

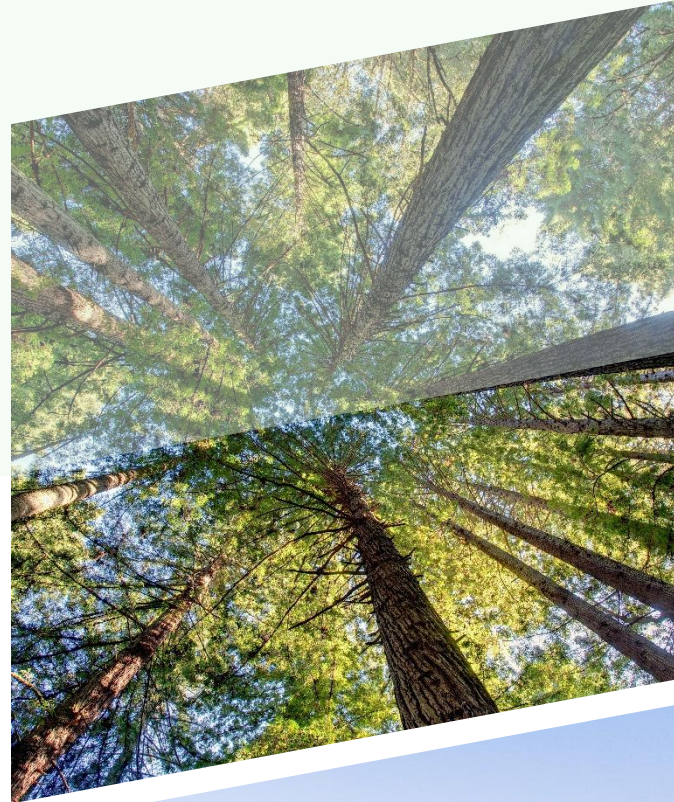
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Purisima Creek Redwoods Comprehensive Use and Management Plan

Prepared by:

Midpeninsula Regional Open Space District

October 2026



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Comprehensive Use and Management Plan
Purissima Creek Redwoods Open Space Preserve

Contents

1.0	Executive Summary.....	1
2.0	Introductions and Background.....	3
2.1	Midpen District.....	3
2.1.1	Mission	3
2.1.2	Preserve Background.....	3
2.2	Plan Purpose	4
3.0	Preserve Overview/Existing Conditions	5
3.1	Natural Resource Management.....	5
3.1.1	Vegetation	5
3.1.2	Wildlife	6
3.1.3	Agriculture and Grazing History and Presence.....	6
3.1.4	Aquatic Resources	7
3.1.5	Wildfire Resiliency	7
3.1.6	Conservation Management Unit.....	7
3.2	Tribal Cultural, Historic and Cultural Resource Management	7
3.2.1	Native American Resources.....	7
3.2.2	Historic and Cultural Resources.....	8
3.2.3	Other Past Land Uses	8
3.3	Aesthetic Resources.....	8
3.3.1	Viewsheds	8
3.3.2	Scenic Corridor	8
3.4	Public Access, Recreation, and Interpretation.....	9
3.4.1	Public Use.....	9
3.4.2	Trails	9
3.4.3	Parking and Trailheads	10
3.4.4	Site Amenities.....	10
3.4.5	Signage	11
3.4.6	Interpretation and Education	11
3.5	Operations and Maintenance	11
3.5.1	Volunteer Program	11

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

3.5.2	Gates and Fencing	11
3.5.3	Residences.....	12
3.5.4	Roads and Trails.....	12
3.5.5	Safety and Security.....	12
3.5.6	Utilities	12
3.5.7	Environmental Hazards	13
3.5.8	Legal Arrangements.....	13
3.5.9	Partnerships	13
4.0	Planning Process, Preserve Vision and Goals.....	15
4.1	Planning Process.....	15
4.1.1	Public Engagement and Feedback.....	15
4.1.2	New Restoration and Public Access Projects.....	17
4.2	Preserve Vision and Goals	20
5.0	Comprehensive Use and Management Plan Implementation Actions	22
5.1	Natural Resource Management.....	22
5.2	Historic, Cultural, and Tribal Cultural Resource Management	23
5.3	Aesthetic Resources.....	23
5.4	Public Access.....	23
5.5	Operations and Maintenance	24
6.0	Financial Implications.....	55
7.0	Phasing and Priority Plan	57
8.0	Next Steps	60
9.0	References.....	61
10.0	Glossary.....	62

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

LIST OF TABLES

Table 1. Existing Trails within Purisima.....	9
Table 2. Purisima Public Engagement Activities.....	15
Table 3. Implementation Actions	25
Table 4. Summary of Costs for Recommended Actions at Purisima	55
Table 5. Timelines for New Restoration and Public Access Projects	60

LIST OF FIGURES

1. Regional Location Map
2. Existing Public Access
3. New Project Sites
4. Natural Resources
5. Future Public Access Map
6. Operations and Maintenance
7. Regional Trails and Trail Connections
8. Coastal Development Permit Map

LIST OF GRAPHICS

1. Highway 35 Multi-use Crossing and Parking Expansion Project Illustrative
2. Verde Road Trailhead and Parking Area Project Illustrative

LIST OF APPENDICES

- A. Compiled Feedback for New Public Access Projects
- B. Highway 35 Multi-use Crossing and Parking Expansion Feasibility Study
- C. Purisima-to-the-Sea Parking and Trails Feasibility Study
- D. Purisima Multimodal Access Implementation Report
- E. Irish Ridge Habitat Restoration Plan
- F. Purisima Consolidated Use and Management Plan
- G. CEQA Coverage for the Implementation Action Table

LIST OF ACRONYMS

ADA	Americans with Disabilities Act
CalFire	California Department of Forestry and Fire Protection
CalGEM	California Geologic Energy Management Division
CalTrans	California Department of Transportation

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

CalWater	California Water Service
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
CG	Conservation Grazing
CSP	California State Parks
CUMP	Comprehensive Use and Management Plan
EDRR	Early Detection Rapid Response
GGNRA	Golden Gate National Recreation Area
HMB	City of Half Moon Bay
IPM	Integrated Pest Management
NPS	National Park Service
NRCS	Natural Resources Conservation Service
PAD	Planned Agricultural District
POST	Peninsula Open Space Trust
PUMP	Preliminary Use and Management Plan
RCD	San Mateo Resource Conservation District
SamTrans	San Mateo County Transit District
SCC	County of Santa Clara
SCMSN	Santa Cruz Mountain Stewardship Network
SFPUC	San Francisco Public Utilities Commission
SMC	County of San Mateo
TDM	Transportation Demand Management
UC	University of California
UCCE	University of California Cooperative Extension
WFRP	Wildland Fire Resiliency Program

1.0 EXECUTIVE SUMMARY

This Comprehensive Use and Management Plan (CUMP, Plan) has been prepared for the 5,400-acre Purisima Creek Redwoods Open Space Preserve (Purisima, Preserve), owned and managed by the Midpeninsula Regional Open Space District (Midpen, District). The Purisima CUMP includes goals and recommendations for the long-term management of natural, historic, aesthetic, and cultural resources and the inclusion of ecologically-sensitive public enjoyment and education opportunities in a manner that is protective of sensitive natural resources and both financially and operationally sustainable. The Plan provides a wholistic approach to use and management of the Preserve by consolidating ongoing programs and operations with recommendations for new actions, including new restoration efforts and new public access projects. The Plan was informed by extensive public engagement, resource analysis, and technical studies completed between 2021-2025 for new restoration and public access projects proposed at Purisima. These new projects include the restoration of redwoods forests and new public trails that will open over 2,200 additional acres of the Preserve to visitors.

Following **Section 1. Executive Summary**, the CUMP is organized into the following sections:

Section 2. Introduction: This section provides general background information on the District, Midpen's mission, and the history of the Preserve. This section further discusses the purpose of developing a comprehensive use and management plan for Purisima.

Section 3. Preserve Overview/Existing Conditions: This section provides detailed information about the resources, ongoing programs, and uses at the Preserve, organized by topic area: Natural Resources, Cultural and Historic Resources, Aesthetic Resources, Public Access, and Operations and Maintenance.

Section 4. Planning Process, Preserve Vision and Goals: This section provides an overview of the planning process to date for key new actions, including a description of the new restoration and public access projects, their public engagement processes, and individual project goals. In addition, this section details the goals for the Preserve and the CUMP.

Section 5. CUMP Implementation Actions: This section includes a brief narrative and context for the use and management actions proposed in the detailed implementation action table and information about how implementation details were developed.

Section 6. Financial Implications: This section summarizes the cost estimates provided in the implementation action table to provide a high-level overview by focus area of the costs associated with recommended new actions at Purisima.

Section 7. Phasing and Priority Plan: This section provides a summary of the actions included in the implementation action table by phasing (short to long-term) and priority (high to low) to show the distribution of actions for future implementation.

Section 8. Next Steps: This section provides closure to the document and summarizes forthcoming actions for new projects that will immediately enter the next project phase with approval of the CUMP.

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Additionally, Section 9 lists all references to relevant policies and planning documents discussed in the Plan. Prior feasibility studies that have been completed for the various new projects listed in the CUMP are attached as Appendices.

2.0 INTRODUCTIONS AND BACKGROUND

The Midpeninsula Regional Open Space District (Midpen, District) was established in 1972 through a voter initiative to preserve a greenbelt of open space throughout the Bay Area peninsula in response to rapid urban sprawl and development. The District has preserved over 70,000 acres of open space across 27 preserves throughout the Santa Cruz mountains, from the San Francisco Bay to the Pacific coast. As a local government agency, the District provides free public access to the preserves through trails for hikers, bikers, and equestrians, as well as parking and staging areas, educational opportunities, and docent-led programs. In addition, the District protects and manages these natural, open spaces through habitat restoration, conservation grazing operations, wildland fire management, and regular patrols by District Rangers.

2.1 Midpen District

2.1.1 Mission

The District's mission is twofold, providing direction for the over 70,000 acres of public open space preserved by the District, as well as an expanded mission for those lands located on the San Mateo County Coastside:

Midpen's mission is to acquire and preserve a regional greenbelt of open space land in perpetuity, protect and restore the natural environment, and provide opportunities for ecologically sensitive public enjoyment and education.

On the Coast, Midpen has an expanded mission: to acquire and preserve in perpetuity open space and agricultural land of regional significance, protect and restore the natural environment, preserve rural character, encourage viable agricultural use of land resources, and provide opportunities for ecologically sensitive public enjoyment and education.

2.1.2 Preserve Background

Purisima Creek Redwoods Open Space Preserve (Purisima, Preserve) is located in San Mateo County on the western slopes of the Santa Cruz Mountains between Highway 35 and Highway 1 (see Figure 1). Purisima is comprised of over 5,400 acres and offers 23 miles of public trails with access for hikers, bicyclists, and equestrians (see Figure 2). These trails provide views of the coast from the ridgelines that slope toward the Pacific Ocean.

The Preserve was first established when the District acquired 570 acres of land, including Whittemore Gulch in 1982, and was originally named the Whittemore Gulch Redwoods Open Space Preserve. Initial public access was only available from the Purisima Creek Trailhead at the western edge of the Preserve and subsequently through an easement that provided eastern access to Highway 35 (Skyline Boulevard). By May of 1984, the District had purchased several more adjacent parcels that expanded the Preserve, including the significant purchase of 1,662 acres of land that comprise Purisima Canyon. Following this acquisition, the District renamed the Preserve to Purisima Creek Redwoods, expanded public access beyond the Purisima Creek Trailhead by including two new access points with limited parking along Skyline Boulevard (now called Redwood Trailhead and North Ridge Trailhead), and added public access from Tunitas Creek Road. This expansion of public access led to a significant increase in Preserve visitation, and the District prepared a comprehensive use and management plan in 1989 to increase Ranger patrols for

safety and enforcement, enhance natural resource protection and management efforts, and expand the available parking and trail system.

The District acquired the Blue Brush Canyon, Elkus Ranch Uplands, and Lobitos Ridge properties as western additions to the Preserve in 2009 and 2010. These properties have remained closed to public access and maintain ongoing conservation grazing, agricultural, and residential operations. As part of these acquisitions, the Board approved Rangeland Management Plans and a Farming Grounds Management Plan for these properties. Lobitos Ridge is the first actively farmed, prime agricultural land to come under District ownership. The District has since acquired numerous adjacent parcels, extending the Preserve boundaries further west to Verde Road and Highway 1, including October Farms, Purisima Uplands, and South Cowell. The preliminary use and management plans for lands southwest of the Irish Ridge Trail have designated these areas as closed to the public until a future long-term plan is developed. The Preserve also includes multiple conservation and trail easements on adjacent private properties. Appendix F includes a consolidated summary of all prior use and management plans for Purisima.

2.2 Plan Purpose

The District develops use and management plans for its lands to establish goals and recommendations for the stewardship of natural, historical, and cultural resources, as well as compatible public recreation, environmental education, and agricultural use where possible. Use and management is initially established at the time of land acquisition or an executed management agreement, usually in the form of a Preliminary Use and Management Plan (PUMP). PUMPs remain in effect until they are amended through Board approval or incorporated into a larger planning effort, such as an Interim Use and Management Plan, Master Plan, Preserve Plan, or a Comprehensive Use and Management Plan.

This Purisima Comprehensive Use and Management Plan (CUMP, Plan) integrates habitat restoration and new public access projects with the multitude of ongoing programs and operations at the Preserve, including its existing trail network, parking areas, agricultural operations, vegetation management, habitat restoration, and educational programs. The Plan builds off extensive public engagement and resource analysis to continue protecting important land resources. The CUMP includes long and short-term recommendations for projects and programs, as well as consolidates all prior Preserve plans into a single guiding document with a cohesive vision for Purisima.

3.0 PRESERVE OVERVIEW/EXISTING CONDITIONS

Purisima Creek Redwoods is located in unincorporated San Mateo County on the western slopes of the Santa Cruz Mountains, south of Half Moon Bay. The land within Purisima includes multiple County zoning designations: the North Ridge Trailhead adjacent to Highway 35 is zoned as One Family Residential District/Residential Density District 10 (R-1/S-10), while much of the eastern and central portions of the Preserve are zoned as Timber Land Preserve District (TPZ) and Timberland Preserve-Coastal Zone District/Coastal Development District (TPZ-CZ/CD). Preserve land west of Irish Ridge is zoned as Planned Agriculture District/Coastal Development District (PAD/CD). The Preserve also includes small areas zoned as Resource Management District (RM) or Resource Management - Coastal Zone District/Coastal Development District (RM-CZ/CD).

This section provides an overview of the existing conditions within Purisima, including natural and cultural resources, public access, and maintenance and operations to provide context for the Plan's recommended new actions for the Preserve, described in Section 5.

3.1 Natural Resource Management

3.1.1 Vegetation

The Preserve includes many native and non-native vegetation communities that span from the forested ridgeline of the Santa Cruz Mountains to the coastside grasslands east of Highway 1 (see Figure 4). The eastern portion of the Preserve is primarily comprised of dense redwood forest, consisting of coast redwoods, madrone, big leaf maple, tan oak, California bay, and Douglas fir, with pocket meadows and arroyo willow thickets. Non-native tree species are present within the Preserve, including blackwood acacia and manna gum. Non-local, but California native, species include Bishop pine, Monterey cypress, and Monterey pine. As elevation decreases along the western slope of the Santa Cruz Mountains toward the coast, the vegetation transitions primarily to California annual grassland, mixed coyote brush scrub, mixed chaparral, and riparian shrubland. These habitats also include non-native invasive species and fire-prone invasive species, such as French broom, jubata grass, blackwood acacia, and blue gum eucalyptus. Grassland habitats containing non-native and native grass and forb species are actively grazed by cattle as part of the District's conservation grazing program to promote and enhance grassland biodiversity (see Section 3.1.3).

Special status vegetative species that are present or likely to be found within the Preserve include the Kings mountain manzanita (*Arctostaphylos regismontana*), coast iris (*Iris longipetala*), San Mateo tree lupine (*Lupinus arboreus* var. *eximius*), Choris' popcorn flower (*Plagiobothrys chorisianus* var. *chorisianus*), Hickman's popcorn flower (*Plagiobothrys chorisianus* var. *hickmanii*), and Methuselah's beard lichen (*Usnea longissima*).

To manage invasive species, the District developed the Integrated Pest Management (IPM) Program in 2014 with policies and guidance for pest control, including measures for controlling and treating invasive plant species. Many locations throughout Purisima, including both open and closed areas of the Preserve, are identified for vegetation management through the IPM program and the Wildland Fire Resiliency Program (WFRP), which is discussed further under Section 3.1.5. Vegetation management work at Purisima that falls under the IPM/WFRP programs includes manual and chemical removal of various

invasive plant species, such as vinca, panic veldt grass, poison hemlock, and eggleaf spurge within the eastern portion of the Preserve, as well as St. John's wort, Italian thistle, and coyote brush throughout the western rangeland areas of the Preserve.

3.1.2 Wildlife

The Preserve provides habitat for a range of wildlife typical of the Santa Cruz Mountains within its forest, scrubland, and grassland habitats. The Preserve serves as an important resource for threatened and endangered wildlife through the presence of habitat for California red-legged frog and steelhead trout (*Oncorhynchus mykiss irideus*), as well as hosting a number of special status species, including American peregrine falcon (*Falco peregrinus*), San Francisco dusky footed woodrat (*Neotoma fuscipes annectens*), marbled murrelet (*Brachyramphus marmoratus*), and white-tailed kite (*Elanus leucurus*). Due to the various habitat types within Purisima, many other special status species are likely to be found within the Preserve, including American badger, Bryant's savannah sparrow, burrowing owl, California giant salamander, golden eagle, grasshopper sparrow, monarch butterfly, mountain lion, and salt marsh common yellow throat. The Preserve provides thousands of acres of uninterrupted open space east of Verde Road, creating a wildlife movement corridor for many terrestrial species, including American badger and mountain lion.

3.1.3 Agriculture and Grazing History and Presence

Agriculture and grazing operations are an important part of the history of the San Mateo County Coast, which continues primarily in the form of row crops and livestock operations. The District supports agriculture within its coastsides lands consistent with its Coastsides Mission, Agricultural Policy, and Conservation Grazing Program.

Purisima contains active agricultural operations, including numerous grazing units. These grazing units form part of the larger Conservation Grazing Program that helps the District manage the acreage of open coastal grasslands to protect local biodiversity while reducing vegetation fuels to enhance wildland fire safety. The management of agricultural lands follows the policies and framework adopted in the Coastal Service Plan, Resource Management Policies, and Agricultural Policy, which encourage viable agricultural use within the Coastsides Protection Area, primarily through conservation cattle grazing. By preserving and supporting agricultural uses on the San Mateo County Coast, the District is protecting wildlife corridors, scenic open space views, groundwater infiltration, and other ecosystem and open space benefits, while supporting environmentally and financially sustainable local agriculture.

There are three active grazing units within Purisima, covering over 1,700 acres. These grazing units are known as: Bluebrush Canyon, Lobitos (UC Elkus/Lobitos Ridge/South Cowell), and October Farm (see Figure 6). Each of these grazing units has a site-specific Rangeland or Grazing Management Plan that establishes parameters for resource management and identifies new infrastructure improvements to effectively support the conservation grazing operation. Many of these areas have a long history of cattle grazing use that precedes District land ownership. Current grazing leases are discussed further under Section 3.5.8.

The Preserve contains approximately eight acres of row crop land along Purisima Creek Road in the westernmost area of the Preserve. This area is managed under an agricultural lease.

3.1.4 Aquatic Resources

Purisima has both natural and man-made aquatic resources throughout the Preserve, including various streams, ponds, and wetlands. Whittemore and Grabtown Gulches are two of many intermittent streams in the eastern portion of the Preserve that flow into Purisima Creek, a perennial stream. Purisima Creek flows through the upper reaches of the Preserve, starting near Skyline Boulevard and heading westward, eventually approaching the Purisima Creek Trailhead. Lobitos Creek, another perennial stream, flows through the western portion of the Preserve and is fed by intermittent streams from Irish Ridge down to Highway 1, providing habitat that supports steelhead trout. Both Purisima and Lobitos Creeks extend beyond the western boundaries of the Preserve into adjacent properties before flowing to the Pacific Ocean. The many intermittent and perennial streams that flow within the Preserve provide important riparian habitat for wildlife, including sensitive and rare species.

The lower, western portion of the Preserve contains many constructed ponds, including Purisima Pond, that support conservation grazing operations and provide habitat for California Red Legged Frog. A seasonal wetland is also present near Purisima Pond.

3.1.5 Wildfire Resiliency

In 2021, the District implemented the Wildland Fire Resiliency Program (WFRP) to proactively respond to and reduce wildland fire risk through ecologically sensitive vegetation management on District lands. The main elements of WFRP include vegetation management plans, preserve maps to assist fire agencies, monitoring plans, and prescribed fire plans used to address program goals of promoting more resilient, fire-adapted ecosystems, reducing overall wildland fire risk, and facilitating the response of fire agencies. At Purisima, wildfire resilience is primarily addressed through vegetation management (see also Section 3.1.1). The District also implements and maintains required defensible spaces around structures in compliance with California state law that establishes fuel reduction protocols based on specific buffer zones.

3.1.6 Conservation Management Unit

Purisima includes various Conservation Management Units (CMUs) in the eastern portion of the Preserve that make up a portion of the Redwood Park Subdivision. The 198-acre Redwood Park Subdivision is comprised of mostly undeveloped land and some developed land that is privately owned. Since 1990, the District has been acquiring undeveloped lots from this subdivision through tax sale collaborations with the County of San Mateo and charitable donations with private landowners. The District currently owns over 100 acres of the undeveloped land in this subdivision with the most recent acquisition in 2025. These parcels are closed to public access and over the years, some of these acquired parcels were designated as CMUs to limit public access.

3.2 Tribal Cultural, Historic and Cultural Resource Management

3.2.1 Native American Resources

The Preserve is located on the lands of Native Indigenous Peoples (Ohlone), whose lineage is present and active throughout the region and who form a part of individual tribal bands, villages, and communities. Recognizing the extensive history and significance of tribal presence and stewardship of the natural landscape, various areas within the Preserve have been evaluated for the presence of cultural and tribal

cultural resources and these studies have identified certain areas as containing sensitive cultural resources. Based on known cultural materials present along Purisima Creek and recorded cultural resources in the western area of the Preserve, there is the potential for unrecorded Tribal Cultural Resources to be encountered in unstudied areas of the Preserve. The District engages with Native American tribes informally during early project planning and through formal consultations as required by the California Environmental Quality Act (CEQA) in order to evaluate, avoid, and/or mitigate any potential impacts to Tribal Cultural Resources.

3.2.2 Historic and Cultural Resources

The District evaluates structures and project sites for significant historic and cultural resources when new projects or programs are proposed that may impact these resources. At Purisima, many structures have been previously evaluated for historic significance to inform future maintenance actions or determine future use. In some cases, structures are evaluated or determined to be eligible for listing on a local or state register prior to District acquisition of the property. Of the evaluated structures within the Preserve, the Lobitos Agricultural Barn and Lobitos Ridge Farmhouse were both determined eligible for listing on the California Register of Historic Places, and the Farmhouse is listed on the local register of historic places in San Mateo County. The October Farm Barn, located near Lobitos Creek Road, is also eligible for listing on the San Mateo County local register. Some structures within the Preserve do not require an evaluation and therefore have not been studied, either due to the age of the structure or because they will not be affected by any proposed projects or programs.

3.2.3 Other Past Land Uses

While the majority of Purisima is undeveloped, the site does contain infrastructure associated with prior land uses, including past oil production and hunting in the northwestern portion of the Preserve. Purisima contains several abandoned oil wells, drilled around 1930 and in production until the 1960s. Prior to the District's ownership, two of the three oil wells were decommissioned and capped. One uncapped well and associated oil production infrastructure had remained within the Preserve until it was recently decommissioned in 2026. The District collaborated with the State Water Board and California Geological Energy Management Division (CalGEM), to decommission and cap the final remaining oil well, conduct cleanup of the site near the oil well, and remove a small, unpermitted hunting cabin located along a tributary to Purisima Creek (described more in Section 3.5.7).

