 2016. Comments received during the review period and responses to these comments will be presented in the final Initial Study.

APPENDIX B

Air Quality and Greenhouse Gas Emissions Calculations

Calabazas Creek OS Preserve

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.00	Acre	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	2			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Use - 3.84 miles of roadway improvements, 12 foot wide road, 5.59 acres, rounded up to 10 acres to encapsulate additional work

Construction Phase - Construction Phase - January through February 2016 (37 days at 6 hours per day)

Off-road Equipment - Data from Preserve Road Assessment

Trips and VMT - Estimated trips

On-road Fugitive Dust - Partially Paved

Grading - Grading - ~10 acres
1,050 cubic yards- Excavated volume includes material permanently removed and stored as well as material excavated and reused for backfilling upgraded stream crossings.

Road Dust - OS

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	37.00
tblGrading	AcresOfGrading	0.00	10.00
tblGrading	MaterialExported	0.00	985.00
tblLandUse	LandUseSquareFeet	0.00	435,600.00
tblLandUse	LotAcreage	0.00	10.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	5.90
tblOnRoadDust	HaulingPercentPave	100.00	10.00
tblOnRoadDust	WorkerPercentPave	100.00	50.00
tblProjectCharacteristics	OperationalYear	2014	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	100	0
tblTripsAndVMT	HaulingTripNumber	123.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0245	0.2697	0.2006	2.4000e-004	1.5899	0.0122	1.6020	0.1958	0.0112	0.2070	0.0000	22.1487	22.1487	6.2000e-003	0.0000	22.2790
Total	**0.0245**	**0.2697**	**0.2006**	**2.4000e-004**	**1.5899**	**0.0122**	**1.6020**	**0.1958**	**0.0112**	**0.2070**	**0.0000**	**22.1487**	**22.1487**	**6.2000e-003**	**0.0000**	**22.2790**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0245	0.2697	0.2006	2.4000e-004	1.5899	0.0122	1.6020	0.1958	0.0112	0.2070	0.0000	22.1487	22.1487	6.2000e-003	0.0000	22.2790
Total	**0.0245**	**0.2697**	**0.2006**	**2.4000e-004**	**1.5899**	**0.0122**	**1.6020**	**0.1958**	**0.0112**	**0.2070**	**0.0000**	**22.1487**	**22.1487**	**6.2000e-003**	**0.0000**	**22.2790**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.9284	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9284**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.9284	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9284**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2016	2/22/2016	5	37	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	3.20	162	0.38
Grading	Graders	0	8.00	174	0.41
Grading	Off-Highway Trucks	2	0.90	400	0.38
Grading	Rubber Tired Dozers	1	5.90	255	0.40
Grading	Scrapers	0	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	4	10.00	0.00	10.00	12.40	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0875	0.0000	0.0875	0.0457	0.0000	0.0457	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.2672	0.1895	2.2000e-004		0.0121	0.0121		0.0112	0.0112	0.0000	20.2828	20.2828	6.1200e-003	0.0000	20.4113
Total	**0.0237**	**0.2672**	**0.1895**	**2.2000e-004**	**0.0875**	**0.0121**	**0.0996**	**0.0457**	**0.0112**	**0.0569**	**0.0000**	**20.2828**	**20.2828**	**6.1200e-003**	**0.0000**	**20.4113**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2000e-004	1.5000e-003	1.2900e-003	0.0000	0.1093	2.0000e-005	0.1093	0.0109	2.0000e-005	0.0109	0.0000	0.3430	0.3430	0.0000	0.0000	0.3431
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	1.0200e-003	9.8500e-003	2.0000e-005	1.3931	1.0000e-005	1.3931	0.1392	1.0000e-005	0.1392	0.0000	1.5229	1.5229	8.0000e-005	0.0000	1.5247
Total	**8.2000e-004**	**2.5200e-003**	**0.0111**	**2.0000e-005**	**1.5024**	**3.0000e-005**	**1.5024**	**0.1501**	**3.0000e-005**	**0.1501**	**0.0000**	**1.8659**	**1.8659**	**8.0000e-005**	**0.0000**	**1.8677**