3.3 Aesthetic Resources

3.3.1 Viewsheds

Various trails along the Preserve's ridgelines provide access to scenic views of the coastside and surrounding canyons. Many existing trails also provide views of dense redwood forest canopy and Purisima Creek. Rolling grassland and scrubland areas of the Preserve near the coastside are visible from Highway 1, providing occasional views of cattle grazing in active conservation grazing pastures.

3.3.2 Scenic Corridor

Highway 35 (Skyline Boulevard) and Highway 1 are designated state scenic highways by Caltrans, which is meant to manage new development to preserve the scenic and natural features visible from the highways. The Preserve's North Ridge and Redwood Roadside Parking Areas are adjacent to the Highway 35 right-of-

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

way, which is heavily vegetated on both sides, providing partial screening of these existing parking areas from the highway. The westernmost portions of the Preserve are visible from Highway 1, which primarily include open space and agricultural facilities supporting conservation grazing programs. The western portion of the Preserve is not open to the public and does not currently provide developed public access facilities, such as a parking area or maintained trails that are visible from the highway.

In addition, Purisima Creek Road, Higgins Canyon Road, and Tunitas Creek Road are designated County scenic corridors. The Purisima Creek Parking Area and Trailhead are located at the intersection of Purisima Creek and Higgins Canyon Roads and are screened by vegetation on both sides of the parking area, including redwood trees and vegetation within the adjacent Purisima Creek riparian habitat.

3.4 Public Access, Recreation, and Interpretation

3.4.1 Public Use

Approximately 2,838 acres of the Preserve are currently open to the public, providing access for hiking, bicycling, and equestrian use, shown on Figure 2. The remaining 2,582 acres of the Preserve are planned to be open for public access with a new parking area, trail amenities and regional trail connections that will expand coastside access to the Preserve. Dog access is not permitted in any area of the Preserve.

3.4.2 Trails

The Preserve has over 23 miles of existing public trails, including multi-use (hiking, bicycling, and equestrian use) and easy-access trails. The 0.3 miles of easy-access trails are accessible from the Redwood Roadside Parking Area. There are currently three publicly accessible trailheads within the Preserve: the North Ridge Trailhead and Redwood Trailhead, both along Highway 35, and the Purisima Creek Trailhead at the intersection of Purisima Creek Road and Higgins Canyon Road.

Table 1. Existing Trails within Purisima

Trail Name	Status	Uses	Approx. Mileage
Bald Knob	Existing	Hiking only	1.3
Borden Hatch Mill	Existing	Multi-use	2.5
Chris MacIntosh*	Existing	Hiking only	0.5
Craig Britton*	Existing	Hiking only	2.5
Grabtown Gulch	Existing	Multi-use	1.9
Harkins Ridge*	Existing	Multi-use	3.1
Irish Ridge	Existing	Hiking only	1.2
Lobitos Creek	Existing	Hiking only	0.6
North Ridge*	Existing	Multi-use	2.1
Purisima Creek*	Existing	Multi-use	4.3
Redwood	Existing	Hiking only/Easy Access	0.3
Whittemore Gulch	Existing	Multi-use	2.7

*Contribute to regional trail segments of the Bay Area Ridge Trail

Significant portions of the existing trails within Purisima are also segments of the regional Bay Area Ridge trail network which include both hiking and multi-use trails.

3.4.3 Parking and Trailheads

Parking for the Preserve is officially provided by two formal parking lots, Purisima Creek Road Parking Area and North Ridge Parking Area, and one roadside parking area, the Redwood Roadside Parking Area.

The North Ridge Parking Area is an onsite gravel, unstriped parking lot adjacent to Highway 35 that accommodates approximately 41 standard vehicles. Though no space is formally designated for equestrian parking, the parking area can accommodate approximately two equestrian trailers parked parallel to the west boundary of the parking lot on a first-come, first-served basis. However, with increasing popularity of the Preserve, the parking area frequently lacks enough space for equestrian trailer parking. The North Ridge Parking Area is currently the largest parking area serving Purisima and frequently reaches capacity during peak visitation on weekends and holidays. During peak visitation, visitors also park along the Highway 35 shoulders, which can accommodate approximately twenty vehicles in the vicinity of the North Ridge trailhead.

The Redwood Roadside Parking Area is approximately two miles south of the North Ridge Parking Area and is accessible from Highway 35. This unimproved roadside parking area accommodates approximately 11 standard vehicles and is within a California Department of Transportation (Caltrans) pullout. During peak visitation on weekends and holidays, visitors will often park along the narrow Highway 35 shoulder near the trailhead.

The Purisima Creek Parking Area currently provides the only access point from the coastside, located south of Half Moon Bay at the intersection of Purisima Creek Road and Higgins Canyon Road. The parking area is an onsite gravel lot that accommodates seven standard vehicles and frequently reaches capacity during peak visitation on weekends and holidays. Approximately 350 linear feet of shoulder parking is available in the vicinity of the trailhead with the remainder of the roadway shoulders designated as “No Parking” zones by San Mateo County. However, vehicles are often parked in the “No Parking” areas, as observed by staff and neighbors, which requires continual enforcement that impacts District operations.

All three Preserve trailheads provide access to the Bay Area Ridge Trail, a regional multi-use trail with segments located within the eastern portion of Purisima. Preserve maps located at the trailheads identify the trails within Purisima that contribute to the Bay Area Ridge Trail and indicate which are accessible from each of the trailheads.

3.4.4 Site Amenities

Vault restrooms are located at the North Ridge and Purisima Creek Parking Areas, although the restroom at the North Ridge Parking Area is not currently ADA-compliant (this restroom was installed prior to current ADA building standards and will be replaced with an ADA compliant restroom in the near term). Trailhead locations for bicycle infrastructure were identified through the Purisima Multimodal Access Study, approved by the Board in 2022 and bike amenities were installed at the Purisima Creek Trailhead (10-capacity corral style bike rack and bike repair station) and Redwood Trailhead (two individual bike racks accommodating four bikes total). An equestrian hitching post is available at the North Ridge Parking Area. Potable water and trash receptacles are not provided at any of the Preserve trailheads; visitors are expected to arrive with their supplies and pack out everything that they bring in.

3.4.5 Signage

Signage is standardized and overall limited to reduce sign clutter. Preserve entrance signs and signage designating ADA-accessible parking spaces are present at the North Ridge, Purisima Creek, and Redwood Roadside Parking Areas. At trailhead entrances, signboards with trail maps, regulatory signs, and trail directional signs provide wayfinding and Preserve information. Trail intersections within the Preserve's internal trail network also include trail directional signs and special emblem designations for trail segments that are part of the regional Bay Area Ridge Trail. Closed areas and Preserve boundaries are appropriately signed and fenced to prevent public access onto private land or sensitive ecological areas.

In recognition of Save the Redwoods League's contribution to the preservation of the Preserve, the League is permitted to designate Memorial Groves. As part of this program, a centralized grove recognition signboard showing all dedicated and available groves is located at the Purisima Creek Trailhead, as well as individual recognition signs at select memorial groves.

3.4.6 Interpretation and Education

The District provides docent naturalist guided hiking and educational activities at Purisima throughout the year, with upcoming activities listed in advance on the District's website. These guided activities can also support the efforts of the volunteer program (see Section 3.5.1) by incorporating hands-on restoration activities with an interpretive hike. The signboards located at the main trailheads often also include interpretive Preserve materials.

3.5 Operations and Maintenance

3.5.1 Volunteer Program

The District's volunteer program provides opportunities for the public to support open space lands through participation in educational programs, trail maintenance, and native and non-native vegetation removal. Land Steward volunteer groups primarily conduct vegetation management along public trails, while Advanced Resource Management Steward volunteers work independently and focus on a particular area of the Preserve for regular invasive species removal throughout the year. Occasionally, these volunteer opportunities provide volunteers with access to areas not yet open to the public.

Volunteer program activities typically occur in areas close to public parking areas and parking availability, and in some cases, must also account for the ability of volunteers to access remote areas or traverse difficult terrain. Weather conditions also affect the frequency of volunteer programs throughout the year.

3.5.2 Gates and Fencing

The North Ridge Parking Area has automatic gates at both the entry and exit driveways that control vehicle access when the Preserve is closed. Interior gates are also located at the start of the North Ridge Trailhead and the driveway leading to the onsite employee residence to limit vehicle access to these interior areas. The Purisima Creek Parking Area and Redwood Roadside Parking Area do not have gates to control access to the parking area, although an interior gate is present at the Purisima Creek Trailhead to control vehicle access past the parking area (no similar interior vehicle gate is required at the Redwood Roadside Parking Area, alternatively there is a trailhead stile). A gate is also located at the intersection of Tunitas Creek Road and the Grabtown Gulch Trail to limit interior Preserve access to emergency and District vehicles.

Gates are present on the east side of Verde Road to control access to the cattle grazing lands and agricultural facilities. This area also includes a mix of primarily chain link and wildlife-friendly fencing along the Preserve boundaries and within the Preserve to support grazing operations. Grazing tenants also use single-strand electric fences in portions of the grazing areas, as needed, to direct cattle grazing while allowing wildlife passage through these areas. Additional gates and wildlife-friendly fencing provide controlled access to farming and grazing tenants off Lobitos Creek Road and Purisima Creek Road.

3.5.3 Residences

The Preserve contains existing residences that were present prior to District ownership and that the District now leases to District employees, private parties, and agricultural tenants. The District rents existing residences to current employees that provide specific services depending on the location and activities associated with the site. Purisima has three residences leased by employees in the western, central, and eastern portions of the Preserve with current staff occupants providing patrol and maintenance services. One employee residence is located just off Highway 35 at the Purisima North Ridge Trailhead and is set back from the existing parking area. The other two employee residences are located off Purisima Creek Road and Verde Road.

Other residences located in the Preserve are leased by the District to agricultural operators, such as the Lobitos Ridge residence, as well as residences leased to private parties, including the October Farms House and Lobitos Ridge Ranch House.

3.5.4 Roads and Trails

District staff within the Land Stewardship and Trails department build new trails within District lands and maintain existing trails through vegetation removal and trail stabilization, as needed, for public use and wildfire fuel reduction. The District maintains public trails in open areas of the Preserve, from Irish Ridge to Highway 35. The District maintains interior ranch roads to support patrol, maintenance, and emergency access throughout the Preserve, and to support active agricultural operations within the coastal grassland foothills. Numerous remnant and unmaintained pathways are present within closed areas of the Preserve that predate District ownership.

3.5.5 Safety and Security

District Rangers assigned to the Skyline Field Office conduct regular patrols of Purisima. As trained peace officers, Rangers can issue warnings and citations to visitors who violate Preserve regulations. Rangers also serve as first responders in medical, fire, or other safety emergencies within and adjacent to District lands in conjunction with state and San Mateo County emergency services. The Kings Mountain Volunteer Firefighters also provide emergency fire response for areas of the Preserve accessible from Highway 35, such as the North Ridge and Redwood Trailheads.

3.5.6 Utilities

The Preserve has limited utility connections that serve residences and facilities for farm and agricultural operations. Water service to the residence at the North Ridge Trailhead is provided through a distribution line that connects to offsite CalWater service facilities. The South Cowell residential and grazing facilities are supplied with water that is redirected from Purisima Creek and do not utilize municipal water connections. The third residence and other grazing facilities within the Preserve utilize active wells and/or water tanks to distribute water. Electrical service is available for all onsite facilities, primarily from connections to electrical lines along Purisima Creek Road, Verde Road, and Highway 35. The North Ridge

Trailhead also includes electrical connections for the automatic gates that control access to the parking area. Sewer connections are not available. Instead, vault toilets are provided at public trailheads (North Ridge and Redwood) and septic systems are utilized by residential buildings. Cellular service is limited depending on topology and availability of nearby cellular infrastructure. Cellular service is usually available at the North Ridge Trailhead and Parking Area but is not currently available at the Purisima Creek Trailhead and Parking Area.

3.5.7 Environmental Hazards

An area of the Preserve known as the Purisima Upland Property, a 240-acre property located on Verde Road, contains abandoned oil facilities and previously contained hazardous materials associated with prior oil operations. The abandoned oil facilities included above-ground storage tanks, oil wells, oil production piping, and oil processing facilities and structures. In coordination with the State Water Board and CalGEM, the District completed environmental assessments and developed a remediation workplan to conduct a clean up of the site near the remaining oil well to protect the surrounding natural environment, which was completed in 2026. The oil well decommissioning and site clean-up removed 3,000 gallons of light crude oil, an unpermitted hunting cabin and septic tank, and 140 cubic yards of contaminated soil. CalGEM conducted the decommissioning and capping of the final remaining oil well in 2026.

3.5.8 Legal Arrangements

Purisima and the adjacent surrounding area include private-land easements, lease agreements, and management agreements. Conservation easements protect and monitor open space and sensitive ecological areas, including the Marsh Trust adjacent to Verde Road, the Chamberlain/Lundell Trust near Lobitos Creek, and Rancho Canada de Verde near Highway 35. Public trail easements provide trail connections within the Preserve, and some conservation easements also allow for public trail access. Patrol easements on adjacent private lands enable ranger patrol and maintenance at Purisima, including access to the Bluebrush Canyon parcel, over the University of California (UC) Regents Elkus Ranch, and over the Giusti Family Trust (Purisima Uplands).

The District manages three active grazing leases within Purisima on the coastside—Bluebrush Canyon, Lobitos, and October Farm grazing units—which together cover over 1,700 acres of land within the Preserve. The District’s Agricultural Policy sets policy guidance on agricultural leases to accomplish land management objectives and balance conservation goals with economically viable agricultural uses. The District solicits proposals for conservation grazing leases and evaluates applicants through a competitive, open selection process to select the most qualified candidates to award the leases.

3.5.9 Partnerships

The District partners with many local and regional organizations for acquisition, project planning and implementation, as well as providing educational activities at Purisima. In the past, the District has partnered with Peninsula Open Space Trust (POST), Save the Redwoods League, State Coastal Conservancy and UC Regents, among others, on significant land purchases, feasibility studies and management agreements. The District is currently partnering with POST to plan the future Bay to Sea trail alignment that will include trail segments within Purisima, as well as with the Bay Area Ridge Trail Council and the San Francisco Public Utilities Commission (SFPUC) to plan for regional trail connections between the North Ridge Trailhead and the SFPUC Skyline Watershed Ridge Trail along Highway 35. POST is also partnering with the District to complete preliminary designs and environmental review of a POST trail easement

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

between Verde Road and Highway 1 that will connect future trail segments of the Purisima-to-the-Sea Trail with the California Coastal Trail. Related to this trail easement, POST will secure land use permits and construct the future trail crossing at Highway 1.

Numerous community organizations conduct educational group activities at Purisima either by partnering directly with the District or requesting use permits to carry out their own educational programming. The District has issued use permits to over 30 organizations, including school groups, nature societies, kids programs, and other interest groups to conduct educational programs at Purisima. The District has previously partnered with the San Jose Conservation Corps and Charter School for activities to remove non-native vegetation in parts of Purisima.

4.0 PLANNING PROCESS, PRESERVE VISION AND GOALS

The planning process for the CUMP builds upon technical analysis and public engagement conducted for new public access and restoration projects proposed at Purisima. These new projects include the Highway 35 Multi-use Crossing and Parking Expansion, Verde Road Parking Area, Purisima-to-the-Sea Trail, Purisima Multimodal Access Implementation, and Irish Ridge Habitat Restoration Plan. Specific goals were developed for each project as part of the individual planning processes. These project goals have since been incorporated into the overarching Preserve goals. This section provides an overview of the planning process for these projects and the subsequent goals developed for the CUMP process and the Preserve.

4.1 Planning Process

4.1.1 Public Engagement and Feedback

The District conducted extensive public engagement activities for the new projects and programs planned at Purisima. These efforts were preceded by the Purisima Multimodal Access Study, approved by the Board in 2022, which developed Preserve-wide transportation demand management strategies that have been carried forward to subsequent public access feasibility studies and detailed project designs. Staff gathered public feedback through Midpen Board and Committee meetings, as well as hosting separate meetings with the public, community organizations, regional stakeholders, City and County agencies, and property neighbors. In addition, staff participated in numerous community events on the coastside to highlight ongoing projects and upcoming engagement activities.

The table below provides a list of many of the engagement activities used to gather feedback throughout the planning process:

Table 2. Purisima Public Engagement Activities

Date	Meeting / Event
February 16, 2021	City of Half Moon Bay staff
March 30, 2021	Ritz Carlton Group Hikes & Shuttle (volunteer)
May 6, 2021	SamTrans – ReImagine SamTrans
June 2021 – June 2022	Santa Cruz Mountains Stewardship Network Shuttle Exploration Team
July 13, 2021*	Purisima-to-the-Sea Neighbor Meeting
July 27, 2021**	Coastal and Trail User Community Meeting
August 18, 2021	Peninsula Trails Team (Bay Area Ridge Trail, Santa Cruz Mountains Stewardship Network, National Park Service, San Francisco Public Utilities Commission, County of San Mateo)
September 28, 2021	Agricultural Community Onsite Meeting
October 20, 2021	Peninsula Trails Team (trail partners)
November 3, 2021*	Sustainable Pescadero
November 4, 2021**	Make It Main Street (Half Moon Bay community event)
November 9, 2021*	Pescadero Municipal Advisory Council
November 20, 2021*	Tabling at Coastside Farmers Market (Half Moon Bay)
December 1, 2021*	District Purisima-to-the-Sea Public Open House and Special Meeting
December 15, 2021*	District Board Meeting: Purisima-to-the-Sea Revised Vision and Goals
December 18, 2021*	Tabling at Coastside Farmers Market (Half Moon Bay)

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

January 18 & 25, 2022	City of Half Moon Bay staff
February 23, 2022*	Midcoast Community Council
March 15, 2022*	Midpen Planning and Natural Resources Committee (Purisima Multimodal Access Study)
March 15, 2022*	Kings Mountain Association Speaker Series
April 20, 2022	Peninsula Trails Team
May 14, 2022**	College of San Mateo Farmer's Market
May 15, 2022**	Group hike with Spanish-speaking hiking group
May 4, 2022*	Sustainable Pescadero
June 7, 2022	San Mateo County Farm Bureau consultation
June 8, 2022*	Midcoast Community Council
June 14, 2022*	Pescadero Municipal Advisory Council
June 29, 2022**	Purisima projects open house (in-person)
July 11, 2022	San Mateo County Planning & Sustainability staff
July 12, 2022**	Purisima projects open house (virtual)
July 20, 2022	San Mateo County Parks
July 27, 2022	Green Foothills staff
August 2, 2022*	Midpen Planning and Natural Resources Committee (Purisima Multimodal)
September 21, 2022**	Trail User Stakeholder Meeting
September 29, 2022**	Trail User Stakeholder Meeting
October 11, 2022*	Midpen Planning and Natural Resources Committee (Purisima-to-the-Sea)
October 19, 2022	Peninsula Trails Team (Bay Area Ridge Trail, Santa Cruz Mountains Stewardship Network, National Park Service, San Francisco Public Utilities Commission, County of San Mateo)
November 9, 2022	Kings Mountain Association (Highway 35)
November 9, 2022	Fisher Investments (Highway 35)
November 9, 2022	Midpen Board of Directors Meeting (Purisima Multimodal)
November 15 & 17, 2022**	Stakeholder group meetings (Hwy 35)
April 4, 2023*	Midpen Planning and Natural Resources Committee (Highway 35)
May 1-2, 2023	Neighbor Consultation
May 8, 2023	Partner Consultation
May 24, 2023*	Midpen Board of Directors Meeting (Purisima-to-the-Sea)
June 7, 2023**	Virtual public meeting (Highway 35)
July 25, 2023*	Midpen Planning and Natural Resources Committee (Highway 35)
November 8, 2023*	Midpen Board of Directors (Highway 35)
November 14, 2024**	Purisima In-person Open House (Purisima Multimodal Implementation)
November 19, 2024**	Purisima Virtual Open House (Purisima Multimodal Implementation)
September 10, 2024*	Midpen Planning and Natural Resources Committee (Purisima Multimodal Implementation)
December 11, 2024*	Midpen Board of Directors (Purisima Multimodal Implementation)
February 19, 2025	Kings Mountain Association (Highway 35)
August 26, 2025*	Midpen Planning and Natural Resources Committee (Purisima CUMP)
October 22, 2025*	Midpen Board of Directors (Purisima CUMP)

*Public meeting

**Public event

The feedback gathered as part of these efforts was summarized and shared with the Board and public through staff reports presented at the District's Committee and Board of Directors meetings prior to Board approval of feasibility study findings, alternatives selection, and/or implementation decisions specific to each project. These summaries of public feedback are included in Appendix A.

4.1.2 New Restoration and Public Access Projects

Five new projects focusing on restoration and public access are proposed at Purisima. The Irish Ridge Habitat Restoration Plan would restore portions of redwood forest within Purisima. Four additional projects would provide new and/or enhanced public access and recreation opportunities at the Preserve: the Highway 35 Multi-use Crossing and Parking Expansion, Purisima-to-the-Sea Trail, Verde Road Parking Area, and Purisima Multimodal Access Implementation. See Figure 3 for site locations of the five new project sites.

4.1.2.1 Irish Ridge Habitat Restoration Plan

The Irish Ridge Habitat Restoration Plan aims to improve the vegetative habitat by addressing the presence of invasive plants within a 42-acre portion of the Preserve in the vicinity of the proposed Purisima-to-the-Sea Trail. Goals of the restoration work include:

- Re-establish native plants within the cleared areas to restore the habitat and reduce the potential for the re-colonization of the area by invasive plant species;
- Reintroduce rare and endangered plants to the area; and
- Reduce the risk of high-intensity wildfire through removal of excessive woody debris that could serve as fuel ladders.

The restoration plan recommends removal of blackwood acacia, French broom, jubata grass, Monterey pine, manna gum, and Bishop pine present within the project site. Recommendations also include installation of native trees, shrubs, forbs, grasses, and grass seed mixes to restore the habitat and reduce the potential for re-colonization by invasive plant species. The Irish Ridge Habitat Restoration Plan is included in Appendix E.

4.1.2.2 Highway 35 Multi-use Crossing and Parking Expansion

The Highway 35 Multi-use Crossing and Parking Expansion Project aims to improve public access facilities at the North Ridge Parking Area and provide a regional trail connection between the North Ridge Trailhead and the new SFPUC extension of the Bay Area Ridge Trail (Skyline Watershed Ridge Trail) on the east side of Highway 35. The project's feasibility study, completed in 2023, developed the following project goals and strategies to guide design development.

Goal 1: Support the implementation of the regional Bay Area Ridge Trail.

Strategies:

- Identify a multi-use trail crossing and trail spur location to connect the SFPUC's new segment of the Bay Area Ridge Trail to the Preserve and the existing Bay Area Ridge Trail segment within the Preserve.
- Maximize safety and minimize neighbor impacts when evaluating multi-use trail crossing locations and infrastructure.

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

- Develop a multi-use trail crossing and spur trail to accommodate low-intensity recreational use by hikers, bicyclists and equestrians, consistent with Bay Area Ridge Trail corridor goals.
- Collaborate with partner agencies to complete the planning, design, and implementation of the multi-use trail crossing and spur trail.

Goal 2: Improve public access and visitor experience at Purisima's North Ridge trailhead using ecologically sensitive design, construction practices, and long-term maintenance and management.

Strategies:

- Add parking capacity through the reconfiguration of existing parking spaces and expansion of the North Ridge Parking Area.
- Improve the existing trailhead amenities, such as replacing the existing restroom with a new Americans with Disabilities Act (ADA) compliant vault restroom, replacing dated signboards with current standard design, and adding bicycle parking.
- Incorporate transportation demand management strategies consistent with the Board-approved Purisima Multimodal Access Study.
- Design recreational amenities to protect the scenic corridor.
- Maximize safety and minimize neighbor impacts when evaluating the multi-use trail crossing, parking enhancements, and vehicle circulation.
- Maintain routine patrols and maintenance and use adaptive management to address unforeseen issues that arise from increased visitation to the North Ridge Trailhead.

The North Ridge Parking Area is planned to be reconfigured and expanded into adjacent, previously disturbed areas of the Preserve to increase onsite parking for up to 70 standard vehicles and provide two designated equestrian trailer parking spaces. The parking area will be paved and striped to improve maintenance and circulation, in accordance with the District's Staging/Parking Area and Trailhead Design Guidelines. The parking area reconfiguration will also address existing ADA barriers by providing an ADA path of travel between the highway crossing and North Ridge Trailhead, and by replacing the existing vault toilet with an ADA accessible model. Bicycle parking and repair facilities will also be provided within the expanded parking area (see Graphic 1). The feasibility study prepared for the Highway 35 Multi-use Trail Crossing and Parking Expansion is included in Appendix B.