3.2 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0875	0.0000	0.0875	0.0457	0.0000	0.0457	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.2672	0.1895	2.2000e-004		0.0121	0.0121		0.0112	0.0112	0.0000	20.2828	20.2828	6.1200e-003	0.0000	20.4113
Total	**0.0237**	**0.2672**	**0.1895**	**2.2000e-004**	**0.0875**	**0.0121**	**0.0996**	**0.0457**	**0.0112**	**0.0569**	**0.0000**	**20.2828**	**20.2828**	**6.1200e-003**	**0.0000**	**20.4113**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2000e-004	1.5000e-003	1.2900e-003	0.0000	0.1093	2.0000e-005	0.1093	0.0109	2.0000e-005	0.0109	0.0000	0.3430	0.3430	0.0000	0.0000	0.3431
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	1.0200e-003	9.8500e-003	2.0000e-005	1.3931	1.0000e-005	1.3931	0.1392	1.0000e-005	0.1392	0.0000	1.5229	1.5229	8.0000e-005	0.0000	1.5247
Total	**8.2000e-004**	**2.5200e-003**	**0.0111**	**2.0000e-005**	**1.5024**	**3.0000e-005**	**1.5024**	**0.1501**	**3.0000e-005**	**0.1501**	**0.0000**	**1.8659**	**1.8659**	**8.0000e-005**	**0.0000**	**1.8677**

4.0 Operational Detail - Mobile

APPENDIX C

Erosion Control Sites

Table C-1
Erosion Control Sites

Erosion Control Site #	Road Name	Problem	Recommended treatments
3	North Road	Stream crossing	1. Excavate stored material above crossing and define a 3' wide channel with 2:1 sideslopes at natural grade from oak to inboard road. 2. Install an armored fill crossing using 10 yd3 of 0.5' -1.5' riprap (okay to reuse riprap at the site). 3. Outslope road and remove ditch for 1,960' up left road. 4. Install 7 rolling dips on left road. 5. Store spoils locally.
4	North Road	Stream crossing	1. Install a 10 yd3 armored fill crossing using of 0.5' -1.5' riprap. 2. Outslope road and fill ditch for 800' up left road. 3. Install 5 rolling dips up left road.
5	North Road	Stream crossing	1. Excavate TOP to BOT and replace existing culvert with a 24" x 40' long culvert set at base of fill at natural channel grade. 2. Install a critical dip at the left hinge. 3. Outslope road and fill ditch for 800' along 1,600' of right road. 4. Install 8 rolling dips on right approach.
6	North Road	Stream crossing	1. Excavate TOP to BOT and replace culvert with a 24" x 40' long culvert set at base of fill at natural channel grade. 2. Outslope road and fill ditch for 500' of right road. 3. Outslope 220' of throughcut left approach and breach berm 2 times to right. (Going downhill to crossing.) 4. Install 4 rolling dips up right road.
7	North Road	Stream crossing	1. Install a 15 yd3 armored fill crossing using 0.5' - 2' riprap. 2. Excavate 40' below outboard road to BOT with a 4' wide channel bottom and 2:1 sideslopes and tie into new armored fill. 3. Outslope road and fill ditch 350' to right and 1,010' to left (breach through berm every 50′ in throughcut area). 4. Install 1 rolling dip on right road and 6 on left road.
8	North Road	Stream crossing	1. Remove existing culvert and install a 10 yd3 armored fill crossing using 0.5'-1.5' riprap. 2. Outslope road and fill ditch 190' up left road. 3. Place 2 yd3 (225 ft2) coarse drain rock on left road.
9	North Road	Stream crossing	1. Remove existing culvert and install a 20 yd3 armored fill crossing using 0.5'-1.5' riprap. 2. Outslope road and fill ditch for 445' on left road. 3. Install 2 rolling dips on left road.
10	North Road	Stream crossing	1. Remove existing culvert and install a 5 yd3 armored fill crossing using 0.5'-1' riprap. 2. Outslope road and fill ditch 330' up right road and 60' of left road. 3. Install 1 rolling dip up right road.

Erosion Control Site #	Road Name	Problem	Recommended treatments
11	North Road	Stream crossing	1. Excavate TOP to BOT and remove existing culvert. 2. Install a ford crossing with 4:1 road approaches and a 7' wide channel bottom. 3. Outslope road and fill ditch 725' up left road (mostly berm removal). 4. Install 4 rolling dips to the left.
12	North Road	Stream crossing	1. Excavate TOP to BOT, remove existing culvert and install a 30 yd3 armored fill crossing using 0.5' - 2' riprap. 2. Install 1 rolling dip up right road.
13	North Road	Stream crossing	1. Remove existing culvert and install a 5 yd3 armored fill crossing using 0.5'-1' riprap. 2. Outslope and remove ditch for 430' of left road and 95' of right road. 3. Install 2 rolling dips to left road.
14	North Road	Stream crossing	1. Excavate TOP to BOT and replace with a 54" x 50' long culvert set at the base of fill at the natural channel grade (move culvert inlet up near tree to better direct flow). 2. Rebuild outboard fillslope 2:1 and inboard fillslope 1.5:1 and rock with 10 yd3 of 1'-2' riprap. 3. Install a trash rack 4.5' above inlet. 4. Install 4 rolling dips to left road just above crossing and install 1 rolling dip up right road. 5. Outslope and breach berm every 75' on the upper 465' of the left approach.
14*	North Road	Stream crossing	1. Excavate TOP to BOT and replace with a 54" x 50' long culvert set at the base of fill at the natural channel grade (move culvert inlet up near tree to better direct flow). 2. Rebuild outboard fillslope 2:1 and inboard fillslope 1.5:1 and rock with 10 yd3 of 1'-2' riprap. 3. Install a trash rack 4.5' above inlet. 4. Install 4 rolling dips to left road just above crossing and install 1 rolling dip up right road. 5. Outslope and breach berm every 75' on the upper 465' of the left approach.
15	North Road	Bank erosion	1. Excavate outboard fillslope 20' wide x 2' deep (average) x 5' long and remove 12' long log from the stream channel. 2. Install 10 yd3 of 0.5'- 2'- riprap 20' wide x 5' tall to buttress bend in stream (maintain 6' wide channel). 3. Outslope road and fill ditch 1,370' of left road. 4. Install 7 rolling dips on left road. 5. Install 1 rolling dip on skid near bend.
16	North Road	Ditch relief culvert	1. Outslope and remove ditch 195' up left road. 2. Remove ditch relief culvert and replace with a rolling dip. 3. Add one more rolling dip up the left road.
17	North Road	Ditch relief culvert	1. Outslope road and fill ditch 330' up left approach. 2. Remove ditch relief culvert and install a rolling dip at the site. 3. Install 1 rolling dips up left road.