4.1.2.3 Purisima-to-the-Sea Trail and Verde Road Parking Area

The Purisima-to-the-Sea Trail and Verde Road Parking Area Projects aim to provide a new regional trail alignment and parking area to facilitate a link between the Preserve and the existing Cowell-Purisima Coastal Trail. The feasibility study for both the trail alignment and parking area was completed in 2023 and established the following vision and goals for the projects:

Project Vision

Realize the decades-long vision to connect the Santa Cruz Mountains to the Pacific Ocean in support of open space, agriculture, wildlife and people. Complete the multi-use Purisima-to-the-Sea trail connection, improve multimodal access and develop a parking area using ecologically sensitive design and

Comprehensive Use and Management Plan

Purisima Creek Redwoods Open Space Preserve

management in a manner that is respectful of the surrounding coastside communities and includes outreach to and engagement with Preserve neighbors.

Project Goals

- **Physical Attributes:** Develop the Purisima-to-the-Sea Regional Trail to accommodate low intensity recreation by multiple user groups, provide ecologically sensitive public access to scenic viewpoints, and provide Preserve access that incorporates multimodal strategies.
 - **Cultural Attributes:** Protect and interpret the agricultural and coastal community culture and history.
 - **Biological Attributes:** Manage, protect, and interpret natural resources, habitats, sensitive species, and connectivity, and provide public access in an ecologically sensitive manner.
 - **Safety Attributes:** Manage the newly open area of the Preserve, trails and parking area to provide a safe visitor and neighbor experience.
- Implementation: Continue to foster and develop partnerships to support project approvals and implementation.

The Purisima-to-the-Sea Trail will consist of approximately 7.2 linear miles of new trails within the Preserve and will connect to existing trails terminating in Irish Ridge to Verde Road. The Purisima-to-the-Sea Trail will traverse active cattle grazing lands and include a trail loop accessible from the new Verde Road Parking Area with views of the Pacific Ocean. The trail alignments carefully avoid and/or minimize impacts to grazing operations and known sensitive natural resources.

Development of the Verde Road Parking Area will provide a new public parking area to serve regional public access to for the regional Purisima-to-the-Sea trail that connects to the California Coastal Trail. The Verde Road Parking Area is designed to provide parking for approximately 107 standard vehicles and five designated equestrian trailer parking spaces. The parking area will incorporate amenities such as bicycle parking and a repair station, a nature education area for group gatherings, a scenic overlook near the parking entrance, designated parking spaces for Rangers, and a sheltered bus/shuttle stop (see Graphic 2).

A new trail crossing on Verde Road is planned that will connect the Purisima-to-the-Sea Trail to a future new trail along a POST-held trail easement (North Trail) through private lands. A second new trail crossing on Highway 1 will connect the POST North Trail to the existing Cowell-Purisima Coastal Trailhead. A third new trail crossing will also be implemented along Verde Road to connect the new Verde Parking Area to the Preserve Trailhead entrance. The feasibility study for the Verde Road Parking Area and Purisima-to-the-Sea Trail project is included in Appendix C.

4.1.2.4 Purisima Multimodal Access Implementation

The Purisima Multimodal Access Implementation project recommends transportation demand management (TDM) strategies for parking management and implementation measures for each Preserve parking area. The project goals were identified through the Purisima Multimodal Access Study (2022), which established priority TDM strategies for Preserve parking areas and trailheads. The TDM strategies recommended for implementation at Purisima have the following goals:

- Address parking demand and improve multimodal access;
- Manage parking resources to improve visitor circulation/access reliability; and

- Improve visitor safety and mitigate negative impacts of overflow parking at the Preserve and for nearby residents and surrounding public roadways.

The recommended TDM strategies include a three-year pilot shuttle program with service between the new Verde Road Parking Area and Purisima Creek Trailhead, as well as real-time parking information systems at the North Ridge and Verde Road Parking Areas that show parking availability on the District website. Carpool and/or reservation parking programs at the Verde Road and North Ridge Parking Areas are also recommended for consideration if parking demand regularly exceeds 80% of capacity during peak visitation periods. The report prepared for the Purisima Multimodal Access Implementation project is included in Appendix D.

4.2 Preserve Vision and Goals

The CUMP aims to address the distinct visions and goals of new restoration and public access projects at the Preserve while confirming the objectives of ongoing programs and activities. The CUMP identifies recommended actions to implement Board-approved projects while acknowledging and continuing the ongoing uses within the Preserve. The goals listed below set the framework for the components, focus, and preparation of the CUMP:

Plan Development Goals

- Guide the long-term land management, operations and public access actions and activities while prioritizing the protection and enhancement of the natural resources and sustainability of existing agricultural uses on the San Mateo County Coastside.
- Consolidate new and existing uses, programs, and operations at the Preserve into a single planning document that provides a cohesive approach for implementing ongoing actions with proposed improvements.
- Streamline the planning and environmental review process for near-term projects taking place in Purisima Creek Redwoods by creating a single, comprehensive plan for the Preserve.
- Create new trail alignments in support of regional trail connections, such as the Bay Area Ridge Trail, California Coastal Trail, Purisima-to-the-Sea Trail, and future proposed Bay to Sea Trail.
- Provide new and expanded parking areas at the Preserve where parking demand often exceeds availability during peak visitation hours.
- Improve the ecological values of the Preserve that have been degraded by invasive species, including high fire prone species, by enabling large-scale restoration projects to take place.
- Protect significant cultural and environmental resources in future development and operations.

Preserve Goals

Goal 1: Natural Resources

- Protect and steward natural resources, habitats, native and sensitive species, and open space connectivity.
- Restore ecologically damaged and disturbed areas.
- Protect waterways and associated natural lands to maintain water quality, watershed function, and healthy aquatic habitats.

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

- Continue conservation grazing to maintain and enhance native grassland communities and support wildland fire resilience.

Goal 2: Public Access

- Enhance and expand ecologically sensitive, low intensity trail use.
- Provide access opportunities for people with diverse physical abilities.
- Establish and support regional trails, including: Purisima-to-the-Sea Trail, Bay-to-Sea Trail, Bay Area Ridge Trail, and California Coastal Trail.
- Improve access to the Preserve through new and expanded parking and trailheads, and adaptive use of visitor demand/multimodal strategies.
- Enrich the visitor experience through environmental education and interpretive opportunities.
- Highlight unique attributes of the Preserve while respecting natural and cultural resources, exhibiting a sense of place, and utilizing sustainable practices.

Goal 3: Cultural Resources

- Protect and interpret the agricultural and coastal community culture and history.
- Protect and interpret significant tribal, cultural, historical and archaeological resources.

Goal 4: Operations and Maintenance

- Reduce the risk of high-intensity wildfires.
- Reduce and control erosion and sedimentation.
- Address environmental hazards to ecosystem health and visitor safety.
- Maintain facilities in working and safe conditions, protective of the natural environment and visitor/neighbor experience.

5.0 COMPREHENSIVE USE AND MANAGEMENT PLAN IMPLEMENTATION ACTIONS

The CUMP organizes use and management recommendations by topic to support Preserve goals and achieve distinct project objectives (shown in Table 3). Topic areas include Natural Resource Management; Historic, Cultural, and Tribal Cultural Resource Management; Aesthetic Resources; Public Access; and Operations and Maintenance. The five topics are further categorized into focus areas with related actions. Each recommended action includes a purpose and scope as well as high-level implementation information, including phasing, priority, action type, cost, and potential partners.

Recommended actions are categorized by type; examples include capital improvement, ongoing maintenance, and policy compliance. Phasing and priority are provided based on available resources and anticipated workflow, as well as prior feedback from the Board and public. Cost information is provided for actions that fall under existing District programs and operations, as well as estimates for actions with new one-time or recurring costs. Costs and phasing/priority are discussed further in Sections 6 and 7. Potential partners are listed where applicable to indicate groups and individuals whom the District should consider collaborating with prior to or during implementation given shared goals and responsibilities, adjoining jurisdictions, and/or opportunities for financial contributions.

Recommendations under each topic area are summarized below.

5.1 Natural Resource Management

Recommendations for Natural Resource Management include actions related to vegetation, wildlife, watershed and aquatic resources, conservation grazing, wildfire resiliency, habitat integrity, sensitive area management, climate resiliency, and conservation management unit. Various ongoing District programs support natural resource management at Purissima, including the following:

- Vegetation management and fuel reduction efforts through the Wildland Fire Resiliency, Conservation Grazing, and Integrated Pest Management Programs;
- Wildlife populations research and management through the Grassland Bird Habitat Management Plan, Badger Management Project, and Mountain Lion Interaction Management Plan;
- Water quality through the Water Quality Monitoring Program; and
- Carbon sequestration efforts through the Climate Action Plan and Bluebrush Canyon Carbon Farming Program.

Recommendations related to new projects and programs identified under this topic area include the following:

- Implementing vegetative habitat restoration under the Irish Ridge Habitat Restoration Plan;
- Conducting additional studies related to enhancing pollinator habitat;
- Enhancing wildlife corridors and removing wildlife barriers;
- Expanding conservation grazing operations throughout the Preserve; and
- Designating sensitive resource areas for special protections.

5.2 Historic, Cultural, and Tribal Cultural Resource Management

Recommendations for managing Tribal Cultural Resources include the following:

- Continuing to engage with Native American tribes on upcoming projects that may affect tribal resources within the Preserve, including new public access and restoration projects;
- Continuing to coordinate with tribes on the protection and treatment of previously undiscovered tribal resources;
- Incorporating tribal knowledge into the visitor experience and educational opportunities;
- Supporting tribal relationships; and
- Providing tribes access to their ancestral homelands.

The CUMP also includes recommendations for managing significant cultural and historic resources present within the Preserve consistent with the District's Basic Policy, Resource Management Policies, and San Mateo Coastal Service Plan, which includes seeking guidance from qualified architectural and cultural historians when physical actions may affect the integrity of these resources.

5.3 Aesthetic Resources

Recommendations for Aesthetic Resources include the following:

- Continuing to protect important viewsheds, particularly those depicting the rural character of San Mateo County;
- Protecting views of the Preserve from designated scenic corridors along Highway 35 and Highway 1; and
- Showcasing the Preserve's natural features for public enjoyment.

These recommendations would be carried out through compliance with the District's Staging/Parking Area and Trailhead Design Guidelines, Coastal Service Plan, and Resource Management Policies that guide the design and siting of future public access projects and Preserve amenities. The site of the future Verde Road Parking Area is naturally screened from Highway 1 by existing trees and site topography and will be further screened through additional native plantings. The future Purissima-to-the-Sea Trail has been sited consistent with the Coastal Service Plan, thus avoiding new, noticeably visible lines on the existing landscape, especially from scenic roads. The North Ridge Parking Area is currently screened from Highway 35 by existing vegetation, which will remain with the implementation of the Highway 35 Multi-use Crossing and Parking Expansion project.

5.4 Public Access

Public access recommendations focus on public use, trails, parking and trailheads, multimodal access, site amenities, signage, and interpretation and education. Recommendations include the following:

- Implementing various new trail and parking area projects that will open over 2,200 acres in the western portion of the Preserve to public access (Figure 5).
- Establishing the Purissima-to-the-Sea Trail, providing seven miles of new multi-use trail.

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

- Redesignating the existing hiking-only Irish Ridge Trail to multi-use to extend the continuity of the multi-use regional trail throughout the Preserve;
- Designating the Purisima-to-the-Sea Trail for on-trail use only to carefully manage public access within sensitive resource areas in the western portion of the Preserve;
- Implementing the new Verde Road Parking Area, expanding public access to the Preserve from the coastside;
- Implementing the Highway 35 Multi-use Crossing and Parking Expansion project to expand the available parking at the North Ridge Trailhead;
- Establishing a Highway 35 trail crossing and Bay Area Ridge Trail spur extension on the east side of the highway to connect the two Ridge Trail segments;
- Continuing ongoing coordination with regional agency partners to implement regional trail connections beyond the Preserve;
- Coordinating public information sharing related to the regional Bay to Sea Trail, Bay Area Ridge Trail, and California Coastal Trail that will connect to trails within Purisima, as shown in Figure 7;
- Conducting additional studies to explore more options for public access, including feasibility studies for dog access, internal trail connections, Easy Access trail opportunities, and regional trail facilities;
- Implementing multimodal access strategies to facilitate public access to the Preserve, including a pilot shuttle program and real-time parking information systems;
- Considering the potential for a carpool and/or reservation systems at the Verde or North Ridge Parking Areas if parking demand routinely exceeds capacity;
- Expanding educational programs through guided outdoor activities and volunteer opportunities;
- Incorporating additional interpretive signage; and
- Expanding outreach to new and underserved communities.

5.5 Operations and Maintenance

Recommendations for Operations and Maintenance focus on road and trail maintenance, safety and security, utilities and infrastructure, environmental hazards, legal arrangements, and partnerships. Recommendations include the following:

- Installing appropriate signage and conducting sufficient patrol to manage new areas that are made open to the public;
- Minimizing impacts to private properties;
- Promoting resilient infrastructure;
- Addressing hazardous areas through the Purisima Upland Site Cleanup and Soil Remediation project;
- Evaluating opportunities to expand water infrastructure for domestic and agricultural operations;
- Removing obsolete infrastructure;
- Continuing to maintain roadways for emergency access and to address erosion;
- Continuing to maintain public trails and facilities;
- Managing conditions and access for tenants and ongoing agricultural activities; and
- Maintaining partnerships to support regional, tribal, and funding interests.

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Table 3. Implementation Actions

NATURAL RESOURCE MANAGEMENT

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Natural Resources Management							
Vegetation	NR-1	Purpose: Protect ecosystem function by promoting native plant species. Actions: Identify, monitor and consider enhancement or reintroduction of special status native plant species. Work with neighbors and partners on coordinated land management actions to promote landscape level ecosystem benefits.	Ongoing	High	PRG	Cost reflected under existing IPM, WFR, CG Programs	CalFire, RCD, CDFW
	NR-2	Purpose: Manage grasslands consistent with the District's Grazing Management Policy to support both biological resources and agricultural heritage of the area. Actions: Manage and conserve grassland habitat with adequate amounts of residual dry matter at the start of each growing season and a diverse range of vegetation heights and species composition and complexity. Control encroachment of problematic invasive and woody vegetation.	Ongoing	High	PRG	Cost reflected under CG Program	Grazing tenants
	NR-3	Purpose: Enhance and protect pollinator habitat. Actions: Develop a pollinator habitat enhancement plan. Conduct seed collection and seed amplification of pollinator host and nectaring plants appropriate for the local ecology. Identify, prioritize and implement plan actions in appropriate areas.	Ongoing and I	Medium	NR	\$75,000 for initial plan development \$15,000 annually	

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Phasing

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III – Long-term (10+ years)

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Natural Resources Management							
	NR-4	Purpose: Restore native forest ecosystems in areas with disturbance from past land use. Actions: Implement the Irish Ridge Restoration Plan, manage invasive species per the Integrated Pest Management Program, and implement vegetation management according to the Wildland Fire Resiliency Program.	Ongoing and I	High	NR, PRG	\$1,301,811 for Irish Ridge Restoration Project \$25,000 annually for EDRR Other costs reflected under IPM and WFR Programs	
Wildlife	NR-5	Purpose: Protect wildlife by reducing barriers to movement and dispersal. Actions: Use wildlife-friendly fencing and infrastructure when replacing existing or installing new infrastructure, establish and maintain safe wildlife crossings, including wildlife compatible culverts and regular maintenance to allow passage, and install signage to increase public awareness of local wildlife species. Conduct habitat assessments to refine objectives and prioritize barrier removals. Reference best available data sources when planning project areas to select most appropriate tool to inform the identification and protection of wildlife corridors (e.g., District American badger studies and linkage analysis, regional wildlife connectivity data, vehicular mortality hotspots).	Ongoing and II	High	NR, PRG	\$20,000 annually for wildlife connectivity enhancements and research Other costs reflected under Bluebrush Canyon Cross-fence and Lobitos Creek Fisheries Restoration	

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Natural Resources Management							
						Projects and the CG and WRF Programs	
	NR-6	Purpose: Protect ecosystem function by promoting native wildlife populations. Actions: Consider designation of conservation management units, consider recreational access type and timing mindful of sensitive wildlife species, restore or enhance degraded habitats for native wildlife, support species reintroduction and/or projects that enhance the genetic diversity and health of wildlife species. Continue efforts of the District's wildlife programs for birds, bats, amphibians, invertebrates and mammals such as conducting marbled murrelet monitoring, grassland bird and habitat management, bat species research, frog monitoring and early detection rapid response, invertebrate monitoring, grassland management, badger management, and maintaining wildlife habitat connectivity. Explore and implement shared benefits of wildlife conservation with Conservation Grazing management actions and landscape regimes.	Ongoing and I	High	NR, PRG	\$25,000/year for 5 years for Grassland Bird Habitat Management Plan Other costs reflected under CG Program, Irish Ridge Restoration, Badger Management, Wildlife Camera Projects, Lobitos Creek Riparian Restoration Project	CDFW, RCD

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Natural Resources Management							
	NR-7	Purpose: Enhance habitats for rare and special status species. Actions: Protect, monitor, and conduct adaptive management actions to sustain viable habitat for special status species, including the San Francisco dusky footed woodrat, mountain lion, marbled murrelet, California giant salamander, California red-legged frog, golden eagle, American badger, steelhead trout, grasshopper sparrow, ferruginous hawk, long eared myotis, and Bryant's Savannah sparrow. Conduct monitoring studies to identify priority habitat and conservation management areas for special status wildlife.	Ongoing and I	High	NR, PRG	Costs reflected under CG Program, Grassland Bird Habitat Management Plan, Badger, Mountain Lion Interaction Management and Purisima Pond Projects	CDFW
Watershed Resources and Aquatic Habitat	NR-8	Purpose: Enhance the quality of riparian habitat along Purisima, Whittemore Gulch, and Lobitos Creeks to promote healthy water quality and anadromy, sequester additional carbon, and protect riparian ecosystem function. Actions: Where feasible, enhance and/or expand the width and extent of the vegetated riparian corridor along major creeks within the Preserve. Monitor Lobitos Creek to assess conditions for water quality and anadromy and identify restoration and habitat enhancement opportunities.	II and III	Medium	NR	\$500,000 for Lobitos Creek Riparian Restoration Project	CDFW, RCD
	NR-9	Purpose: Protect and monitor water quality to support long-term preservation, restoration, and enhancement of natural resources within Purisima. Actions: Provide appropriate setbacks/buffers to water resources during public access planning in accordance with the Coastal	Ongoing and I	High	NR, PRG, CSP	Costs reflected under Lobitos Ranch Water Improvements, Purisima-to-the-Sea Trail	

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Natural Resources Management							
		Service Plan guidelines and the District's Resource Management Policies. Restrict direct human and livestock access to Lobitos Creek to minimize sedimentation and other impacts to the creek. Fence riparian areas, as needed, to exclude cattle. Continue to implement the Water Quality Monitoring Program priorities for the Preserve, including regular monitoring of creeks, ponds, springs, and wells to guide adaptive management efforts and any appropriate response actions.				Projects and CG and WQM Programs	
	NR-10	Purpose: Prevent erosion impacts to riparian habitats and water resources. Actions: Monitor stream bank stability at Purisima and Lobitos Creeks, particularly in areas near trails and cattle access and implement stabilization actions and/or restrict access as needed.	II	Medium	NR, PRG	Costs reflected under Lobitos Creek Restoration, WQM Program	
Conservation Grazing	NR-11	Purpose: Continue conservation grazing as a land management tool to preserve grasslands, reduce fire fuels, and support local agriculture. Actions: Manage grazing in accordance with the Board-approved Rangeland Management Plan (RMP) and Agricultural Policy. Update the RMP as needed. Continue existing monitoring program and evaluate introducing new monitoring frameworks (e.g. Audubon Conservation Grazing, Pt. Blue Rangeland Monitoring Network) as needed.	Ongoing	High	PRG	Cost reflected under CG Program	Grazing tenant, NRCS, UCCE, San Mateo County Farm Bureau, Agricultural Advisory Committee
	NR-12	Purpose: Update conservation grazing infrastructure to support existing and future operations.	I and II	High	NR, PRG	Cost reflected under CG Program, Bluebrush	Grazing tenant, RCD

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Natural Resources Management							
		Actions: Install and replace grazing infrastructure (e.g. new and/or repairs to pasture fences, new gates, stock water systems) to achieve grazing management objectives set forth in the RMP; explore emerging infrastructure technologies that improve general range management (e.g. stock water monitoring systems, electric fence, virtual fence).				Canyon Cross-fence and Lobitos Ranch Water Improvements Projects	
	NR-13	Purpose: Consider expanding conservation grazing operations to further support natural resource management goals. Actions: Evaluate potential to expand conservation grazing in the western areas of the Preserve to address fuel reduction, control invasive plants, control brush encroachment, and conserve native plant and animal diversity.	II	Medium	PRG	Cost reflected under CG Program	Grazing tenant, San Mateo County Farm Bureau, Agricultural Advisory Committee
Wildfire Resiliency	NR-14	Purpose: Reduce wildland fire risk and improve ease of accessibility by emergency personnel in the Preserve. Actions: Implement the Wildland Fire Resiliency Program's vegetation management plan, which includes ecosystem resiliency/healthy forest initiatives, enhanced fire management (i.e., fuel breaks and legally required defensible spaces around critical infrastructure), targeted removal of eucalyptus and acacia, and updating fire response resource maps. Conduct outreach to neighbors to promote the District's defensible space permits and encourage ecologically sensitive vegetation management related to wildfire resiliency and natural resource enhancement consistent with the Integrated Pest Management (IPM) and	Ongoing	High	PRG, POL	\$7,000 every 3 to 5 years for wildfire fuel reduction costs for new Verde parking area \$3,500 every 3 to 5 years for wildfire fuel reduction costs for expanded	

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Natural Resources Management							
		Wildland Fire Resiliency programs. Close trail access points within the coastal service area during red flag days and post notice of closures on the District's website.				North Ridge parking area Other costs reflected under WFRP and Coastal Management Plan	
Habitat Integrity	NR-15	Purpose: Preserve habitat integrity when siting new preserve infrastructure to support ecosystem resilience and health. Actions: Properly design and site new preserve infrastructure (i.e., trails, parking areas, fencing, corrals, etc.) to avoid habitat segmentation, maintain wildlife movement, and reduce the need for compensatory mitigation. Focus on siting new physical elements in the outer edges of preserves and close to areas of existing development where possible as recommended in the District's Parking Area and Trailhead/Staging Area Design guidelines. Identify and implement proper buffers to critical habitats and wetlands, both within and near the Preserve.	Ongoing and I	High	NR, POL, CSP	Costs reflected under Purisima-to-the-Sea Trail, Verde Road Trailhead and Parking, Hwy 35 Trail Crossing and Parking Expansion, Coastal Management Plan	
Sensitive Area Management	NR-16	Purpose: Protect highly sensitive areas of conservation priority. Actions: Identify and designate highly sensitive natural resource areas and/or highly disturbed areas that require extensive restoration effort as areas restricted to on-trail use only and/or as Conservation Management Units (CMUs).	Ongoing and I	High	NR, POL	N/A	

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Natural Resources Management							
Climate Resiliency	NR-17	Purpose: Reduce and manage greenhouse gas emissions where possible. Actions: Promote resilience of long-term vegetation carbon sequestration by implementing the Wildland Fire Resiliency Program actions. Support rangeland carbon sequestration and storage by implementing actions under the Bluebrush Carbon Farming Plan. Protect soil carbon storage by managing erosion. Promote old-growth structure in redwood forest through active forest management practices for long-term carbon sequestration and storage potential. Reduce visitor greenhouse gas emissions by promoting use of multimodal and green travel alternatives and the associated support infrastructure.	I	High	NR, PRG	Cost reflected under CAP, WFRP, Bluebrush Carbon Farming Plan, Verde Road Parking Area and Trailhead, Hwy 35 Parking Area projects	
	NR-18	Purpose: Promote habitat resilience to the effects of extreme weather conditions and climate change. Actions: Implement priorities under the Wildland fire Resiliency Program and Integrated Pest Management Program. Maintain and enhance habitat corridors to support species redistribution or migration needs as climate changes. Remove barriers to species as they may need to adapt to changing conditions and consider nature-based solutions. Consider best-available models of future climate conditions when designing restoration or mitigation projects. Identify and protect a mosaic of habitat refugia with consideration given to changing temperatures and moisture levels. Implement Early Detection and Rapid Response methods to address invasive and protect native and imperiled species that are negatively affected by shifting climate conditions. Make water	Ongoing	High	PRG	Cost reflected under WFRP and IPM Programs	

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Natural Resources Management							
		available for livestock, while sufficiently preserving natural sources of water resources for wildlife and riparian habitat health, consistent with District policies.					
	NR-19	Purpose: Inform the public about the effects of climate change and the District's resilience efforts in the preserve. Actions: Provide interpretive opportunities regarding climate change impacts to the preserve and the San Mateo Coast, and the District's resiliency work. Anticipate increased coast side visitation during heatwaves and alert the public ahead of these conditions about heat risks and safety measures via the District website and/or social media. Provide clear messaging when weather conditions (e.g. storm damage, red flag days on the coastside) lead to trail closures.	Ongoing	High	PRG	Ongoing Operations and Maintenance Interpretation and Education Program	
Conservation Management Unit (CMU)	NR-20	Purpose: Manage public access in CMUs to be consistent with site specific management goals. Action: Designate CMUs at the Preserve, when needed, for sensitive areas requiring limited or no public access, restricted infrastructure or facilities planning, and/or special management considerations.	Ongoing and I	High	POL	Costs reflected under existing visitor services and natural resources programs	

HISTORIC, CULTURAL, AND TRIBAL CULTURAL RESOURCES

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Historic, Cultural, Tribal Cultural Resources							
Tribal Cultural Resources	CR-1	Purpose: Engage with Native American tribes to plan for and address tribal cultural resources within the Preserve. Action: Begin tribal consultations as early as possible in the project planning process, as appropriate. Conduct cultural resource studies and analyses where appropriate and needed, including areas with proposed ground disturbance.	Ongoing and I	High	CIP	Cost reflected under Purisima-to-the-Sea Trail, Verde Road Parking Area and Trailhead, Hwy 35 Parking Expansion, Irish Ridge Restoration	
	CR-2	Purpose: Appropriately address Tribal Cultural Resources that could be affected by a proposed project. Action: In areas where there are known tribal cultural resources, implement avoidance measures to the greatest extent possible. When avoidance is not possible, work with the tribe(s) on implementing cultural resource protection measures and monitoring for known Tribal Cultural Resources. In the event that previously undiscovered Tribal Cultural Resources are discovered, work with the appropriate tribes to develop and implement recommendations for the protection and treatment of the cultural resources in accordance with tribal cultural values, District's Resource Management Policies, and Coastal Service Plan protocols.	Ongoing	High	CIP, POL	Cost reflected under Purisima-to-the-Sea Trail, Verde Road Parking Area and Trailhead, Hwy 35 Parking Expansion, Irish Ridge Restoration	
	CR-3	Purpose: Incorporate tribal knowledge and history into the visitor experience. Action: Engage tribes in development of ongoing education opportunities regarding archeology, anthropology, and Native	Ongoing	Medium	PRG	Native American Relations Program, Interpretation and Education	

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Historic, Cultural, Tribal Cultural Resources							
		American cultural history. Develop interpretation signage that includes Indigenous voices.				Program, Volunteer Program	
	CR-4	Purpose: Support tribal relationships and access to their ancestral homelands. Action: Consider formalizing access for tribal members to practice traditional lifeways, such as cultural burns/prescribed fires, ethnobotanical collection, and land stewardship actions that connect tribal members to their ancestral homeland and support ecosystem land management goals.	Ongoing	Medium	PRG	Costs reflected under the Native American Relations Program and WFRP	
Historic and Cultural Resources	CR-5	Purpose: Appropriately address significant cultural and historical resources that could be affected by a proposed project. Action: Conduct records searches and surveys with qualified archaeologists and consult the District's historic and cultural resource inventories to identify significant resources prior to project implementation, in accordance with the District's Resource Management Policies for cultural resources. For projects that may trigger environmental (CEQA) review and may negatively impact historic resources, hire a qualified architectural historian to verify historic significance eligibility and inform treatment. Provide a qualified historic/cultural resource monitor when ground-disturbing work is occurring within areas of concern to protect resources from damage.	Ongoing and I	High	CIP, POL	Cost reflected under Purisima-to-the-Sea Trail, Verde Road Parking Area and Trailhead, Hwy 35 Parking Expansion, Irish Ridge Restoration	
	CR-6	Purpose: Manage historic and cultural resources consistent with the Basic Policy and Resource Management Policies.	Ongoing	Medium	PRG, CIP, POL	Costs reflected under Historic and	

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Historic, Cultural, Tribal Cultural Resources							
		Action: With guidance from qualified architectural and cultural historians and informed by cost projections, identify financially and operationally sustainable options consistent with the Basic Policy and Resource Management Policies for the long-term management of cultural and historical resources, such as interpretation and documentation.				Cultural Resources Programs	

AESTHETIC RESOURCES

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Aesthetic Resources							
Viewshed	AR-1	Purpose: Protect important Preserve viewsheds, including views and elements that depict the rural character of San Mateo County. Action: Site proposed infrastructure and amenities in accordance with the District's Coastal Service Plan, Resource Management Policies, and the Parking and Staging Area Design Guidelines. Where feasible, use materials complementary of the Preserve's natural landscape and the rural character of San Mateo County. Design new parking areas in a way that utilizes existing topography to screen them from view and site them naturalistically in the landscape to limit the need for earthwork and retaining walls. Include locally appropriate native seeding to provide additional screening only when necessary.	Ongoing and I	High	POL	Cost reflected under Purisima-to-the-Sea Trail, Verde Road Trailhead and Parking Area, and Hwy 35 Trail Crossing and Parking Expansion Projects	

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Aesthetic Resources							
	AR-2	Purpose: Showcase the Preserve’s natural beauty, unique characteristics and landscape features for public enjoyment. Action: Site proposed amenities, including benches, overlooks and interpretive signage, in accordance with the District’s Resource Management Policies and Parking and Staging Area Design Guidelines to highlight key vistas, including coastal views.	Ongoing and I	High	POL	Cost reflected under Purisima-to-the-Sea Trail, Verde Road Trailhead and Parking Area, and Hwy 35 Trail Crossing and Parking Expansion Projects	
Scenic Corridor	AR-3	Purpose: Protect designated State and County Scenic Corridors. Action: Site proposed infrastructure and amenities to minimize effects on the Highway 1 and Skyline Boulevard (Highway 35) Scenic Corridors in alignment with the County of San Mateo, Coastal Service Plan, and Resource Management policies. Retain existing berms and native trees where possible that provide screening of new public access facilities.	Ongoing and I	High	POL	Cost reflected under Purisima-to-the-Sea Trail, Verde Road Trailhead and Parking Area, and Hwy 35 Trail Crossing and Parking Expansion Projects	SMC

PUBLIC ACCESS

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
Public Use	PA-1	Purpose: Locate trails and designate trail uses (hiking, mountain biking, equestrian uses, dog use) appropriately based on site suitability to remain protective of the natural resources, agricultural uses, and public safety. Action: Consider natural and cultural resource sensitivities, trail features, including slope and line of sight, the presence of agricultural uses, and other elements when determining the allowable uses for each trail (which do not include e-bikes unless as an ADA other powered mobility device) to protect natural and cultural resources, reduce the potential for conflicts, and maintain visitor safety. Designate public access as on-trail use only within conservation grazing areas, restoration areas, and other sensitive areas within the preserve. Designate the Purisima Uplands area as a closed area until site remediation work is completed and designated trails are established. Evaluate appropriate trail segments for options to incorporate dog access, such as the Purisima-to-the-Sea trail loop, that avoids impacts to sensitive natural and cultural resources and grazing operations, and that meet the 1995 Board-adopted dog access site suitability criteria. Consider seasonal closures or changes to recreational access based on new information about impacts to sensitive resources.	Ongoing and I	High	POL, EVAL	Cost for feasibility study reflected under PA-4.	Grazing tenant
	PA-2	Purpose: Remain consistent with the Board-adopted Trail Use Policies for regional trails. Action: Designate the regional Purisima-to-the-Sea Trail as multi-use (hiking, biking and equestrian use, not including e-bikes unless as an	Ongoing, I	High	POL	Cost reflected under Purisima-to-the-Sea Trail Project	Bay Area Ridge Trail, POST

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Public Access							
		ADA other powered mobility device); includes redesignating existing segments that are hiking-only as multi-use.					
Trails	PA-3	Purpose: Site and design trails to be protective of the natural and cultural resources, minimize impacts to surrounding uses, and for long-term durability. Action: Consider topography, vegetation, native habitats, habitat connectivity, species sensitivities, cultural resources, and other natural features when planning new trail alignments. Evaluate the suitability of existing roads and trails for public use to minimize new cuts on the landscape. Design and construct trails in accordance with the District's Trail Use Policy, Coastal Service Plan policies and guidelines, and Details and Specifications Guidelines. Site and design trails to avoid or minimize impacts to sensitive habitats, rare plants, wildlife corridors, and cultural resources wherever feasible. Build trails to an average grade of eight percent, where practicable, for long-term durability. Incorporate sustainable trail design features to reduce erosion and encourage proper drainage that directs runoff to vegetated areas away from creeks. Avoid siting trails near private property boundaries, cattle grazing infrastructure and sensitive resource areas whenever possible. Consider seasonal closures or changes to recreational access based on new information about impacts to sensitive resources.	II and III	Medium	EVAL, POL, CIAP	Cost reflected under Purisima-to-Sea Trail Project: \$2,400,000 and PA-4.	
	PA-4	Purpose: Provide a variety of trail opportunities to offer a diversity of trail experiences. Action: Consider trail loop opportunities of varying distances, including shorter loops (e.g. 1-4 miles) from main trailheads.	II and III	Medium	EVAL	\$250,000 for future trail feasibility assessments	

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Public Access							
		Consider new internal trail connections to improve trail connectivity within the preserve (e.g. a western North Ridge Trail connector to lower Whittemore Trail) while considering impacts to wildlife movement and habitat fragmentation.					
	PA-5	Purpose: Explore opportunities for local and regional trail connections to the Preserve. Action: Coordinate with the San Francisco Public Utilities Commission (SFPUC) to implement the Highway 35 trail crossing on Highway 35 and a spur trail from the North Ridge parking area to connect existing segments of the Bay Area Ridge Trail within Purisima to the new SFPUC Skyline Watershed Ridge Trail. Implement the Purisima-to-the-Sea regional trail within the preserve and coordinate with POST, San Mateo County Parks, Coastal Conservancy and Caltrans to connect the Purisima-to-the-Sea trail to the California Coastal Trail at the Cowell-Purisima trailhead via an existing trail easement held by POST on private property. Collaborate with agencies and partners implementing the regional trails that connect to Purisima (i.e. Bay to Sea, Bay Area Ridge, and California Coastal trails) about how to disseminate information and updates to the public about the regional trails, including trail maps, amenities, and operating hours.	Ongoing and I	High	CIP, POL	Costs reflected under the Purisima-to-the-Sea Trail and Hwy 35 Trail Crossing and Parking Expansion projects	SFPUC, POST, SMC Parks, Coastal Conservancy, Caltrans, Adjacent landowners
	PA-6	Purpose: Expand Easy Access trail opportunities. Action: Explore opportunities to extend the existing 0.3-mile Easy Access Redwood Trail. Evaluate new locations for Easy Access trails that connect to ADA facilities and other amenities (e.g. restrooms, benches, vista points).	Ongoing	High	EVAL	Costs reflected under PA-4	

Action Types

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Phasing

I - Short-term (1-3 years)
 II - Mid-term (4-9 years)
 III - Long-term (10+ years)

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
	PA-7	Purpose: Ensure new trails remain consistent with Board-approved policies, including the Coastal Service Plan for trails within the Coastsides Protection Area, and the Trail Use Policies. Action: Follow the applicable Board-approved Resource Management Policies and trail design and specification guidelines when identifying new trail alignments and designing/constructing new trails.	Ongoing and I	High	POL, CSP	N/A	
Parking and Trailheads	PA-8	Purpose: Develop safe driveways connecting public roadways to Preserve parking areas. Action: Develop new driveways in accordance with the Board approved Parking/Staging Areas and Trailhead design guidelines, including confirming adequate lines of sight. Implement no parking areas along public roadway frontages near driveway entrances, as appropriate, to maintain lines of sight and orderly site circulation.	I	High	CIP, POL	Costs reflected under Hwy 35 Parking Expansion and Verde Road Trailhead and Parking Area Projects	
	PA-9	Purpose: Design and develop new parking areas that are functional, safe, and reflect a sense of place appropriate for the parking/trailhead location. Action: Develop the new Verde parking area and North Ridge parking area expansion in alignment with the Board-approved Coastal Service Plan and Parking/Staging Areas and Trailhead design guidelines, including proper siting/design of new parking areas and selection of construction materials that are durable and reflect the	I	High	CIP, CSP, POL	\$3,500,000 for Hwy 35 Multi-use Crossing and Parking Expansion \$7,600,000 for Verde	SCC, SFPUC, Bay Area Ridge Trail Council, POST, SMC

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Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
		open space character of the surrounding area. Coordinate with the County of San Mateo to designate no-parking zones on roadways adjacent to parking areas, where necessary, to reduce congestion and improve visitor safety and emergency access near Preserve parking areas and trailheads.				Road Trailhead and Parking Area Project	
Multimodal Access	PA-10	Purpose: Improve parking management at the Purisima Creek Road trailhead. Action: Implement a three-year pilot shuttle program that provides a point-to-point shuttle service between the new Verde Road Parking Area and Purisima Creek Road Trailhead consistent with the Purisima Multimodal Implementation Project Report. Close roadside and trailhead parking at the Purisima Creek Road Trailhead when the shuttle is in service.	I and III	High	CIP / PRG	\$3,421,300 to \$5,402,600 for pilot shuttle (Purisima Multimodal Implementation Project)	
	PA-11	Purpose: Consider additional transportation demand management (TDM) strategies, as needed, for the lower area of the Preserve. Action: After evaluating the level of success of the pilot shuttle program for the Purisima Creek Road Trailhead, consider either expanding the shuttle program with stops in Half Moon Bay and/or Pescadero, or pursuing other TDM strategies to further manage parking and visitation. Seek partnerships and funding sources for implementation and long-term operation.	III	Low	PRG	\$250,000 for future Multimodal Assessment Study	SamTrans, SMC, HMB, CSP,
	PA-12	Purpose: Provide visitors with real-time parking availability information at the North Ridge and Verde Road parking areas as an effective parking management tool.	Ongoing and I	High	CIP/PRG	\$50,000 to \$70,000 for capital improvements	

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Comprehensive Use and Management Plan
Purissima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
		Action: Establish an online real-time parking information system, using sensors to track available parking spaces at the North Ridge and Verde parking areas, providing information online to assist the public in scheduling their visit and better distribute parking use.				associated with the Hwy 35 and Verde Road Parking Areas. \$55,000 for annual operating cost for these parking areas.	
	PA-13	Purpose: Take incremental actions to further manage parking, as needed, at the North Ridge and/or Verde Road parking area. Action: When parking demand meets established capacity thresholds, consider the following: - Designating parking spaces for carpool, vanpool or high-occupancy vehicles as an incremental, additional step to better manage parking use and encourage carpooling to the Preserve; and/or - Establishing a reservation parking system.	II, III	Medium for Carpool Space Low for Reservation System	PRG	Carpool Spaces: \$15,000 for signage \$125,700 to \$251,000 annually for operations Reservation System: \$15,000 for signage	

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Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
						\$140,700 to \$266,000 annually for web platform/software application, operations and online system management	
	PA-14	Purpose: Pursue additional strategies to reduce parking congestion at specific sites. Action: Advertise other District trailheads and nearby preserves for visitors to find alternative destinations when specific parking areas are at capacity.	I	Medium	PRG	\$5,000 per parking area (cost of signage requiring improvements in Caltrans right-of-way.)	
Site Amenities	PA-15	Purpose: Explore new interior trail amenities that support long distance travel within the preserve (i.e., travel between Skyline Boulevard and Verde Road). Action: Inventory the various rest stop amenities, including restrooms and rest areas that currently exist within the preserve.	I	Medium	EVAL	Costs reflected under PA-16	

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Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
		Identify potential suitable interior sites for new amenities to support long distance travel within the preserve. Ensure existing and new amenities are wildlife friendly.					
	PA-16	Purpose: Explore new interior trail amenities that support long distance, regional trail use. Action: Inventory the various rest stop amenities, including restrooms, rest areas with bench(es), potable water, hitching post, and/or backpack camps that currently exist along the regional Bay to Sea Trail corridor. Conduct a feasibility study to identify critical gaps where similar amenities can be offered within the preserve to support this regional trail use. In addition, coordinate with regional partners to explore how trail amenities would be implemented to support the Purisima-to-the-Sea Trail and overall Bay to Sea Trail corridor.	II and III	Low	EVAL	\$150,000 for Trail Amenity Feasibility Study	Bay Area Ridge Trail, POST, SCMSN, SMC, NPS, Parks Conservancy, CSP, GGNRA, Sierra Club
	PA-17	Purpose: Provide visitor serving amenities at new parking areas and trailheads. Action: Incorporate visitor serving amenities in accordance with the Board approved Parking/Staging Areas and Trailhead design guidelines, including proper signage. Provide a vault toilet at the future Verde Road parking area.	I	High	CIP	Costs reflected under Hwy 35 and Verde Road Parking Area projects	
	PA-18	Purpose: Provide amenities at trailheads that promote multimodal travel to the preserve. Action: Include bicycle racks, a bicycle repair station, bicycle wheel brush, hitching posts, and/or water troughs, as would be suitable, at	I	High	CIP	Costs reflected under Hwy 35 and Verde Road	

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Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
		preserve trailheads. Include notices or educational material to the public about pathogen or weed transfer.				Parking Area Projects \$6,000 for amenities at other trailheads covered under the Purisima Multimodal Implementation project	
Signage	PA-19	Purpose: Install proper signage at new trails, parking areas and other public access features per District standards. Action: Develop a signage plan in alignment with the District's Sign Manual to provide trail directional signs, relevant regulation signs, and appropriate resource management signs. Install standard District signboards at the future Verde Road trailhead, including a partner signboard that recognizes the support from partners and Measure AA public funding support.	I	High	CIP	\$25,000 for Verde Road Parking Area trailhead signboards and interpretive signage \$36,700 for all Hwy 35 Parking Area Project signage	

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Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
						\$4,000 for Purisima-to-the-Sea Trail and other regulatory signage	
Interpretation and Education	PA-20	Purpose: Incorporate interpretive signage at the Preserve, as appropriate, to highlight important resources and site history, including the land's agricultural heritage. Action: Identify appropriate locations for new interpretive signage at trailheads or on trails where mid-trail facilities may be located and at the Verde Road trailhead/parking area. Potential interpretive topics include themes that highlight the local ecology, sensitive species, agricultural heritage, tribal cultural resources, climate change impacts and sustainability measures, historic oil refinery and logging operations in Purisima Canyon, and land management practices that protect biodiversity and support the preservation of local agriculture on the San Mateo County coast. Include language translations on interpretive signage on the coastside based on changing demographics and census-related data when the number of residents with limited English proficiency (LEP) reach San Mateo County/Santa Clara County thresholds.	I	Medium	PRG, CIP	\$25,000 for potential interpretive signage that is not yet planned within new trailheads and parking areas	San Mateo County Historical Society, Half Moon Bay History Association, Coastsides Land Trust
	PA-21	Purpose: Enrich the visitor experience through outdoor guided activities that highlight the importance of open space, conservation, and agricultural preservation.	Ongoing	Medium	PRG	Cost associated with existing interpretatio	Save the Redwoods League

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Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Public Access							
		Action: Provide docent naturalist guided activities to the public. When effective and as capacity allows, generate digital media content (e.g., StoryMaps, OuterSpatial, podcasts, mobile apps, audio tours, etc.) to enhance storytelling. Provide language translations for online resources.				n, public affairs and GIS programs	
	PA-22	Purpose: Expand reach of educational and interpretation programs to new and underserved communities. Action: Explore opportunities and interest in offering cultural and/or natural resource docent-led programming for local schools. Incorporate Spanish language translations and other language translations to signage and educational programs, as needed, to expand reach to non-English speaking communities on the coastside.	Ongoing	Medium	PRG	Cost associated with existing interpretation and public affairs programs	Parks Conservancy, GGNRA, SMC Parks, POST, CSP

OPERATIONS AND MAINTENANCE

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Operations and Maintenance							
Road and Trail Maintenance	OM-1	Purpose: Provide and maintain adequate emergency access to the Preserve Action: Maintain existing operational roadways consistent with the District's best management practices.	Ongoing	High	M	Costs reflected under existing visitor service program and Coastal Management Plan	

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Comprehensive Use and Management Plan
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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Operations and Maintenance							
	OM-2	Purpose: Reduce erosion and sedimentation originating from legacy roads. Action: Properly decommission unnecessary internal roadways. Implement erosion control measures and drainage improvements, including maintenance of existing culverts, as needed for the remaining roads.	Ongoing	Medium	POL, CSP	Costs reflected under Purisima-to-the-Sea Trail Project and staff time associated with ongoing assessment and maintenance reflected under Coastal Management Plan	
	OM-3	Purpose: Maintain trails to promote an enjoyable trail experience. Action: Maintain vegetation along trails in compliance with the District's Wildland Fire Resiliency Program and Integrated Pest Management program. Maintain trail surfaces and associated drainage infrastructure in compliance with the Open Space Maintenance and Restoration Program. Identify trail segments that require additional hardening, particularly for new trail segments in grazing areas, and install and replace aggregate material as needed to maintain trail function. Evaluate and implement minor trail reroutes to avoid problematic trail conditions or trail failures.	Ongoing	High	PRG, M	Costs reflected under WFR and IPM Programs and Coastal Management Plan	

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Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Operations and Maintenance							
Safety and Security	OM-4	Purpose: Ensure compliance with District rules and regulations for public safety and resource protection. Action: Provide signage and education to promote compliance with District regulations. As needed, conduct enforcement actions to address violations for the protection and safety of the resources and public.	Ongoing and I	High	PRG, CSP, CIP	Reflected under Coastal Management Plan, and PA-19	
	OM-5	Purpose: Ensure security of Preserve lands. Action: Conduct ongoing patrol to monitor safe, appropriate, and permissible public uses. Patrol closed areas for unauthorized access. Utilize gates, wildlife-friendly fencing, and signage on District property where appropriate to maintain site security and meet public safety objectives in alignment with the District's Good Neighbor Policy.	Ongoing	High	PRG, POL	Reflected under Coastal Management Plan	
	OM-6	Purpose: Manage Preserve lands to minimize wildland fire risk Action: Maintain vegetation along roads and trails, where appropriate. Educate visitors about regulations to maximize compliance, conduct regular patrols, and conduct maintenance activities according to best managements practices for fire safety. Implement actions specified for the Preserve in the Wildland Fire Resiliency Program.	Ongoing	High	PRG, POL, CSP, M	Reflected under existing WFRP and Coastal Management Plan	
	OM-7	Purpose: Minimize impacts to private properties and avoid public/private use conflicts and trespassing. Action: In areas within the coastside protection area where trail routes are adjacent to private property, wildlife-friendly	Ongoing and I	High	POL, CSP	Reflected under Coastal Management Plan	

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Purissima Creek Redwoods Open Space Preserve

Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Operations and Maintenance							
		fencing shall be employed as necessary to deter users from leaving the trail and private property signs will be installed to inform visitors of private property rights. Consider wildlife-appropriate directional fencing to guide wildlife away from unsafe or unwanted property areas. Specific fence, gate, and crossing designs will be determined in consultations with adjacent affected property owner(s) at the Use and Management Plan stage, in accordance with the Coastal Service Plan. In the coastside protection area, trails should be sited 300 feet from any occupied dwellings on neighboring properties, where feasible, with a minimum 50-foot setback if greater separation from dwellings is not feasible. Consider impacts from District operations in the vicinity of private properties such as noise, maintenance activities, and siting of new trails and facilities in accordance with the District's Good Neighbor Policy and Coastal Service Plan.					
Utilities and Infrastructure	OM-8	Purpose: Remove obsolete infrastructure. Action: Identify and document utilities and infrastructure and remove unnecessary facilities and infrastructure, such as obsolete water systems and fencing. Remove the old county park restroom near the Redwood Trailhead, approved for demolition by the Board in 2000.	II	Medium	M, CIP	Costs reflected under structures disposition program. \$100,000 for removal of old county park restroom	
	OM-9	Purpose: Maintain reliable domestic and agricultural water sources essential to implement management objectives.	Ongoing, II	Medium	M, EVAL, CIP	\$50,000 for water	Grazing tenants

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Operations and Maintenance							
		Action: Inventory and maintain existing water infrastructure. Measure domestic and agricultural consumptive water use and evaluate opportunities to use municipal water supply where feasible. Evaluate opportunities to expand and/or replace existing water infrastructure to support conservation grazing operations while maintaining water requirements of wildlife. Ensure all water infrastructure is wildlife friendly and does not create entrapment risk (e.g. escape ramps, secured closures).				infrastructure maintenance	
	OM-10	Purpose: Promote resilience of infrastructure to impacts of extreme weather conditions and climate change. Actions: Assess roads, trails, crossings, and water conveyance infrastructure for vulnerability to impacts from severe storms, fire, and extreme heat. Upgrade or decommission infrastructure as appropriate. Design new infrastructure and repairs in consideration of more severe weather conditions than historic levels.	III	Medium	PRG	Cost reflected under CAP, WFR Programs, Ongoing Operations and Maintenance	
Environmental Hazards	OM-11 OM-11-1	Purpose: Address environmental hazards Action: Remove barbed wire, nails, debris, and other materials that no longer have a functional purpose or that pose public safety hazards and do not contain significant cultural or historic value. Support the long-term stewardship of the property and meet public safety objectives in alignment with the District's Good Neighbor Policy.	I	High	M, NR, AGT	Cost reflected under ongoing operations and maintenance and Coastal Management Plan	CalGEM

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Operations and Maintenance							
	OM-11-2	Action: Identify hazardous areas and develop any necessary plans for containment, removal, and/or remediation appropriate in alignment with natural and historic resource management objectives and procedures. Remove and remediate hazards where already identified within Purisima Uplands and designate Purisima Uplands as a closed area until the site has been remediated. Following remediation, re-evaluate the area for potential public access in consideration of long-term natural and cultural resource protection.					
Legal Agreements	OM-12	Purpose: Ensure conditions of easements and other agreements are met.	Ongoing	High	AGT, POL	N/A	POST, SCC, adjacent landowners, tenants
	OM-12-1	Action: Where required, develop public access in alignment with stipulations set forth by the conservation and trail easements held by the Peninsula Open Space Trust and California Coastal Conservancy.					
	OM-12-2	Action: Comply with access easements with applicable neighbors.					
	OM-12-3	Action: Comply with the Purisima Creek Water Adjudication.					
	OM-12-4	Action: Review the existing Lobitos Farming Grounds Management Plan for consistency with District's Agricultural Policy. If needed, update the plan to align with relevant District policies and practices.					