Erosion Control Site #	Road Name	Problem	Recommended treatments
18	North Road	Stream crossing	1. Install a 10 yd3 armored fill crossing using 0.5' - 1.5' riprap. 2. Install 2 rolling dips up left road. 3. Oustlope road and fill ditch 220' left road.
19	North Road	Stream crossing	1. Install a 30 yd3 armored fill crossing using 0.5' - 3' riprap. 2. Outslope road and fill ditch for 90' right road and 350' left road. 3. Install 1 rolling dip on left road.
22	Nunns' Canyon Road	Gully	1. Install 15 cross road drains on left road.
23	Nunns' Canyon Road	Landslide	1. Excavate unstable fill and cutbank slide debris on road 2. surface (50' wide x 3' deep x 15' long). 3. Endhaul 400' up road and store on low gradient portion of meadow. 4. Install 2 cross road drains up left road.
24	Nunns' Canyon Road	Stream crossing	1. Excavate TOP to BOT with 8' wide channel bottom with 2:1 sideslopes. 2. Decommission outslope immediate 200' of left road that heads to grassland. 3. Install 2 cross road drains up left road that heads to forested streamside road.
25	Nunns' Canyon Road	Ditch relief culvert	1. Remove existing ditch relief culvert and layback fill 2:1 to decommission road segment. 2. Keep new road alignment 15' above existing culvert for seasonal drive use only. 3. Install 1 rolling dip left road.
26	Nunns' Canyon Road	Stream crossing	1. Install a 10 yd3 armored fill crossing using 0.5' -1.5' riprap. 2. Use soil from throughcut to rebuild fill if necessary. 3. Install 2 rolling dips on left road.
27*	Nunns' Canyon Road	Stream crossing	1. Install a 10 yd^3 armored fill crossing using 0.5' -1.5' riprap. 2. Remove woody debris from site. 3. Outslope road and fill ditch for 180' of right road.
28*	Nunns' Canyon Road	Road drainage discharge point	No recommended treatments if seasonal road use continues.
29*	Nunns' Canyon Road	Stream crossing	1. Install a 15 yd^3 armored fill crossing using 0.5 '- 2' riprap. 2. Outslope road and fill ditch for 430' on left road and 105' on right road. 3. Install 2 rolling dips on left road.
30*	Nunns' Canyon Road	Stream crossing	1. Excavate crossing and remove existing culvert. 2. Establish ford crossing with 3. 4:1 road approaches and a minimum 10' channel bottom. Dewater stream prior to work. 4. Install a 50 yd^3 grade control structure 45' wide x 15' long. 5. Endhaul spoils to meadow 200' up right road. 6. Outslope road and fill ditch on upper 75' of right road. 7. Install 1 rolling dip on right road.

Erosion Control Site #	Road Name	Problem	Recommended treatments
31*	Nunns' Canyon Road	Stream crossing	1. Install a 15 yd^3 armored fill crossing using 0.5'-1.5' riprap. 2. Reduce road width to 15' at crossing and use spoils to bury ditch down to Site 30. 3. Outslope road and fill ditch for 105' to left.
32*	Nunns' Canyon Road	Stream crossing	1. Install a 10 yd^3 armored fill crossing using 0.5' - 1.5' riprap. 2. Outslope road and fill ditch for 120' on left road.
32.1*	Nunns' Canyon Road	Stream crossing	1. Install a rolling dip at the site to drain the small stream. 2. Rock the trough of the dip with 5 yd3 of 3" drain rock.
33*	Nunns' Canyon Road	Stream crossing	1. Install a 15 yd^3 armored fill crossing using 0.5' - 1.5' riprap. 2. Outslope road and fill ditch for 700' of right road. 3. Install 3 rolling dips along right road.
33.1*	Nunns' Canyon Road	Stream crossing	1. Install a 5 yd^3 armored fill crossing using 0.5'-1' riprap. 2. Outslope road and fill ditch for 200' on right road. 3. Install 1 rolling dip on right road.
34*	Nunns' Canyon Road	Gully	1. Outslope road and fill ditch 550' right road. 2. Install 4 rolling dips to the right road.
37.2*	Nunns' Canyon Road	Bank erosion	1. Excavate outboard fill 60' wide x 3' deep x 30' long with concavity and no more than 2' into road. 2. Endhaul spoils.
41*	Nunns' Canyon Road	Road drainage discharge point	1. Outslope road and fill ditch for 350' on right road and 40' on left road. 2. Install 2 rolling dips on right road.
42*	Nunns' Canyon Road	Stream crossing	1. Pull remaining fill from right slope above ford (50 yd^3). 2. Establish 4' wide bottom channel at pulled fill location for small channel coming off of the slope. 3. Install 1 rolling dip up left road.
43*	Nunns' Canyon Road	Stream crossing	1. Install a 5 yd^3 armored fill crossing using 0.5' - 1.5' riprap. 2. Outslope and fill any ditch for 220' of left road. 3. Install 1 rolling dip on left road.
44*	Nunns' Canyon Road	Road drainage discharge point	1. Install 3 rolling dips on left and breach the berm at their outlets. 2. Outslope road and fill ditch for 600' to grade road surface and drain towards creek but keep existing berm between rolling dips on 300' of streamside road near gate.

Notes:
Erosion sites with an asterisk (*) represent sites that are near known cultural resources.