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Focus Areas	Ref.	Purpose and Actions	Phasing	Priority	Action Type	Costs	Potential Partners
Operations and Maintenance							
Partnerships	OM-13	Purpose: Seek and maintain partnerships to support management of the Preserve in alignment with the District's mission and policies					
	OM-13-1	Action: Explore potential partnerships for implementation and long-term use and/or management of trail crossings and connectors to Cowell Purisima Coastal Trail.	Ongoing,	High	AGT	N/A	POST, SMC, CSP
	OM-13-2	Action: Partner with tribes, non-profits, governmental entities, and/or other interested communities in regional resource and land management efforts pertaining to the preserve in accordance with the District's Good Neighbor Policy.	Ongoing, I	Medium	AGT	N/A	SMC, HMB, POST, Tribes
	OM-13-3	Action: Explore local and regional partnership opportunities that encourage multimodal access to the preserve as well as connections to the California Coastal Trail, Bay to Sea Trail, Bay Area Ridge Trail, Ohlone-Portola Heritage Trail, etc. Support the implementation of San Mateo County's planned bike routes and planned Connect the Coastside projects.	Ongoing	Medium	AGT	N/A	SMC, Caltrans, RCD, CSP, SamTrans, POST
	OM-14	Purpose: Seek funding partnerships to leverage and magnify District resources. Action: Explore grant and external funding opportunities to support public access improvements, resource management actions, and long-term use and management of the preserve.	Ongoing	Medium	AGT	N/A	SFPUC, SCC

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6.0 FINANCIAL IMPLICATIONS

The implementation action table identifies preliminary cost information for recommended actions that are new and not currently ongoing at the Preserve, including costs for the implementation of the new restoration and public access projects. The table below summarizes costs by focus area and separates initial (one-time) costs for implementation from recurring costs that may occur every 1-5 years. Cost estimates are based on current knowledge of projects and work schedules. These estimates may change as a project's scope and schedule are refined and do not reflect contributions from grants or other potential funding sources.

Table 4. Summary of Costs for Recommended Actions at Purisima

Focus Area	Cost Estimates ¹		Comments
	Initial Costs	Recurring Costs	
Vegetation	\$ 1,376,811	\$ 40,000	Initial costs: Irish Ridge Habitat Restoration Plan and Pollinator Habitat Enhancement Plan. Recurring costs: Pollinator Habitat Enhancement Plan and EDRR.
Wildlife	---	\$ 45,000	Badger Management Project and Grassland Bird Habitat Management Plan.
Watershed Resources and Aquatic Habitat	\$500,000	---	Lobitos Creek Riparian Restoration project.
Wildfire Resiliency	---	\$10,500	Fuel reduction for new Verde Road Trailhead and Parking Area and expanded North Ridge Parking Area.
Trails	\$2,650,000	---	Purisima-to-the-Sea Trail and feasibility studies for future trail connections, access, and amenities.
Parking and Trailheads	\$11,100,000	---	Verde Road Trailhead and Parking Area and Highway 35 Multi-use Crossing and Parking Expansion projects.
Multimodal Access	\$5,767,000	\$572,000	Initial costs: pilot shuttle program, real-time parking information system, carpool and reservation parking signage, and way-finding signage. Recurring costs: real-time parking information, carpool, and reservation parking programs.
Site Amenities	\$156,000	---	Multimodal trailhead amenities and future studies for additional trail amenities.
Signage	\$65,700	---	Signage for Verde Road Trailhead and Parking Area, Highway 35 Multi-use Crossing and Parking Expansion, and Purisima-to-the-Sea Trail projects.

¹ Costs are provided in 2026 dollars, except for the new public access and restoration projects, which are provided in dollars of the year construction is anticipated to begin (2027-2028).

Comprehensive Use and Management Plan
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Focus Area	Cost Estimates ¹		Comments
	Initial Costs	Recurring Costs	
Interpretation and Education	\$25,000	---	Interpretive signage.
Utilities and Infrastructure	\$150,000	---	Removal of old county park restroom and water infrastructure maintenance.
TOTAL	\$21,791,111	\$667,500	

The largest initial costs are attributed to implementing the new Verde Road Parking Area and Hwy 35 Multi-use Crossing and Parking Area Projects. Other significant initial costs come from multimodal access implementation, primarily the pilot shuttle program, as well as the new Purisima-to-the-Sea Trail. The most significant recurring costs are attributed to operations of the carpool, reservation, and real-time parking information systems. The carpool and reservation systems would only be considered if future parking conditions at the Verde Road and North Ridge Parking Areas exceed certain thresholds, and their implementation would require Board confirmation.

Approximately \$6.1 million of the total initial costs are funded through Measure AA (MAA) allocations, leaving an approximate \$8.5 million funding gap to implement other actions eligible for MAA funds under the Purisima Creek Redwoods portfolio. Approximately \$1.4 million of the total initial costs are funded through the District's General Fund, leaving an approximate \$6.6 million funding gap. The cost of implementing the pilot shuttle program, approximately \$5.4 million, accounts for most of the General Fund gap.

In order to address these funding gaps, the District may explore opportunities for grants, partnership funding, future MAA reallocations, interest income allocations, and/or reserves. A cost sharing agreement is in development between the District and SFPUC to fund a portion of the implementation costs for the Highway 35 Multi-use Crossing and Parking Expansion Project.

7.0 PHASING AND PRIORITY PLAN

The CUMP Implementation Action Table provides phasing and priority information for all recommended actions. Phasing is categorized as “short-term” for implementation within 1-3 years, “medium-term” for 4-9 years, “long-term” for 10 or more years, and “ongoing” for recurring actions. Phasing is based on project timelines, staff availability, partner coordination, and necessary project sequencing. Actions are also assigned as high/medium/low priority based on Board and public priorities, staff input, and whether other ongoing or previous projects have separately addressed the purpose of a particular action. The recommended actions are summarized and grouped below by phase and priority to illustrate the sequencing of implementation for new and ongoing actions.

Short-term Actions (1-3 years)

High Priority

All five topic areas have high priority actions anticipated for implementation within the first three years, including:

- Implementing vegetative restoration work, such as the Irish Ridge Habitat Restoration Plan;
- Continuing District wildlife programs and adaptive management for sensitive species;
- Conducting water quality monitoring;
- Updating conservation grazing infrastructure;
- Managing greenhouse gas emissions through carbon sequestration methods;
- Identifying sensitive resource areas to inform the design and planning of public access and Preserve infrastructure;
- Evaluating significant cultural and historic resources that could be affected by upcoming projects;
- Conducting early consultations with Native American tribes;
- Protecting important viewsheds and scenic corridors;
- Showcasing Purissima’s unique features through siting and designing new infrastructure in compliance with the District’s Staging/Parking Area and Trailhead Design Guidelines
- Implementing the Purissima-to-the-Sea Trail, Verde Road Parking Area, Highway 35 Multi-use Crossing and Parking Expansion projects;
- Supporting regional trail connections to the Preserve;
- Implementing multimodal strategies at new and existing parking areas (including the pilot shuttle program and real-time parking); and
- Maintaining public safety, minimizing impacts to private property, and addressing environmental hazards with the implementation of new public access projects.

Medium Priority

Medium priority, short-term, actions address natural resource management, public access, and operations and maintenance, including:

- Developing a pollinator habitat enhancement plan;
- Evaluating regional trail amenities and parking management strategies; and
- Exploring community partnerships for resource and land management.

Medium-term Actions (4-9 years)

High Priority

High priority actions identified for implementation within four to nine years address natural resource management, including:

- Improving infrastructure for conservation grazing operations; and
- Reducing wildlife barriers throughout the Preserve.

Medium Priority

Medium priority, medium-term, actions address natural resource management, public access, and operations and maintenance, including:

- Improving water quality and riparian habitat through implementation of the Lobitos Creek Restoration project and erosion control measures near water resources;
- Exploring the expansion of conservation grazing operations for vegetation management;
- Studying new opportunities for trail connections within the Preserve with sustainable trail design;
- Considering additional parking management through a carpool parking program at the North Ridge or Verde Parking Areas;
- Removing obsolete infrastructure; and
- Maintaining water sources for domestic and agricultural uses.

Low Priority

Low priority, medium-term, actions address public access, including:

- Evaluating a reservation parking system at North Ridge or Verde Parking Areas if additional measures are needed to reduce parking congestion; and
- Exploring new public access amenities to support regional trail alignments connecting to Purisima.

Long-term Actions (+10 years)

High Priority

The highest priority action identified for implementation within ten or more years is improving access to the Purisima Creek Road Trailhead, which may involve various multimodal strategies.

Medium Priority

Medium priority, long-term, actions identified for implementation address natural resource management, public access, and operations and maintenance, including:

- Continuing to study new trail opportunities;
- Implementing carpool or reservation parking strategies;
- Completing the Lobitos Creek Restoration project; and

Comprehensive Use and Management Plan
Purisima Creek Redwoods Open Space Preserve

- Planning infrastructure improvements for extreme weather conditions and climate change impacts.

Low Priority

Low priority, long-term, actions address public access, including:

- Evaluating the success of the pilot shuttle program to determine the program's continuation and possible expansion; and
- Evaluating a parking reservation system, if necessary.

8.0 NEXT STEPS

Following Board certification of the environmental review (CEQA) document and adoption of this CUMP, District staff will work to incorporate the recommended actions into future capital improvement and action plans based on the assigned phasing and priority, in balance with other District priorities.

New restoration and public access actions would subsequently move into permitting phases. Projects located within the San Mateo County Coastal Zone are required to obtain a Coastal Development Permit (CDP) through the County of San Mateo, as governed by the Local Coastal Program and regulated by the Local Coastal Act. The CDP is planned to include the Purisima-to-the-Sea Trail, Verde Road Parking Area, Verde Road Crossings, Pilot Shuttle Program, and Irish Ridge Habitat Restoration Plan projects (see Figure 8). These projects are also located within parcels zoned for Planned Agricultural District/Coastal Development District (PAD/CD) in unincorporated San Mateo County, which will require a Planned Agricultural District (PAD) permit through the County. Both the Coastal Development and PAD permits will require review and approval by the San Mateo County Planning Commission. Separately, POST will be applying for a CDP for the POST North Trail and Highway 1 crossing to connect to the Cowell Purisima trailhead.

The table below outlines the general timelines for implementation of the new public access and restoration projects.

Table 5. Timelines for New Restoration and Public Access Projects

Project	CDP/PAD*	Additional Permitting	Construction/ Implementation
Irish Ridge Habitat Restoration Plan	Spring 2027	N/A	Fall 2027 – Fall 2029
Highway 35 Multi-use Crossing and Parking Expansion	N/A	Fall 2026 – Spring 2027	2027 – 2028
Purisima-to-the-Sea Trail	Spring 2027	Spring – Summer 2027	2027 – 2029
Verde Road Parking Area	Spring 2027	Spring – Summer 2027	2028
Pilot Shuttle Program	Spring 2027	N/A	Fall 2027 – Fall 2029

**The projects requiring a CDP and PAD permit will be submitted under a single application, per the recommendations of San Mateo County staff.*

9.0 REFERENCES

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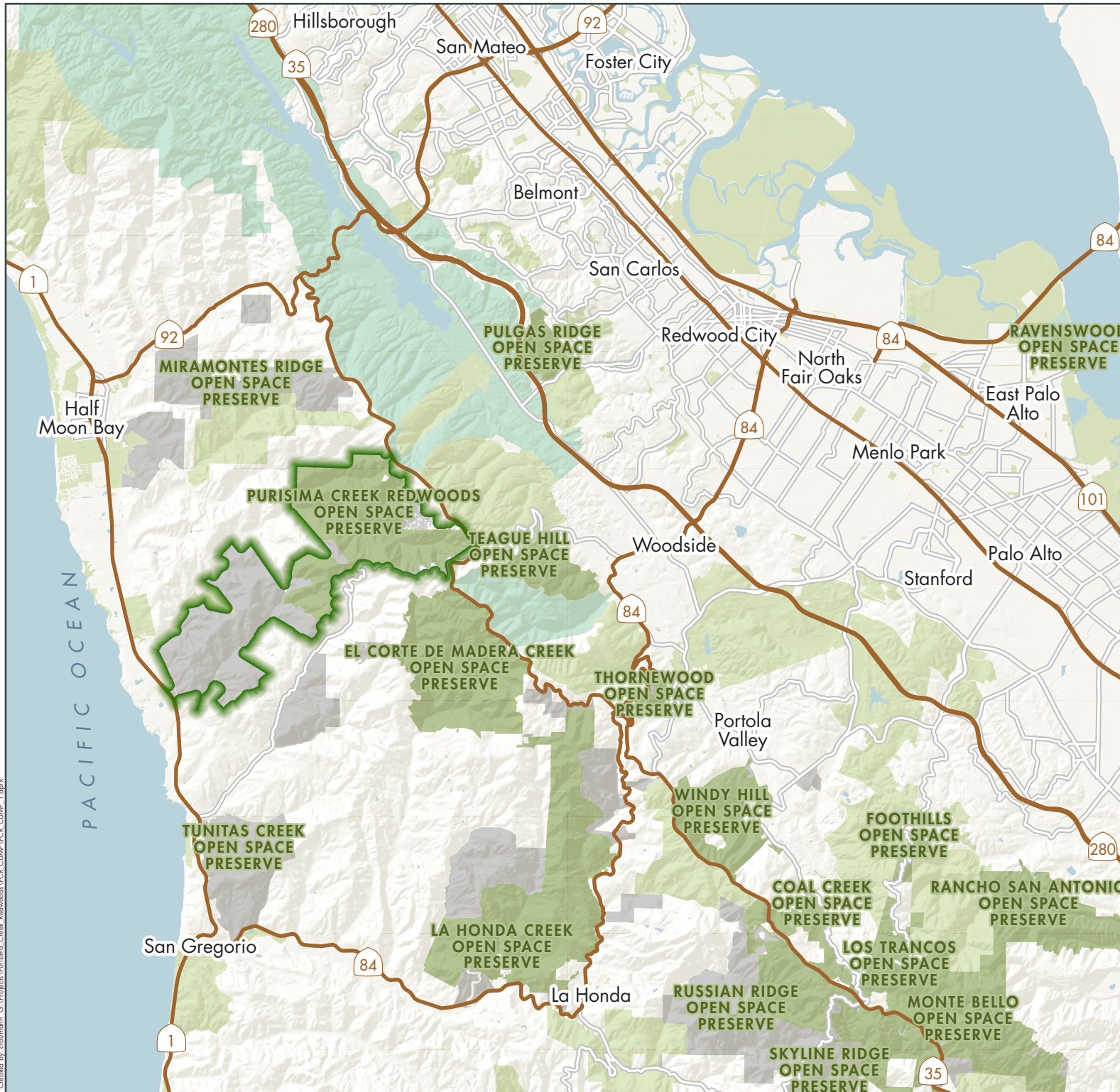
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<https://portal.laserfiche.com/Portal/DocView.aspx?id=18352&repo=r-5197d798>

10.0 GLOSSARY

Intermittent (stream/creek)	A seasonal waterbody that does not have water present year-round
Perennial (stream/creek)	A waterbody that flows continuously year-round

FIGURES



**Figure 1
Regional Location**

-  Purisima Creek Redwoods Open Space Preserve
-  Midpen preserve
-  Closed area (no public access)
-  Other protected land
-  Private watershed lands

 Miles 0 1 2

Midpeninsula Regional
Open Space District
(Midpen)
9/21/2026



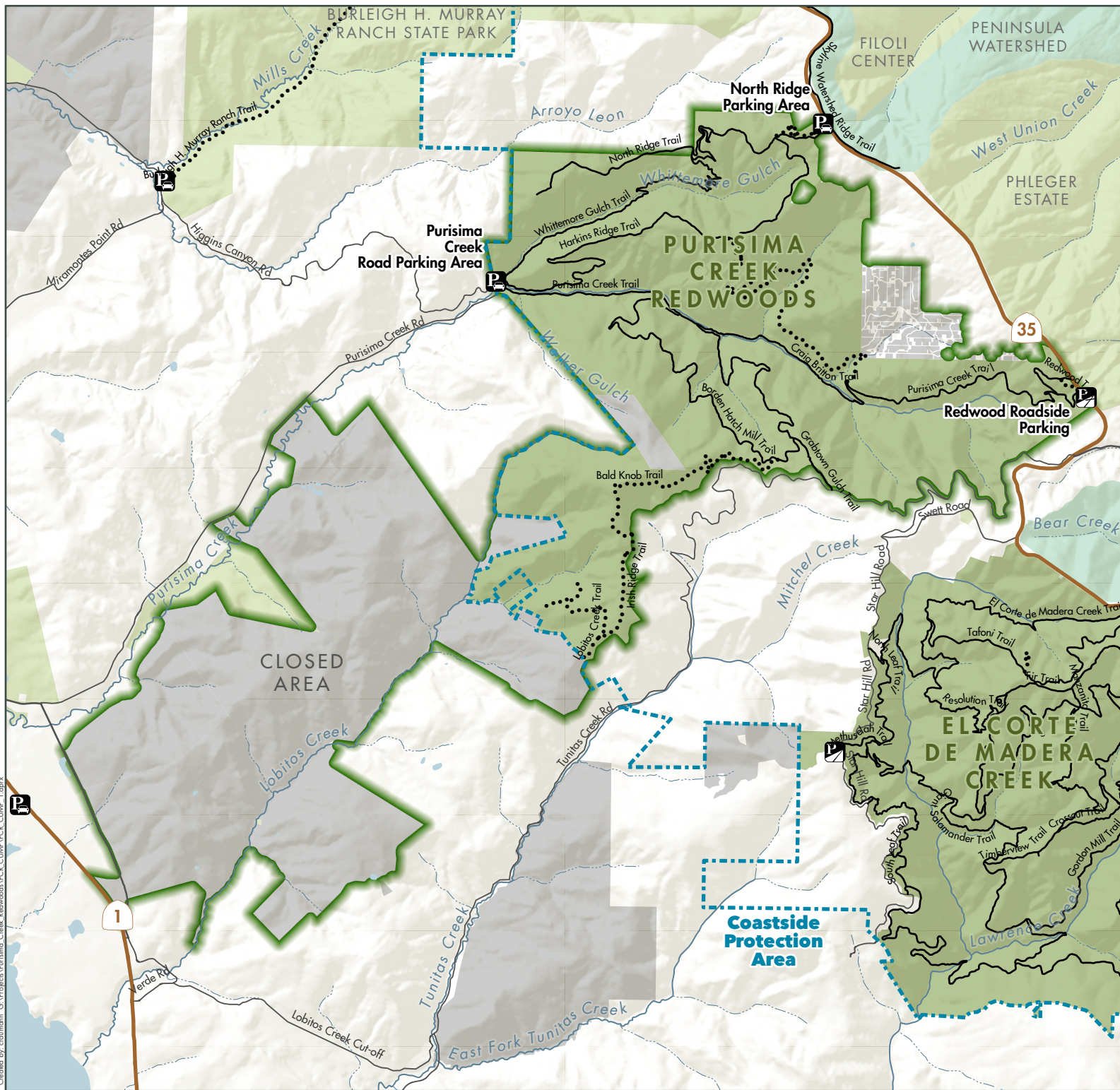


Figure 2
Existing Public Access

- Purisima Creek Redwoods Open Space Preserve
- Midpen preserve
- Closed area (no public access)
- Other protected land
- Private watershed lands
- Parking area
- Roadside parking
- Coastside Protection Area
- Trail - hiking only
- Trail - hiking, bicycling, equestrian

Miles 0 0.5 1

While the District strives to use the best available digital data, these data do not represent a legal survey and are merely a graphic illustration of geographic features.

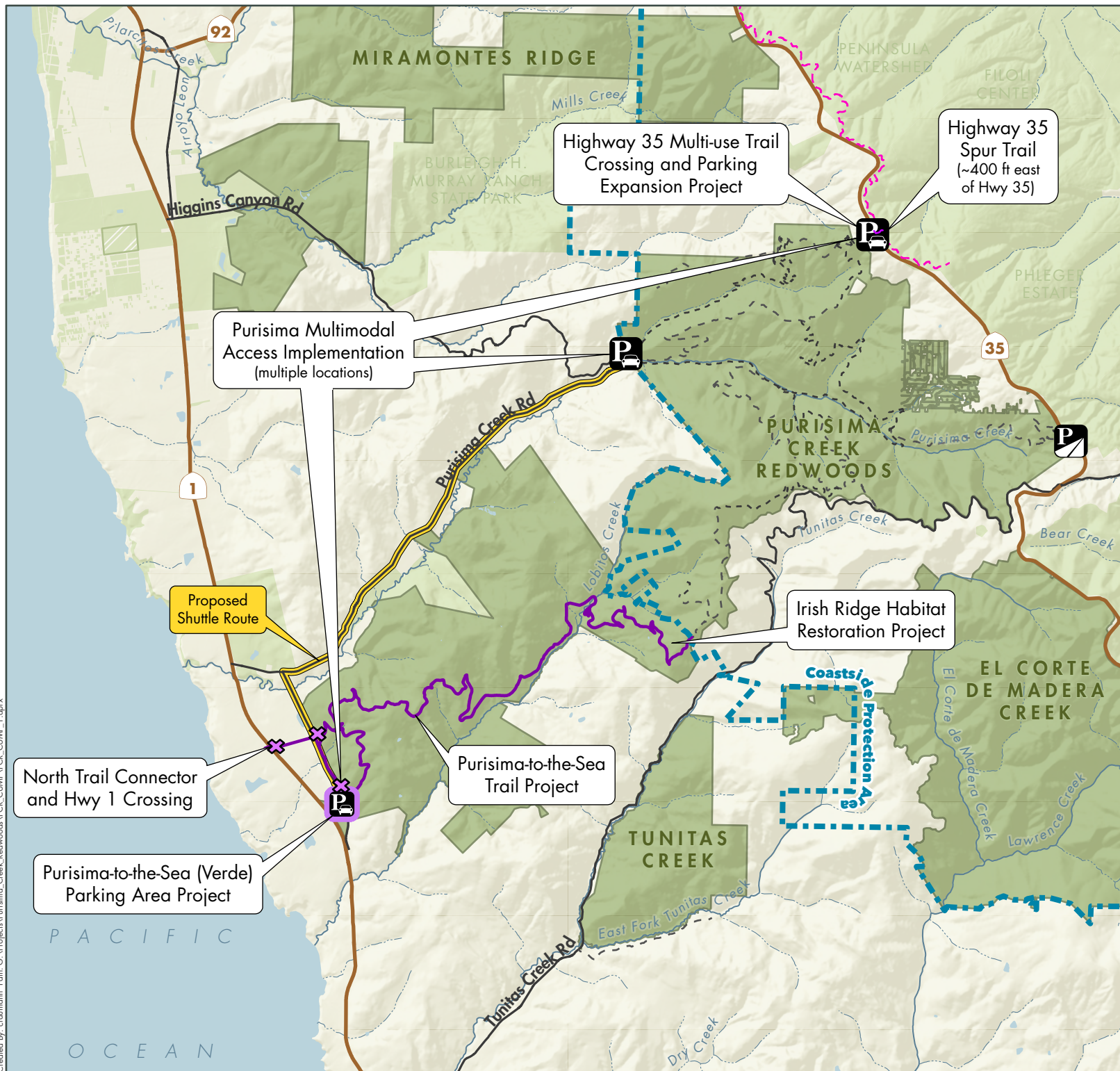
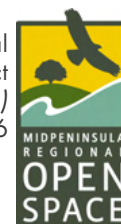


Figure 3
New Project Sites

-  Proposed road crossing location
-  Proposed parking area
-  Existing parking area
-  Existing roadside parking area
-  Proposed Purissima-to-the-Sea Trail
-  Existing Bay Area Ridge Trail Extension
-  Existing trail
-  Midpen preserve
-  Other protected land

 Miles 0 0.5 1

Midpeninsula Regional
Open Space District
(Midpen)
9/21/2026



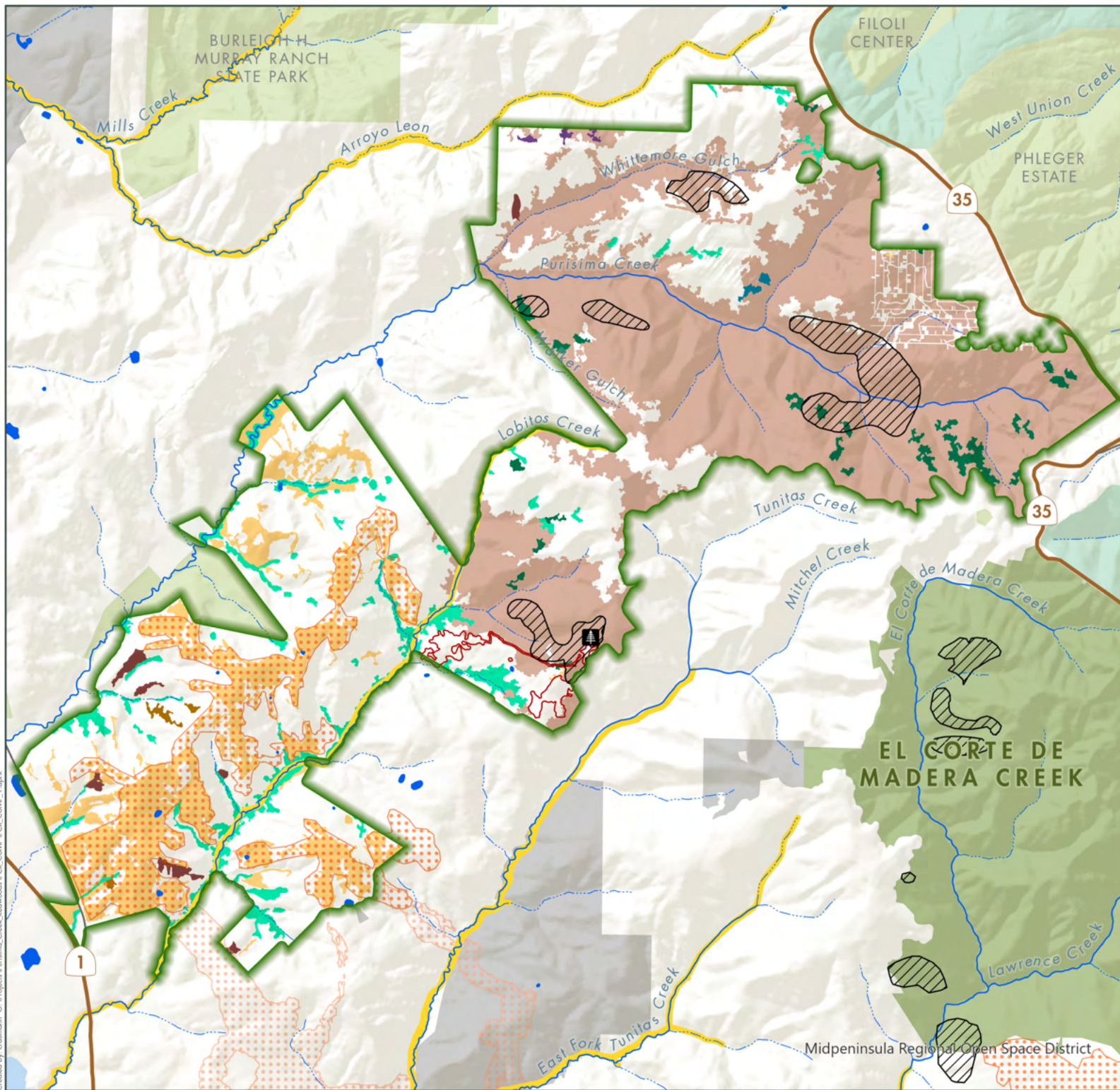


Figure 4
Natural Resources

-  Old growth redwood (Elbow Tree)
-  Priority restoration area
-  Marbled murrelet habitat
- American badger corridor**
-  Source (habitat)
-  Critical linkage
-  Grasslands – suitable sparrow habitat
- Sensitive Natural Communities**
-  Glossy leaf manzanita–Golden chinquapin chaparral
-  Tanoak forest
-  Wax myrtle scrub
-  Redwood forest and woodland
-  California bay forest and woodland
-  California sagebrush scrub
-  Riparian forest
-  Perennial stream
-  Intermittent stream
-  Steelhead critical habitat
-  Waterbody
-  Purisima Creek Redwoods Open Space Preserve
-  Other Midpen preserve
-  Closed area (no public access)
-  Other protected land
-  Private watershed lands



Midpeninsula Regional
Open Space District
(Midpen)
9/22/2026



While the District strives to use the best available digital data, these data do not represent a legal survey and are merely a graphic illustration of geographic features.

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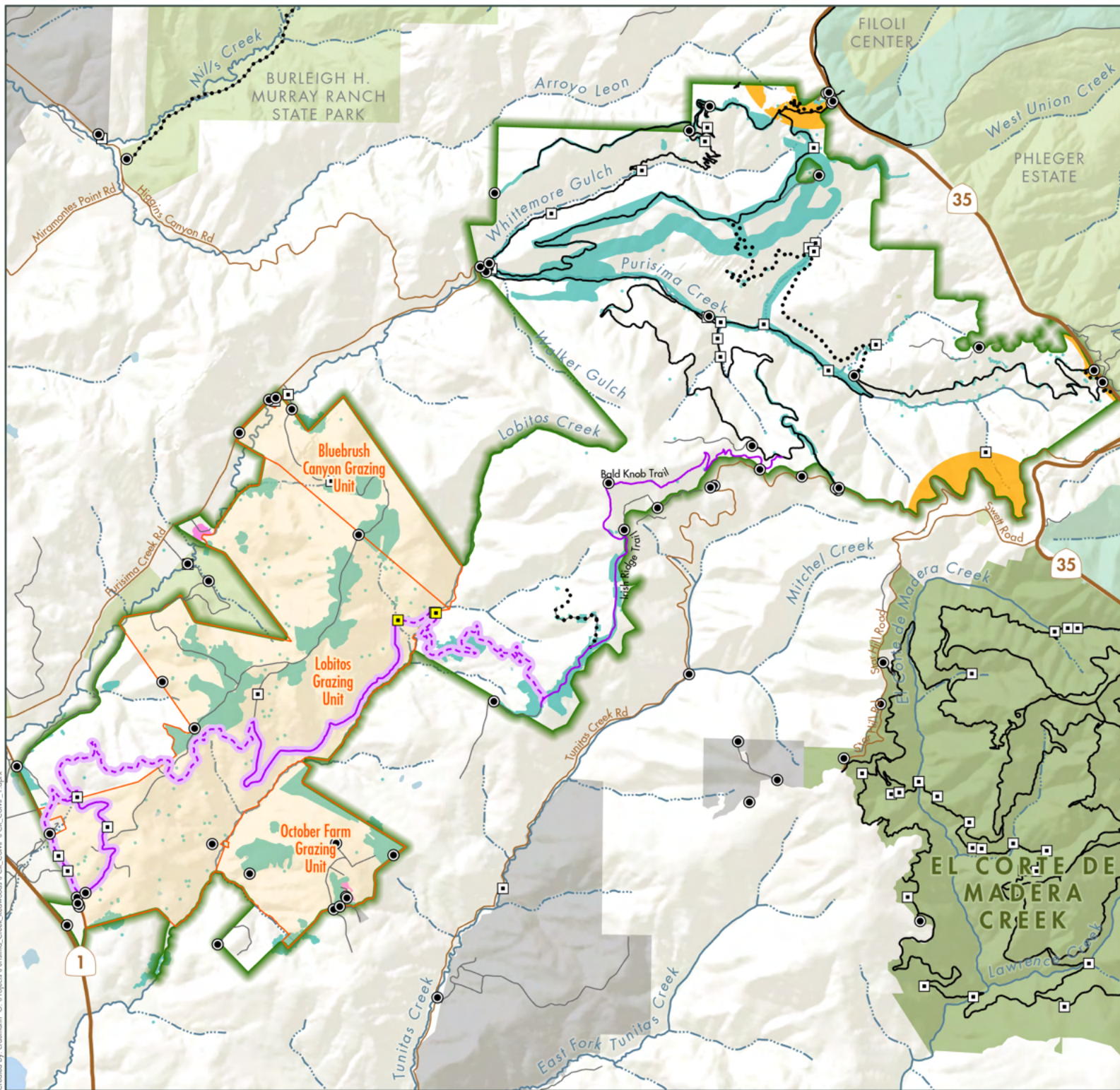


Figure 6
Operations and Maintenance

- Gate
- Existing bridge
- Proposed bridge
- Trail - hiking only
- Trail - hiking, bicycling, equestrian
- Unpaved road
- Purisima-to-the-Sea Trail alignment
- - - Construct new road/trail
- Improve existing road/trail for multi-use
- Rangeland Management Plan area (grazing lease)
- Current vegetation management area
- Future work associated with the Wildland Fire Resiliency Program (WFRP)
- Integrated Pest Management (IPM) area
- Purisima Creek Redwoods Open Space Preserve



Midpeninsula Regional
Open Space District
(Midpen)
9/22/2026



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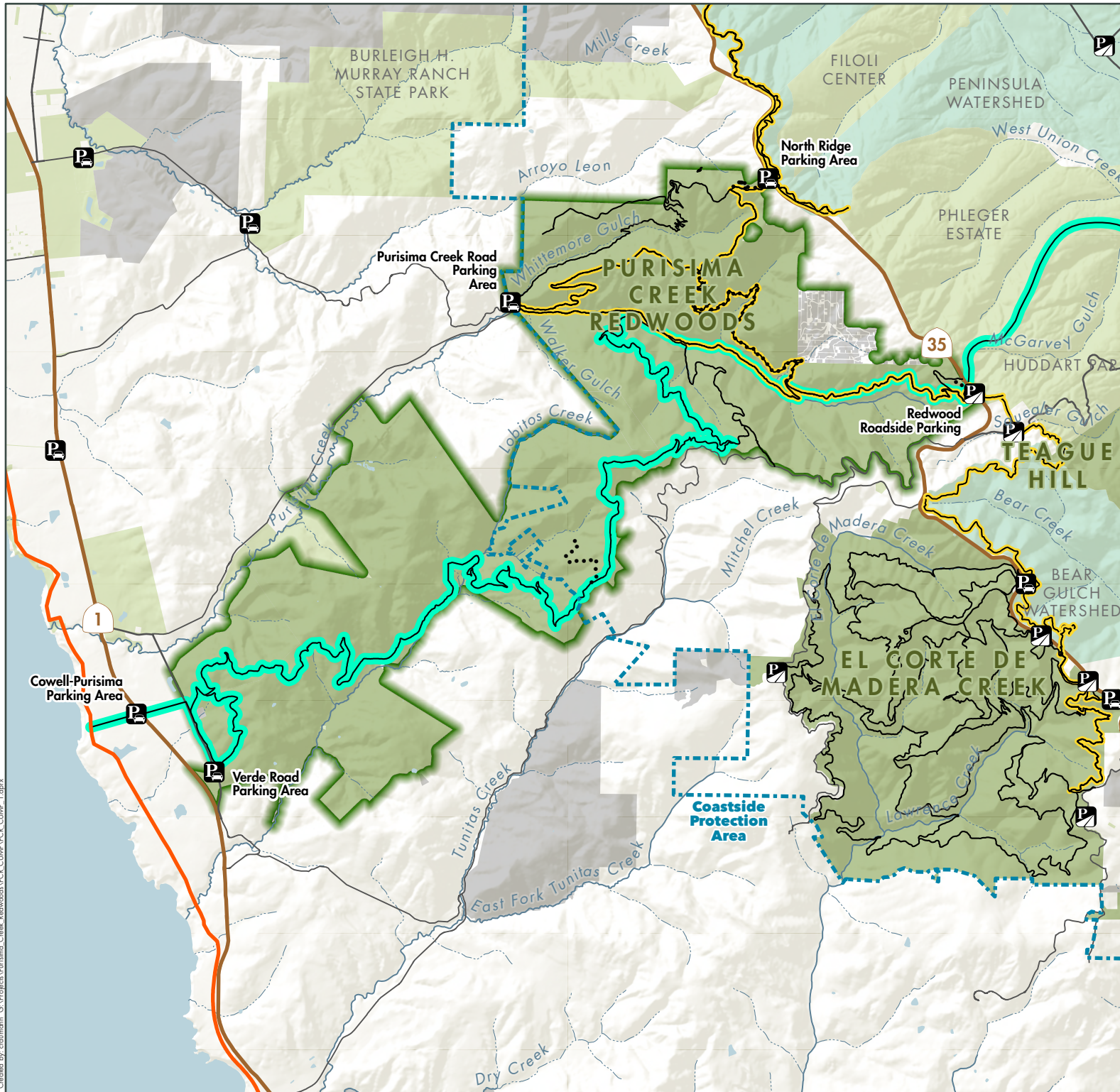


Figure 7
Regional Trails and
Trail Connections

Future conditions with the new
Midpen public access projects

- Purisima Creek Redwoods
- Midpen preserve
- Closed area (no public access)
- Other protected land
- Private watershed lands
- Coastside Protection Area
- Trail - hiking only
- Trail - hiking, bicycling, equestrian
- Bay Area Ridge Trail
- Bay to Sea Trail
- California Coastal Trail
- Parking area
- Roadside parking

Miles 0 0.5 1

Midpeninsula Regional
Open Space District
(Midpen)
9/21/2026



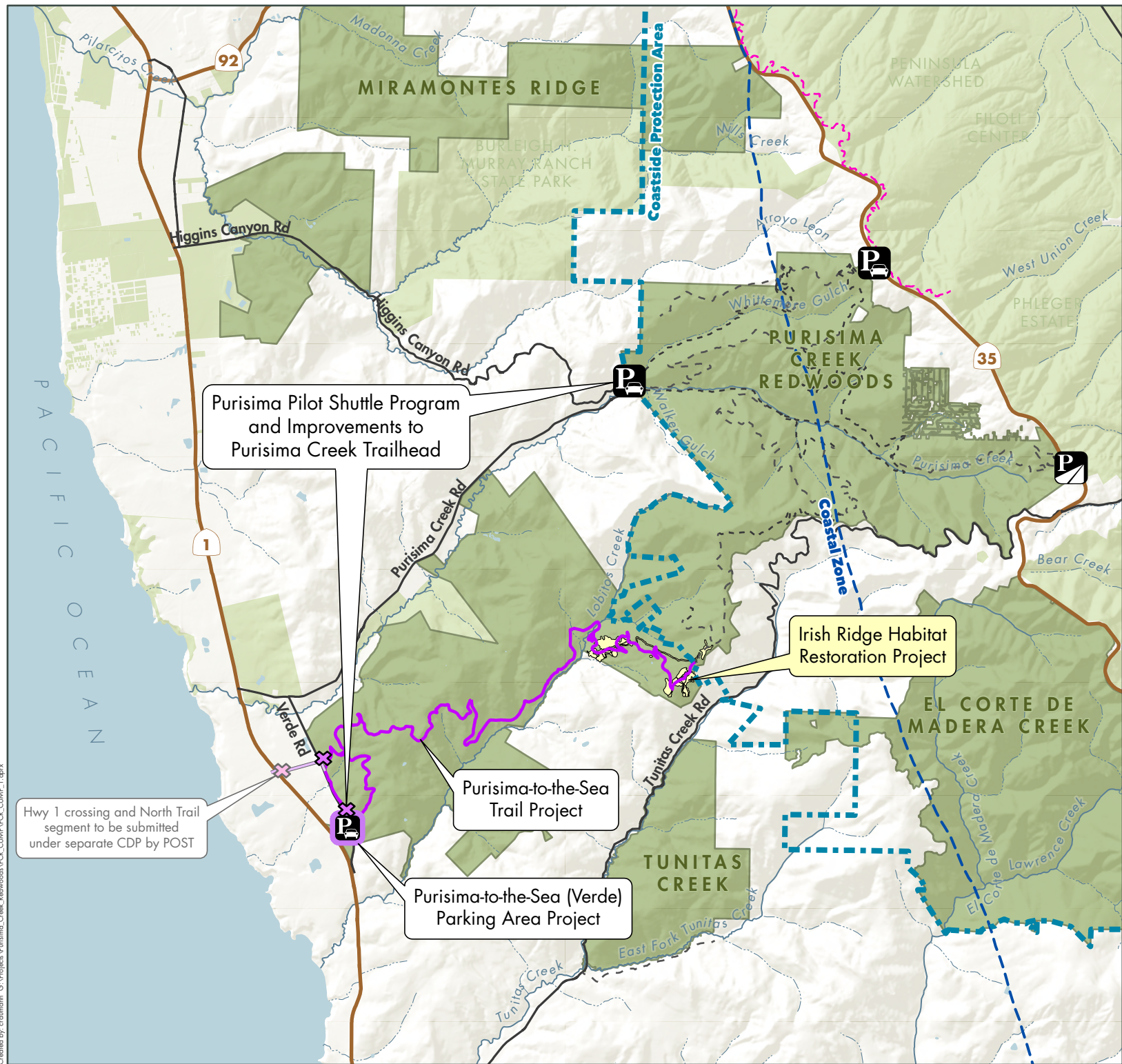


Figure 8
Coastal Development
Permit Projects

-  Proposed road crossing location
-  Proposed parking area
-  Existing parking area
-  Existing roadside parking area
-  Proposed Purisima-to-the-Sea Trail
-  Existing Bay Area Ridge Trail Extension
-  Existing trail
-  Midpen preserve
-  Other protected land



Midpeninsula Regional
 Open Space District
 (Midpen)
 9/21/2026



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While the District strives to use the best available digital data, these data do not represent a legal survey and are merely a graphic illustration of geographic features.

GRAPHICS



✱ DISTRICT SIGNAGE



ADA COMPLIANT TRAIL

POTENTIAL CARPOOL PARKING (FUTURE)

POTENTIAL RESERVATION PARKING (FUTURE)

EQUESTRIAN TRAIL

BIORETENTION AREA

NATURE EDUCATION
AREA

OVERLOOK

EQUESTRIAN PARKING

EQUESTRIAN AMENITIES

BICYCLE AMENITIES

EXTENT OF WORK LINE

RESTROOM

MIDPEN SIGNAGE TYP.

SHUTTLE STOP & SHELTER

ENTRY &
EXIT GATE

RIPERIAN BUFFER

DRAINAGE CHANNEL

NORTH



CABRILLO HIGHWAY 1



APPENDIX A

**Compiled Feedback for New Public
Access Projects**

APPENDIX A. Compiled Feedback from New Public Access Projects

The following information includes summarized Board and public feedback from feasibility studies conducted for the Purisima-to-the-Sea Trail and Verde Parking Area (2023), Hwy 35 Multi-use Trail Crossing and Parking Expansion (2023), and Purisima Multimodal Access Implementation (2024) projects. These tables and feedback were included with the individual board reports for each project during Board selection of a preferred concept at the conclusion of the feasibility studies. Links to the original Board reports are also provided below under each project.

Purisima-to-the-Sea Trail & Verde Parking Area¹

Theme/Topic	General Feedback/Comments*
Visitor Behavior	• 95% are hikers, with a preference for 4 to 7-mile hikes. • 45% ride their bicycle or horse, with a preference for 10 to 15-mile rides. • 90% prefer a loop trail, as opposed to 7% preferring out and back, and 3% preferring a one-way with shuttle. • 75% stated they come to Purisima either on weekday mornings or afternoons; 50% visit on weekday mornings.
Destinations people are interested in seeing when coming to Purisima	• 50% prefer Purisima's unique features. • 19% prefer the nearby inland vistas and viewpoints. • 15% prefer the coastal overlooks and beaches.
Priorities of survey respondents	• When asked about the most important factors that should be considered in planning for the Purisima-to-the-Sea project, 50% prioritized biological site attributes, and 25% prioritized physical site attributes.
Preferred parking design alternative	• At open house events, members of the public overwhelmingly supported a larger parking area to accommodate TDM strategies. • Survey respondents heavily favored standard and larger parking area sizes.
Impacts to Parking Lot Design and amenities	• Trail Access ◦ Preference for accessing the trail without having to cross the drive aisle near the parking area's drive entrance. • Shuttle Pick-Up/Drop-Off ◦ 50% reported that they would use a shuttle if their preferred parking area was full; 25% said that they may be interested.

¹ Included in Board report for the May 24, 2023 meeting ([R-23-52](#))

	- o Design should consider shuttle pick-up/drop-off area and parking quantity to accommodate those taking the shuttle in addition to parking for those using the trailhead. • Electric vehicle parking: - o Public expressed interest in electric vehicle parking. • Flexible Parking Uses - o 66% were open to flexible parking uses at different times. - o Commenters noted that flexible parking areas would need to be clearly signed. Education would be necessary to inform the public. • Bikes - o ~50% indicated they would visit by bike - o Interest in bike racks, bike lockers, and bike repair stations - o Bike brushes to remove debris off tires and prevent spread of Sudden Oak Death - o E-bike charging station • Equestrians - o Majority of those parking with equestrian trailers would like to see at least 4 equestrian trailer spaces at the new lot. - o ~66% prefer having a natural surface parking area and pathways - o ~50% expressed interest in having hitching posts and mounting blocks available. - o Preference for having equestrian parking on the outer ring in the parking alternatives • Parking / Parking Surface - o Interest in loading zone adjacent to / back of parking spaces - o Commenters note that the coastal areas lack storm water drainage and that the proposed parking should incorporate impervious surfaces into the design - o If overflow lot is proposed, there was interest in natural surface for overflow parking. • Restroom - o Interest in having a second vault toilet near equestrian parking. • Other amenities suggested: - o Availability of restrooms - o Stroller and wheelchair rentals - o Seating / rest area - o Potable water / drinking fountains - o Trash collection - o Pay phone
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	- o Connections to other transit - o Signboard w/ maps, showing nearby points of interest - o Interpretive signage - o WiFi - o Cell phone charging - o Wayfinding signage - o Animal waste bags - o Fire lanes / loading zones
Mid-Trail facilities	• 89% expressed interest in a rest area / bench and 82% in a restroom as mid-trail (interior preserve) amenities. • 22% were interested in a picnic area as a mid-trail amenity • Hitching post, mounting block, and non-potable water trough received support from 8% of respondents • Over half of survey respondents identifying as equestrians would like to see a hitching post, mounting block, and water trough at a mid-trail location. • Backpack camping
Impacts to Grazing	• When asked what measures the District should consider to ensure compatibility of the existing conservation grazing and future recreational access, 50% supported providing on-site education about the value of the conservation grazing program. ~25% supported providing education on sharing the trail with cattle.
Interpretive Signage Topics	• Survey respondents had a preference for interpretive signage topics discussing wildlife (20%), Native American history (19%) and Ecosystems (19%).
Trail Uses	• Interest in allowing multi-uses on trails • Interest in single-track bike trails
Highway Crossing	• Concerns about at grade crossing • Suggestions for above grade or below grade crossings - o Underpass study to accommodate wildlife crossing
Equity	• Signage available in English and Spanish
Additional comments / concerns	• Road safety and emergency vehicle access • Traffic circulation safety for vehicles traveling to and from parking lot • Concerns about preserve visitors trespassing over private property • Consider that Cowell Ranch Beach trailhead exceeds capacity on good weather days, this lot may be used as an overflow lot for beach use and other nearby open space destinations. • Ensure project is compatible with San Mateo Local Coastal Program. • Consider impacts to prime agricultural land, sensitive habitats, views. • Balance square footage of parking area with protecting habitat

	• Allow backpacking and reservation camping • Allow dog access • Real-time parking information • Clear signage, and enforcement of violations • Strong etiquette education program • Allow e-bike use • Limit equestrian use / limit bike use • Minimize infrastructure in parking areas
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*Feedback noted above is based on visitor survey and input received during engagement activities; percentages reflect respondent responses from the visitor survey.

Hwy 35 Multi-use Trail Crossing and Parking Expansion²

Theme/Topic	General Feedback/Comments
Conceptual Parking Design Options	• Support for options A.2 (Upper & Lower Expansion, Two-Way Circulation), B.1 (Upper Only, One-Way Circulation), and B.2 (Upper & Lower Parking Expansion areas, One-Way Circulation). • A neighbor shared concerns about the change to the “serenity” of the neighborhood setting with the parking changes. • Concern regarding shoulder parking on Highway 35. Some suggestions included removing these altogether for safety concerns or formalizing (striping) these spaces to prevent cars parking inappropriately on the highway shoulder. In particular, the location of the three shoulder spaces south of the parking area entrance would make it difficult for cars to get back into the parking area if these were occupied.
Equestrian Parking/Access	• Neighbors and equestrians both shared that few equestrians currently visit the North Ridge trailhead due to a lack of designated equestrian parking. Equestrians supported the inclusion of designated equestrian parking spaces and said they appreciated being considered in the planning process and would use these equestrian parking if provided. • Proximity of equestrian parking to standard vehicle parking is not a significant safety concern and the different types of parking do not necessarily need to be separated. For example, equestrian parking at

² Included in the Board report for the November 8, 2023 meeting ([R-23-137](#))

	Rancho San Antonio is located next to standard vehicle parking and gets a good amount of foot traffic. • Two designated equestrian spaces at North Ridge may be sufficient. Providing four equestrian spaces would make it much easier for equestrians to count on available parking but they may not be regularly occupied. • An equestrian suggested waiting to implement an equestrian parking reservation system at North Ridge until staff can confirm this is needed or would be utilized. • Enforcement of equestrian parking areas should be considered so that standard vehicles do not use this space.
Transportation Demand Management (TDM) Strategies	• If two designated equestrian parking stalls are provided, another two stalls could be provided as flexible stalls for larger vehicles that could be used by either equestrians, bicycling groups transporting bikes and other gear, or school/educational programs, etc. These flexible spaces could also be reserved to allow groups to plan their outings to the North Ridge trailhead.
Circulation	• Consider how one-way circulation through the parking area will interfere with traffic on Highway 35. Anticipate that cars may back up on the highway if a vehicle stops at the parking entrance or if vehicles circle back into the parking area. • Suggestions to remove shoulder parking on Highway 35 and use that space for vehicles to loop around the parking area.
Highway Crossing/Traffic Recommendations	• Neighbors expressed concerns about the safety of an on-grade trail/road crossing due to excessive speeding on Highway 35 (especially on weekends) and the road curvature. • A neighbor suggested a tunnel for a safe crossing and lights should not be used for the crossing. • Equestrians shared that they have used similar equestrian/pedestrian crossings on Highway 50 and other highways that could be perceived as “unsafe” for trail crossings. The equestrians appreciate these crossings, which are not highly used but necessary for equestrians to connect to county parks and equestrian facilities. • Important to consider who will be using the crossings and how much traffic is expected on the highway to balance the risk of formalizing an on-grade crossing.

	- Concerns regarding line of sight and the time it will take for larger, slower vehicles (such as equestrian trailers) to turn out of the parking area and onto Highway 35. - Concerns related to foggy conditions along Highway 35 that will reduce visibility. - Better/clearer roadway parking signage can discourage parking along the roadway, which is impacting neighboring properties. - Multiple suggestions for additional warning features, including crossing lights and pavement markings (although acknowledging that designs will ultimately be determined by Caltrans). - Interest in keeping the crossing consistent with the rural character of the area.
General/Amenities	- General support for the Project if concerns are addressed. - New regional trail connection may increase traffic and trash. - Support for the proposed trailhead amenities and two restroom stalls. - Suggestion to include emergency response information on trailhead signage.

Purisima Multimodal Access Implementation³

09/10/24 Planning & Natural Resources Committee Comments	
PNR Committee Comments	Response ¹
<i>General</i>	
How will these improvements impact the Preserve's carrying capacity and impact on flora and fauna.	The potential environmental impacts associated with the proposed TDM strategies and associated improvements will be evaluated through the Purisima Comprehensive Use & Management Plan's CEQA process. Additionally, the Visitor Use Management and Carrying Capacity (Project 31913) is anticipated to initiate in FY26-27 whereby the District will develop a framework for visitor use management to assess visitor capacity and identify management strategies that protect resources and enhance the visitor experience for

³ Included in the Board report for the December 11, 2024 meeting ([R-24-155](#))

	possible future implementation at one or more Midpen preserves.
<i>Shuttle</i>	
Do we have hourly data that will be useful to make better visitor demand estimations?	Raw visitor counter data was used to identify average and maximum hourly visitation. This data informed the shuttle service scenarios (Sections 3.2.1, 3.2.2, and 3.3.4).
Can shuttle vehicles complete a trip within 15 minutes?	Parametrix test drove the proposed route in March 2024 confirming the trip can be completed within 15 minutes.
Any reason the District couldn't include vehicle idling in a vendor contract?	The District could include idling requirements in the vendor contract. More discussion is included in Zero-Emission Considerations in Section 3.5.3.
Confirm projected annual operating costs in Tables 8 and 9 in the Consultant's report.	Parametrix revised the cost calculations in Tables 8 and 9 in Section 3.6.2.
Hours of shuttle service – Practicality of winter hours.	Hours of operation is for illustrative purposes and would be refined prior to pilot service launch. In Section 3.4, Parametrix reduced winter service hours to 9 hours.
Has there been outreach/engagement with neighbors/operators along the proposed route to ensure there is cooperative agreement?	Project staff conducted prior engagement with the neighbors and community during the Purisima Multimodal Access Study and the Purisima-to-the-Sea Feasibility study (2021-2022). District staff conducted additional neighbor engagement on November 14 and 19, 2024, see Attachment 3 for summary of feedback received from engagement meetings.
Make service as successful as possible with visitor experience in mind, "front-load" service.	Section 3.4 acknowledges the Committee's preference for providing as much service to maximize a positive shuttle experience and encourage visitation and states that Service Scenario 2 should meet all visitors needs throughout the year.
Provide a roll-out marketing budget to ensure program is successful from initial launch.	Parametrix developed a marketing budget that has been included in Section 3.6.2.
Is there an app for tracking shuttle location?	Section 3.5.7 includes information about real-time or static vehicle tracking.
Marketing/Branding – The shuttle should be designed in a way that represents District's philosophy.	Section 3.5.7 includes images of different open space shuttle service branding. The Board report discusses how the shuttle can be branded to convey District values. Implementation will engage the District's Public Affairs department to ensure District values are integrated into the shuttle branding and marketing.

Staffing costs and FTE seem high	The range for annual costs reflects the midpoint of a position's combined salary and benefits and FTE range.
Add Pescadero as a potential stop for Concept 2 – Expanded concept	Section 2.2 details a list of potential destinations for the expanded shuttle concept, and Pescadero is added to the list. Outreach to community organizations like Puente, Sustainable Pescadero, Pescadero Municipal Advisory Council (PMAC) and others can gauge interest for future ridership.
Shuttle Fares	Section 3.4 discusses the PNR Committee's recommendation to pursue free shuttle service.
Performance Measures	New section 3.6.5 discusses performance measures.
Integrate with Interpretation	Planning staff can coordinate with Visitor Services staff to develop interpretive opportunities that integrate with the shuttle program.
<i>Parking Management Concepts</i>	
Helpful to include images of what these programs would look like / visual impacts.	Images of parking TDM strategies were added in the report.
Additional thresholds/indicators to implement parking TDM strategies – anything else other than exceeding 80% of parking capacity?	Parametrix confirmed that the 80% threshold is a transportation industry standard. District staff's participation in the <i>San Mateo County Get There Together TDM Plan</i> proposes an 85% threshold, which aligns well with the District's proposed metric. District staff also identified additional thresholds that are discussed in the Board report.
Identify other reservation fee amounts and alternatives to parking reservation fee	User Fees in Section 4.2.1 were updated to include a typical range of fees. Parametrix reviewed an additional open space destination that has implemented no fee parking reservations, which is a model that the District can consider for initial implementation. The District can monitor its effectiveness and make adjustments as needed.
Real-time parking with other parking types (carpool, parking reservations, ADA, etc)).	"Potential Strategy Combination" in Section 4.3.1 describes how to track parking counts based on other parking types. Based on staff review of the preliminary design of the future Verde parking area, there is a potential to track priority parking capacity (carpool, parking reservations, ADA, etc) separately using real-time parking technologies.

Neighbor Engagement Feedback 11/14 and 11/19

Shuttle program opportunities:

- Operations/Logistics
 - Shuttle program seems logical to implement.
 - Include Wifi at Purisima Creek trailhead: Starlink mini with solar panel on a tall pole on top of the restroom.
 - Match shuttle frequency to peak times – e.g. busy weekends only.
 - Provide parking at Purisima Creek trailhead on weekdays, early mornings, evening on weekends.

Shuttle program challenges:

- Operations/Logistics
 - Lack of cell coverage at Purisima Creek Trailhead, what do visitors do if they miss last shuttle of the day?
- Visitor Behavior
 - Active parking enforcement from the start, so that compliance with proposed parking changes supports shuttle program.

Ways to make shuttle program more successful:

- Education/Information
 - Incorporate advertising into all local communication platforms/organizations ex: churches/clubs, City of Half Moon Bay weekly eNews, schools & businesses, non-profits/stores.
 - Once plans to implement shuttle program are finalized, clearly communicate proposed parking changes to the public ahead of time, which could help the public embrace program.
 - Conduct outreach at the trailhead to raise awareness, talk to first time visitors. Hand out fliers. Use social media to promote shuttle service.
- Safety
 - Parking on Verde Road should be prohibited. Roadway is too narrow and will cause problems for residence and farms (two comments received).
- Operations/Logistics
 - Live in Half Moon Bay & run at Purisima 2-3x/week. Weekdays & early Sat/Sun are easy to park at Purisima Creek parking area. Please don't shut that down, doesn't want to take a shuttle.
 - Time the shuttle project so it doesn't start until the new trail to Irish Ridge is open – that creates an alternative path to preserve that doesn't require riding a shuttle.
 - No parking on weekends and holidays at Purisima Creek Road parking area.
 - Shuttle should accommodate bicycle rack for up to 6 bicycles.
 - Cell service needed along Purisima Canyon.
 - Program success depends on predictability and reliability of shuttle program.
- Community Engagement
 - Thank you for doing such a great job soliciting feedback on this plan.

Other TDM Programs:

- Real-time parking information: Provide insights on trends. Helpful to see if people are checking online parking counts.

Preserve Updates (Concept Parking Areas & Trail Alignment):

- New interpretive signs on the trails should communicate oil extraction history and remaining infrastructure.

Other Comments:

- Work with Caltrans to extend the parallel trail along (off) CA-1 from Half Moon Bay to Purisima Creek Road.
- More strictly enforce dog use regulations.
- Not enough bike racks.

APPENDIX B

Highway 35 Multi-use Crossing and Parking Expansion Feasibility Study



Midpeninsula Regional Open Space District

R-23-137
Meeting 23-32
November 8, 2023

~~SPECIAL MEETING~~ AGENDA ITEM 15

AGENDA ITEM

Highway 35 Multi-use Trail Crossing and Parking Feasibility Study at Purisima Creek
Redwoods Open Space Preserve

GENERAL MANAGER'S RECOMMENDATION *den*

Accept conceptual parking design Option A.2 (upper and lower parking area expansion with two-way circulation and the associated multi-use trail crossing location and design) as the project description and scope to initiate environmental review under the California Environmental Quality Act for the Highway 35 Multi-use Trail Crossing and Parking Project.

SUMMARY

The Highway 35 Multi-Use Trail Crossing and Parking Feasibility Study (Project) is a partnership between the Midpeninsula Regional Open Space District (District), San Francisco Public Utilities Commission (SFPUC), Bay Area Ridge Trail Council (Ridge Trail Council) and Peninsula Open Space Trust (POST). The Project is evaluating a multi-use trail crossing location over Highway 35 and connector trail in the northeastern reaches of Purisima Creek Redwoods Open Space Preserve (Purisima, Preserve), as well as the potential expansion of the existing North Ridge parking area.

On April 4 and July 25, 2023 ([R-23-38](#), [R-23-87](#)), the Planning and Natural Resources Committee (PNR) provided feedback on the Project's opportunities and constraints analysis, location of a feasible highway crossing, and conceptual parking design options for the Purisima North Ridge parking area. The PNR recommended parking concept Option A.2 as the preferred parking option due to the two-way circulation, greatest increase in onsite parking, and ability to implement Transportation Demand Management (TDM) strategies.

BACKGROUND

The District is conducting a feasibility study to identify a trail crossing location from the Purisima North Ridge parking area across Skyline Boulevard (Highway 35) to connect existing segments of the Bay Area Ridge Trail within Purisima, west of Highway 35, to a new segment of the Bay Area Ridge Trail planned on the east side of Highway 35 (Ridge Trail Extension). The feasibility study also analyzes the potential expansion of the North Ridge parking area to serve visitors to both the existing Preserve trailhead and to the proposed Ridge Trail Extension.

Project Goals

The intent of the Project is to enhance regional connectivity through a multi-use trail crossing that will allow access to trails on both sides of Highway 35 and to identify ways to reconfigure and increase parking capacity at the North Ridge parking area. Project goals and strategies have been identified to guide the development of Project elements and evaluate Project success.

Goal 1: Support the implementation of the regional Bay Area Ridge Trail.

Strategies:

- Identify a multi-use trail crossing and trail spur location to connect the SFPUC's new segment of the Bay Area Ridge Trail to the Preserve and the existing Ridge Trail segment within the Preserve.
- Maximize safety and minimize neighbor impacts when evaluating multi-use trail crossing locations and infrastructure.
- Develop the multi-use trail crossing and spur trail to accommodate low-intensity recreational use by hikers, bicyclists and equestrians, consistent with Bay Area Ridge Trail corridor goals.
- Collaborate with partner agencies to complete the planning, design and implementation of the multi-use trail crossing and spur trail.

Goal 2: Improve public access and visitor experience at Purisima's North Ridge trailhead using ecologically sensitive design, construction practices, and long-term maintenance and management.

Strategies:

- Add parking capacity through the reconfiguration of existing parking spaces and expansion of the North Ridge Parking Area.
- Improve the existing trailhead amenities, such as replacing the existing restroom with a new Americans with Disabilities Act (ADA) compliant vault restroom, replacing dated signboards with current standard design, and adding bicycle parking.
- Incorporate Transportation Demand Management Strategies consistent with the Board-approved Purisima Multimodal Access Study.
- Design recreational amenities to protect the scenic corridor.
- Maximize safety and minimize neighbor impacts when evaluating the multi-use trail crossing, parking enhancements and vehicle circulation.
- Maintain routine patrols and maintenance and use adaptive management to address unforeseen issues that arise from increased visitation to the North Ridge trailhead.

The Project site includes an area west of Highway 35 within Purisima, comprised of the existing North Ridge parking area and adjacent open areas west of the parking area (see Attachment 1). The Project site also includes the Caltrans Highway 35 right-of-way and approximately four acres of SFPUC Watershed lands east of Highway 35 for the spur trail study area.

The North Ridge parking area and trailhead is the northernmost entry point into Purisima, located along Highway 35, providing public access to hiking, biking, and equestrian trails within the Preserve. The existing North Ridge parking area is an unstriped gravel lot with 41 standard parking spaces and 2 ADA parking spaces (see Attachment 2). Equestrian parking at the North Ridge lot is accommodated along the northwest boundary of the parking area, with space for approximately two equestrian trailers. The North Ridge trailhead includes standard amenities such as an equestrian hitching post, map and sign boards, a boot brush, and a single-stall vault restroom. As with many other District Preserves, the North Ridge trailhead receives peak

visitation on weekends and the parking area, which currently only serves visitors to Purisima, frequently reaches capacity during peak visitation periods.

Adjacent to the North Ridge parking lot is an open, flat area (upper expansion area) that is available as a helicopter landing zone for CalFire emergency response. Further west of this open area, the land slopes down and levels out to another open, flat area (lower expansion area) adjacent to a District employee residence. This lower expansion area can be accessed from the existing North Ridge parking lot via a separate driveway along the Preserve's north property boundary. Both the upper and lower expansion areas have been previously disturbed, and the upper expansion area has occasionally been used for overflow parking for community events, such as the Kings Mountain Art Fair.

Purisima contains existing segments of the Bay Area Ridge Trail, of which these segments contribute to over 400 miles (and counting) of existing multi-use trail that follow the ridgelines encircling the San Francisco Bay. A new alignment of the Bay Area Ridge Trail (Ridge Trail Extension) is being constructed on SFPUC Watershed lands east of the North Ridge trailhead, with an estimated completion date in late 2024. This poses an opportunity to connect Purisima and its Bay Area Ridge Trail segment to the new Ridge Trail Extension through the Project's multi-use trail crossing on Highway 35. With a multi-use trail crossing, the North Ridge parking area can also serve as the southern staging area for the Ridge Trail Extension.

DISCUSSION

Technical Studies

District staff contracted with professional consulting firms to complete various technical studies to analyze the biological, historic, cultural, traffic, geotechnical, and topographic characteristics of the Project area. The biological survey did not uncover any special-status wildlife species or other sensitive biological resources within the Project area. Analysis from a Pathogens Risk Assessment found that the Project area within Purisima has relatively low levels of contamination risk, while areas east of Hwy 35 are highly receptive to potential contamination and are considered sensitive sites. The cultural and historic resource surveys did not identify any known archaeological or historic resources within or in the vicinity of the Project site, although staff will coordinate with the appropriate tribes to receive guidance during the CEQA environmental review process on addressing a potential discovery/unearthing of cultural resources. A topographic survey and geotechnical recommendations report did not uncover any issues for construction of a parking area in the upper or lower expansion areas.

A traffic study was conducted by TJKM Transportation Consultants (TJKM) to evaluate the sight distance conditions for the two existing parking area driveways and the feasibility/design of a new on-grade trail crossing on Highway 35. Data collected in April 2022 was used to determine if adequate sight distance is available for vehicles exiting the existing driveways, and if northbound and southbound vehicles on Highway 35 have adequate stopping sight distance for a new on-grade trail crossing. TJKM also reviewed five years of traffic collision data within the vicinity of the project site to inform the final recommendations. Based on the available information, TJKM concluded that there is a feasible on-grade trail crossing location immediately adjacent to the existing exit driveway. TJKM recommends improvements within the right-of-way to maintain site distances and enhance visibility of the crossing. Furthermore, TJKM concluded that the existing driveway is the most favorable configuration for ingress and egress. TJKM sought concurrence from the California Department of Transportation (Caltrans)

on their findings and recommendations. Caltrans reviewed the findings and requested additional information in the final report, which was provided by TJKM. Caltrans does not have any further comments at this time. Additional coordination with Caltrans will be required for future encroachment permits, which would occur after a Board-selected alternative is analyzed as part of the CEQA environmental review process. Additional details of the recommended crossing location and roadway improvements are shown in Attachment 3.

Related Studies and Transportation Demand Management (TDM) Strategies

The Purisima Multimodal Access Study was approved by the Board on November 9, 2022, which recommends TDM strategies both specific to the Purisima North Ridge parking area and Preserve-wide. The expectation is that many of these strategies are suitable for the North Ridge trailhead site and can be incorporated into the design and long-term management of the parking area, where one or more of these strategies may be implemented concurrently:

Highest priority TDMs

- Peak period parking reservations/priority parking
- Bicycle parking and facilities (including bicycle repair stations)
- Temporarily redesignate spaces on specific days/times to best meet demands
 - May include designating special parking areas temporarily for carpool, equestrian, or other uses
- Real-time parking lot occupancy sensors and signage
- Electric Vehicle (EV) charging infrastructure

Lower priority TDMs

- Vehicle wayfinding signage
- Clearly identify permitted on-street / shoulder parking
- Accommodate future shuttle / transit systems

Site Opportunities and Constraints

Opportunities and Constraints for the Project were developed by analyzing the results of the technical studies and identifying site conditions that need to be considered for the multi-use trail crossing, spur trail, and North Ridge parking expansion (see Attachment 9). Key opportunities and constraints are summarized below.

Natural Resources:

The biological survey did not uncover any special-status wildlife species, nesting birds or raptors, aquatic resources, roosting bats, or other sensitive biological resources within the Project area. Best Management Practices (BMPs) are recommended to avoid construction impacts to nearby biological resources, including nesting bird surveys, San Francisco dusky-footed woodrat midden avoidance buffer, marbled murrelet avoidance and mitigation measures, BMPs to prevent *Phytophthora* and other pathogen contamination, and BMPs related to construction runoff and drainage.

Public Access:

The traffic study identified a suitable multi-use crossing location on Highway 35 as well as roadway improvements to establish a safer crossing with sufficient lines of sight at the proposed crossing location. Two onsite parking expansion sites are located adjacent to the North Ridge parking area; expansion of the parking area coupled with TDM strategies would alleviate parking demands and potentially meet anticipated parking needs at the North Ridge trailhead.

Local and Regional Connectivity:

Existing segments of the Bay Area Ridge Trail within Purisima can be accessed from the North Ridge trailhead, which makes a multi-use trail crossing at Highway 35 from the planned Ridge Trail Extension to the North Ridge trailhead a natural and direct connection point.

Cultural and Historic Resources:

The cultural resources survey did not identify any previously recorded cultural resources within the Project area and no archaeological resources were encountered during the pedestrian survey. Aside from consultations with Native American tribes for review of the preliminary concept plans and during the CEQA environmental review process, no further action is recommended regarding cultural or archaeological resources. The historic resource evaluation for the onsite employee residence found that the structure was not eligible for listing at the local, state, or national level and no further action is necessary for this structure (the residence would remain in place and continue to be used as an employee residence).

Aesthetics:

Highway 35 is a state scenic highway and subject to both State of California and San Mateo County policies regulating development along scenic corridors. An existing vegetated barrier that serves as a partial screen lies between the Caltrans right-of-way and the existing parking area. Although the Project will direct new development (parking expansion areas and vault restroom) away from the Highway 35 scenic corridor zone, the upper parking expansion area and replacement vault restroom (which will be relocated to more central site for improved ADA accessibility) may be partially visible from the highway. The lower parking expansion area is set further back from the roadway and at a lower elevation as compared to the existing parking area, making this area less visible from Highway 35.

Operations and Maintenance:

The North Ridge trailhead has available electrical and cellular service, which could support new parking area amenities and infrastructure, such as electric vehicle charging and real-time parking sensors. The existing vault restroom is in deteriorating condition and requires replacement with an ADA-accessible model and ADA accessible path. Staff have reached out to the agencies and organizations that may utilize the landing zone at the upper expansion area, including CalFire, San Mateo County Fire, and the Kings Mountain Volunteer Fire Department. These organizations are aware of the Project and have not requested further coordination at this time. In addition, there are other landing zones located in the vicinity of the Project area that are currently used by these organizations. These nearby alternative landing zone locations include private properties on Cyprus Ridge Road, less than a mile north of the Project site, and Tunitas Creek Road, approximately two miles south of the Project site. The nearest alternative landing zone on District lands is located at El Corte de Madera Creek Preserve, approximately five miles south of the Project site. Should a Project alternative be selected for CEQA review that would change the use of the landing zone, District staff will engage in additional coordination with these agencies to confirm the landing zone can be formally retired.

Public Engagement

From 2021 to 2023, the District engaged with stakeholder groups and partners as part of Project-focused meetings and at meetings that included the Purisima-to-the-Sea project and the Purisima Multimodal Access Study. These engagement activities were used to gather feedback on existing challenges at the North Ridge parking area, desired amenities that should be considered for this

parking area, as well as parking area conceptual designs. The feedback received is incorporated into the opportunities and constraints analysis. Prior key engagement activities include:

- Kings Mountain Association – July 24, 2021, March 15, 2022 and November 9, 2022
- Midcoast Community Council – February 23, 2022
- Peninsula Trails Team (comprised of regional trails partners and public land managers) – October 19, 2022
- Fisher Investments (neighboring property) – November 9, 2022
- Stakeholder group meetings – November 15, 2022 and 17, 2022
- Virtual public meeting – June 7, 2023

In addition, preliminary Project information was shared at many community events between 2021 and 2023 for the Purisima Multimodal Access Study and Purisima-to-the-Sea projects, including, but not limited to farmer’s markets, community council meetings, advisory council meetings, and District-led open houses.

A summary of the feedback received across the public engagement meetings and during PNR Committee meetings is included in the table below:

Table 1. Public Feedback

Theme/Topic	General Feedback/Comments
Conceptual Parking Design Options	• Support for options A.2 (Upper & Lower Expansion, Two-Way Circulation), B.1 (Upper Only, One-Way Circulation), and B.2 (Upper & Lower Parking Expansion areas, One-Way Circulation). • A neighbor shared concerns about the change to the “serenity” of the neighborhood setting with the parking changes. • Concern regarding shoulder parking on Highway 35. Some suggestions included removing these altogether for safety concerns or formalizing (striping) these spaces to prevent cars parking inappropriately on the highway shoulder. In particular, the location of the three shoulder spaces south of the parking area entrance would make it difficult for cars to get back into the parking area if these were occupied.
Equestrian Parking/Access	• Neighbors and equestrians both shared that few equestrians currently visit the North Ridge trailhead due to a lack of designated equestrian parking. Equestrians supported the inclusion of designated equestrian parking spaces and said they appreciated being considered in the planning process and would use these equestrian parking if provided. • Proximity of equestrian parking to standard vehicle parking is not a significant safety concern and the different types of parking do not necessarily need to be separated. For example, equestrian parking at Rancho San Antonio is located next to standard vehicle parking and gets a good amount of foot traffic. • Two designated equestrian spaces at North Ridge may be sufficient. Providing four equestrian spaces would make it much easier for equestrians to count on available parking but they may not be regularly occupied.

	• An equestrian suggested waiting to implement an equestrian parking reservation system at North Ridge until staff can confirm this is needed or would be utilized. • Enforcement of equestrian parking areas should be considered so that standard vehicles do not use this space.
Transportation Demand Management (TDM) Strategies	• If two designated equestrian parking stalls are provided, another two stalls could be provided as flexible stalls for larger vehicles that could be used by either equestrians, bicycling groups transporting bikes and other gear, or school/educational programs, etc. These flexible spaces could also be reserved to allow groups to plan their outings to the North Ridge trailhead.
Circulation	• Consider how one-way circulation through the parking area will interfere with traffic on Highway 35. Anticipate that cars may back up on the highway if a vehicle stops at the parking entrance or if vehicles circle back into the parking area. • Suggestions to remove shoulder parking on Highway 35 and use that space for vehicles to loop around the parking area.
Highway Crossing/Traffic Recommendations	• Neighbors expressed concerns about the safety of an on-grade trail/road crossing due to excessive speeding on Highway 35 (especially on weekends) and the road curvature. • A neighbor suggested a tunnel for a safe crossing and lights should not be used for the crossing. • Equestrians shared that they have used similar equestrian/pedestrian crossings on Highway 50 and other highways that could be perceived as “unsafe” for trail crossings. The equestrians appreciate these crossings, which are not highly used but necessary for equestrians to connect to county parks and equestrian facilities. • Important to consider who will be using the crossings and how much traffic is expected on the highway to balance the risk of formalizing an on-grade crossing. • Concerns regarding line of sight and the time it will take for larger, slower vehicles (such as equestrian trailers) to turn out of the parking area and onto Highway 35. • Concerns related to foggy conditions along Highway 35 that will reduce visibility. • Better/clearer roadway parking signage can discourage parking along the roadway, which is impacting neighboring properties. • Multiple suggestions for additional warning features, including crossing lights and pavement markings (although acknowledging that designs will ultimately be determined by Caltrans). • Interest in keeping the crossing consistent with the rural character of the area.
General/Amenities	• General support for the Project if concerns are addressed. • New regional trail connection may increase traffic and trash. • Support for the proposed trailhead amenities and two restroom stalls. • Suggestion to include emergency response information on trailhead signage.

Conceptual Parking Area Design Options

Staff prepared four conceptual parking area design options, which strive to accommodate the increased demand for access to the Preserve from hikers, equestrians, and bicyclists while minimizing neighbor and environmental resource impacts. Each option will meet or exceed accessibility requirements under the ADA.

The parking area, in all configurations shown, would have over 5,000 square feet of impervious area and therefore require Low Impact Development (LID) measures in compliance with the Municipal Regional Stormwater Permit. Although not shown, each design would include LID measures such as bio-swales, detention basins, or pervious pavements; the details of which will be developed through the design process in association with the type of paving surface selected.

Similarly, the striping shown in each conceptual design option is intended to convey the intent of circulation and function; the final striping plan and type of striping will be developed through the design process. Staff recommends the striping comply with industry standard marking conventions, such as straight white parking space lines, rather than decorative or illustrative parking space lines to minimize installation and maintenance costs. Moreover, standard conventions are the norm for drivers and support good compliance.

Furthermore, it should be noted that each design option includes the recommendations of the traffic engineering study to maintain existing entrance and exit driveways, locate an on-grade crossing adjacent to the exit driveway, establish a no-parking zone along the western side of Skyline Boulevard and formalize shoulder parking at designated spaces (approximately six standard vehicle spaces). The final design solution for the on-grade trail crossing and parking improvements located within the highway right-of-way will be at the discretion of Caltrans through the encroachment permit process.

Four conceptual parking design options were presented to the Planning and Natural Resources (PNR) Committee on July 25, 2023 and the PNR selected Option A.2 as the preferred option for full Board's consideration.

Option A.2 Upper & Lower Expansion, Two-Way Circulation (Preferred Option)

This design option proposes to improve the upper area for standard vehicle parking and develop the lower expansion area for designated equestrian parking. It includes a main parking aisle with approximately 51 parking spaces and two-way vehicle circulation within the aisle as well as a second row of parking spaces with approximately 23 stalls and one-way vehicle circulation. This option provides the greatest amount of onsite parking with approximately 74 passenger vehicle spaces in the upper area and 2 to 3 equestrian spaces in the lower area (see Attachment 4). A new driveway would be constructed down to the lower area to allow equestrian vehicles to “pull-through” when parking. Equestrian parking is appropriate for the lower area because it offers the most separation between horses and other user groups and, based on the number of spaces available for use, offers the lowest volume of visitors adjacent to the employee residence. New vegetation would buffer the employee residence from the parking area. The second aisle can flexibly meet TDM strategies, including priority / reservation parking. Access to this aisle could be managed with a gate or kiosk if deemed appropriate. In this design option, the restroom can be located at the current, south end of the area near the existing trailhead, or relocated to the north end of the parking area, where there is more space for staging. The approximate footprint of drivable surface is 39,500 square feet. An ADA path of travel is provided on the west side of

the upper parking area that connects to the Highway 35 crossing and restroom option #2 on the north end of the parking area, and to the ADA parking spaces and restroom option #1 on the south end of the parking area. A new vehicular connection to the employee residence would be created off the one-way aisle constructed through the lower area.

Option A.1 Upper Expansion Only, Two-Way Circulation

This design option proposes to improve the upper area only (see Attachment 5). It includes a main parking aisle with approximately 50 parking spaces and two-way vehicle circulation within the aisle. This is very similar to the current parking configuration, but with more effective use of the space. A second one-way aisle is proposed with approximately 4 equestrian parking spaces and ample adjacent space for horse staging. Similar to Option A.2, TDM strategies could be implemented in the second aisle of the upper area. Pedestrian circulation and restroom locations are generally consistent with Option A.2. The approximate footprint of drivable surface is 25,000 square feet.

Option B.1 Upper Expansion Only, One-Way Circulation

Design Option B.1. has the smallest footprint and lower construction costs (see Attachment 6). This option proposes one-way vehicle circulation and angled parking spaces for approximately 41 passenger vehicles in the main aisle. Consistent with Option A.2, a second aisle is proposed with approximately 4 equestrian parking spaces, which can flexibly meet TDM strategies. Pedestrian circulation and restroom locations are generally consistent with Option A.2. The approximate footprint of drivable surface is 22,500 square feet.

Option B.2 Upper & Lower Expansion, One-Way Circulation

This design expands on option B.1 by relocating the equestrian parking to the lower expansion area and introducing a second row of angled passenger vehicle spaces in the upper area (see Attachment 7). Approximately 61 passenger vehicle spaces can fit in the upper area, with 2 to 3 equestrian spaces down below via a new one-way driveway. Similar to Option A.2, new vegetation would buffer the employee residence from the parking area and a new vehicular connection created to the residence. Pedestrian circulation and restroom locations are generally consistent with Option A.2. The approximate footprint of drivable surface is 34,750 square feet.

Phasing

Implementation of any parking design option, including Option A.2 can be phased. For example, option A can be implemented as phase A.1 initially. Once additional capacity is needed, option A.2 can be implemented with little change or reconstruction of the A.1 improvements.

Preliminary Cost Estimate in Current Dollars

Preliminary estimates are shown below that compare the probable construction costs for each design option (see Table 2). Estimates are based on the findings of the site assessments, technical studies, and recommended construction methods. The estimates provide a rough order of magnitude cost, commiserate with the limited amount of information available in the current design. Each estimate includes the components shown in the attached conceptual designs, including parking and circulation improvements, TDM strategies, trailhead amenities, on-grade crossing infrastructure, and right-of-way improvements. Many factors will impact the final construction costs, including design changes, permit conditions, and fluctuations in material and labor costs. The estimates were prepared using current 2023 dollar values because the target construction date has not yet been identified.

Table 2. Design Concept Summary

	Existing		Option A.1		(Preferred) Option A.2		Option B.1		Option B.2	
	Cars	Eq.	Cars	Eq.	Cars	Eq.	Cars	Eq.	Cars	Eq.
Existing Lot + Upper Area	41*	0*	50	4	74	0	41	4	61	0
Lower Expansion Area	0	0	0	0	0	2	0	0	0	2
Hwy 35 Shoulder	10	0	3	0	3	0	3	0	3	0
Total	51	0	53	4	77	2	44	4	64	2
Impervious Area	17,490 sf		25,000 sf		39,500 sf		22,500 sf		34,750 sf	
Preliminary Cost Estimate	n/a		\$2,135,000		\$3,050,000		\$2,025,000		\$2,838,000	

*Although the existing parking lot can accommodate equestrian parking, it does not provide designated equestrian parking spaces. Existing capacity is approximately 26 cars and 2 equestrian spaces.

Cars = Standard vehicle parking stalls, 9' x 18'

Eq. = Designated equestrian trailer parking stalls, 12' x 55'

sf = Square feet

Each option is intended to support the project's goals and strategies. A comparison of the conceptual parking area design alternatives is shown in Attachment 8. The criteria used to compare the options include value, impact to site, integration of TDMs, alignment with Project goals and policies, and public support.

Feedback on the Project from two PNR Committee meetings is summarized in Table 3. Staff developed the four conceptual parking design options after receiving preliminary feedback from the PNR Committee meeting on April 4, 2023 and presented the concept designs to the PNR at the July 25, 2023 Committee meeting. The four conceptual design options show different combinations of circulation, development footprints, total parking counts, and location options for designated equestrian parking stalls. At the July meeting, PNR expressed support for parking concept Option A.2 due to the two-way circulation design and ability to provide the greatest increase in on-site parking spaces (including designated equestrian spaces). In addition, Option A.2 supports future implementation of TDM strategies by incorporating a second drive aisle for controlled access for uses such as carpool, reservation, and/or flexible parking areas. PNR also recommended that shoulder parking on Highway 35 be reduced from what was shown in the concept designs due to public concern about safety and circulation within the highway right-of-way. Based on this feedback, staff updated the concept designs to remove three parking stalls in the Highway 35 right-of-way, south of the parking area entrance. This recent change is incorporated in this report and in the attachments.

PNR also provided feedback on the multi-use trail crossing location, acknowledging safety concerns from the public and that specific design considerations for the on-grade crossing be discussed with Caltrans during the permitting phase of the Project.

A summary of the PNR feedback received in April and July 2023 is provided below.

Table 3. PNR Committee Feedback (April 4, 2023 & July 25, 2023)

Theme/Topic	General Feedback/Comments
Conceptual Design Options*	• Support for Option A.2 due to its loop capability within the parking area (through upper and lower expansion areas) and greatest amount of onsite parking (to address growing parking demand and shift parking away from the highway shoulder). • Interest in parking reconfiguration options with and without expansion into the lower area near the District residence. • Interest in having the lower expansion area be for equestrian parking, as long as screening is provided for the adjacent residence. • Interest in increasing equestrian parking in the lower expansion area (shown in Options A.2 and B.2) from two to three spaces, if possible • Preference to remove shoulder parking along Highway 35 south of the parking area entrance.
Equestrian Parking Demand	• Consider the demand for equestrian parking at the North Ridge trailhead (a range of 2-4 designated equestrian spaces requested). • Possibility of a reservation system for equestrian parking to insure equestrian trailer space is available.
Highway Crossing/Traffic Recommendations	• Concerns regarding parking area circulation that encourages vehicles to loop onto Highway 35 to look for parking. Although, this may not be preventable regardless of parking area circulation.
Transportation Demand Management (TDM) Strategies	• Support for parking reservations and flexible parking areas for part of the parking area. More information is needed regarding equity considerations for visitors with limited access to technology and understanding the success of parking reservation systems at other parks/preserves. • Consider where a shuttle stop could be incorporated at this location, such as on the highway shoulder or within the parking area. • More information is needed about the required space for a potential shuttle drop-off and pick-up area and whether a shuttle could circulate through the parking area. If a shuttle stop is not provided, visitors may “self-shuttle” by parking cars at two parking areas. • Bike racks and other bike facilities may not need to be prioritized at the North Ridge trailhead since not many people will ride their bikes to the preserve. • Need to consider if/how many electric vehicle (EV) spaces are necessary given the limited size of the parking areas, and how the addition of this infrastructure may increase parking demand due to decreased general parking spaces.
General/Amenities	• Suggestion to identify the best site for the restroom of the two options.

*Conceptual parking design options were developed after the April 4th PNR meeting and shared at the July 25th PNR Committee meeting.

FISCAL IMPACT

There is no immediate fiscal impact associated with the recommendation. The Fiscal Year 2023-24 (FY24) budget includes \$90,000, which covers design development to inform the CEQA

environmental review process. Funds for permitting and construction will be recommended in a future fiscal year as a part of the annual Budget and Action Plan process.

This project is not currently funded by Measure AA as it is still within a feasibility stage. However, implementation of capital improvements may be eligible for Measure AA funding reimbursements in the future.

PRIOR BOARD AND COMMITTEE REVIEW

September 29, 2020: The Legislative, Funding and Public Affairs Committee (LFPAC) reviewed a partnership agreement and recommended Board adoption of a resolution authorizing the General Manager to accept \$114,000 in grant funding from the SFPUC for the Project.

- [Board Report \(R-20-101\)](#)
- [Minutes](#)

October 28, 2020: The Board adopted a resolution authorizing the General Manager to accept grant funding for the Project.

- [Board Report \(Res. 20-32\)](#)
- [Minutes](#)

April 4, 2023: PNR received a presentation on the Project and provided feedback on the Project goals, technical studies, opportunities and constraints analysis, and preliminary considerations for parking expansion.

- [Board Report \(R-23-38\)](#)
- [Minutes](#)

July 25, 2023: PNR provided feedback on conceptual parking design options and TDM strategies to consider at the Purisima North Ridge parking area. PNR selected a preferred parking design option to forward to the Board.

- [Board Report \(R-23-87\)](#)
- [Minutes](#)

PUBLIC NOTICE

Public notice was provided as required by the Brown Act. In addition, public notices were sent to interested parties of the Preserve and to hiking, biking, equestrian, accessibility, and regional trails interested parties lists as well as the Kings Mountain Neighborhood Association.

CEQA COMPLIANCE

Board selection of a preferred design option for the Highway 35 Multi-use Trail Crossing and Parking Feasibility Study is not a project subject to the California Environmental Quality Act (CEQA). Environmental review for project design and engineering is anticipated to occur as part of the Purisima Comprehensive Use and Management Plan CEQA document, based on Board selection of a project design alternative as the CEQA project description.

NEXT STEPS

Staff will explore grant funding and partner cost-sharing opportunities to fund subsequent phases of the project.

Future Project Phases	Tentative Schedule
Environmental review conducted as part of Purisima Comprehensive Use and Management Plan	FY24 and FY25
Design development, engineering, and permitting	FY25 and FY26
Construction	TBD

Attachment(s)

1. Project Area
2. Existing Conditions
3. Traffic and Crossing Recommendations
4. Conceptual Parking Design Option A.2 (Preferred)
5. Conceptual Parking Design Option A.1
6. Conceptual Parking Design Option B.1
7. Conceptual Parking Design Option B.2
8. Parking Area Design Alternative Comparison
9. Existing Conditions & Opportunities and Constraints Analysis

Responsible Department Head:

Jason Lin, PE, Engineering and Construction Department Manager

Jane Mark, AICP, Planning Department Manager

Prepared by:

Scott Reeves, Senior Capital Project Manager, Engineering and Construction Department

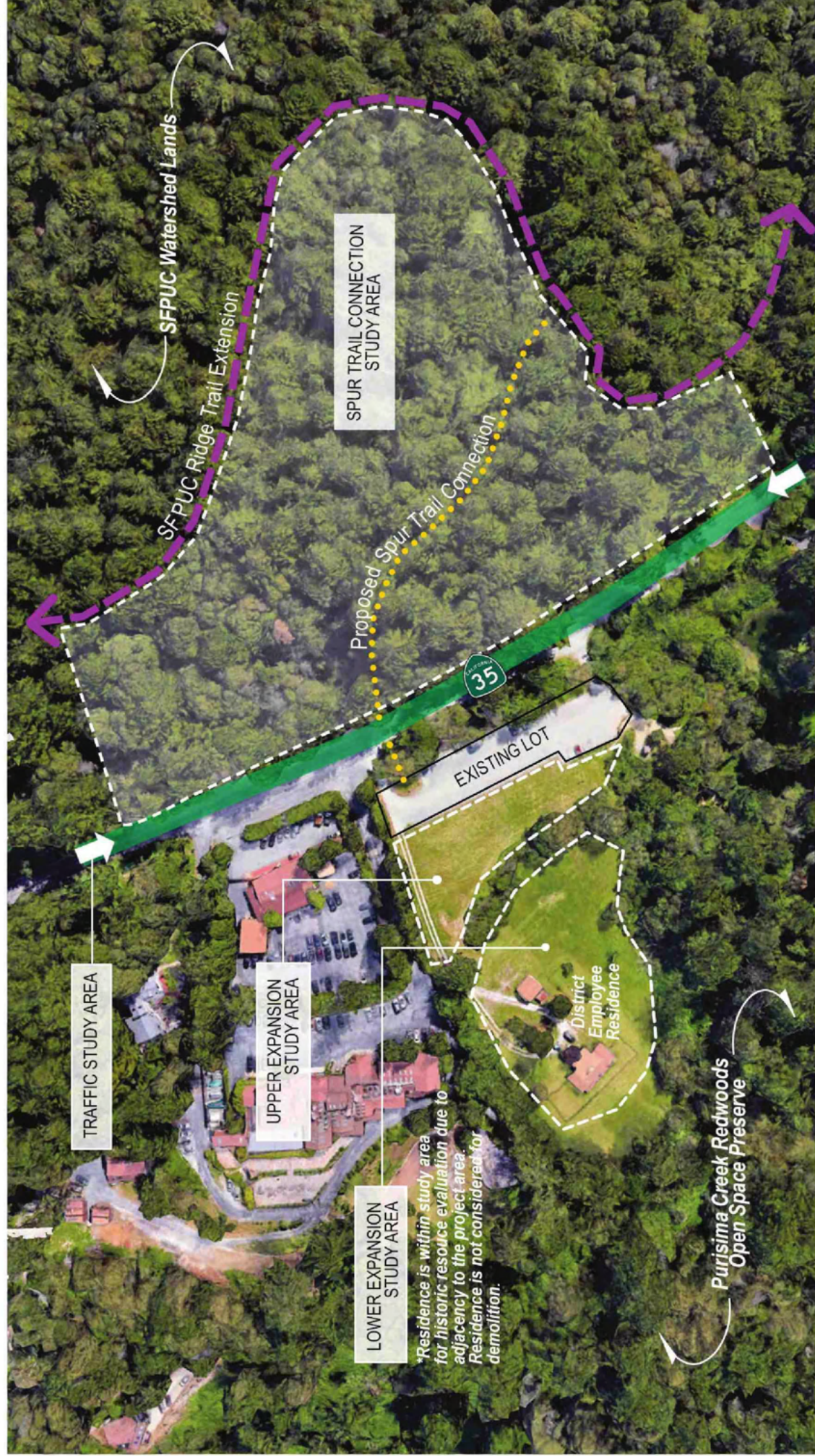
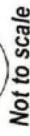
Brittany Wheatman, AICP, Planner II, Planning Department

Contact person:

Brittany Wheatman, AICP, Planner II, Planning Department

Graphics prepared by:

Scott Reeves, Senior Capital Project Manager



ATTACHMENT 1.b PROJECT STUDY AREAS



HWY 35 MULTI-USE TRAIL CROSSING AND PARKING AREA PREFERRED CONCEPT PLAN

PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE

NORTH RIDGE PARKING LOT



Not to scale



PARKING AREA	EXISTING		A.1		A.2		B.1		B.2	
TOTALS	Cars	Equest.	Cars	Equest.	Cars	Equest.	Cars	Equest.	Cars	Equest.
EXISTING LOT + UPPER EXPANSION AREA	26 or 41	2 or 0	50	4	74	0	41	4	61	0
LOWER EXPANSION AREA	0	0	0	0	0	2	0	0	0	2
HWY 35 SHOULDER	10	0	3	0	3	0	3	0	3	0
TOTAL	36 or 51	2 or 0	53	4	77	2	44	4	64	2
IMPERVIOUS AREA	17,490 sf		25,000 sf		39,500 sf		22,500 sf		34,750 sf	

ATTACHMENT 2 EXISTING CONDITIONS

NOVEMBER 8, 2023



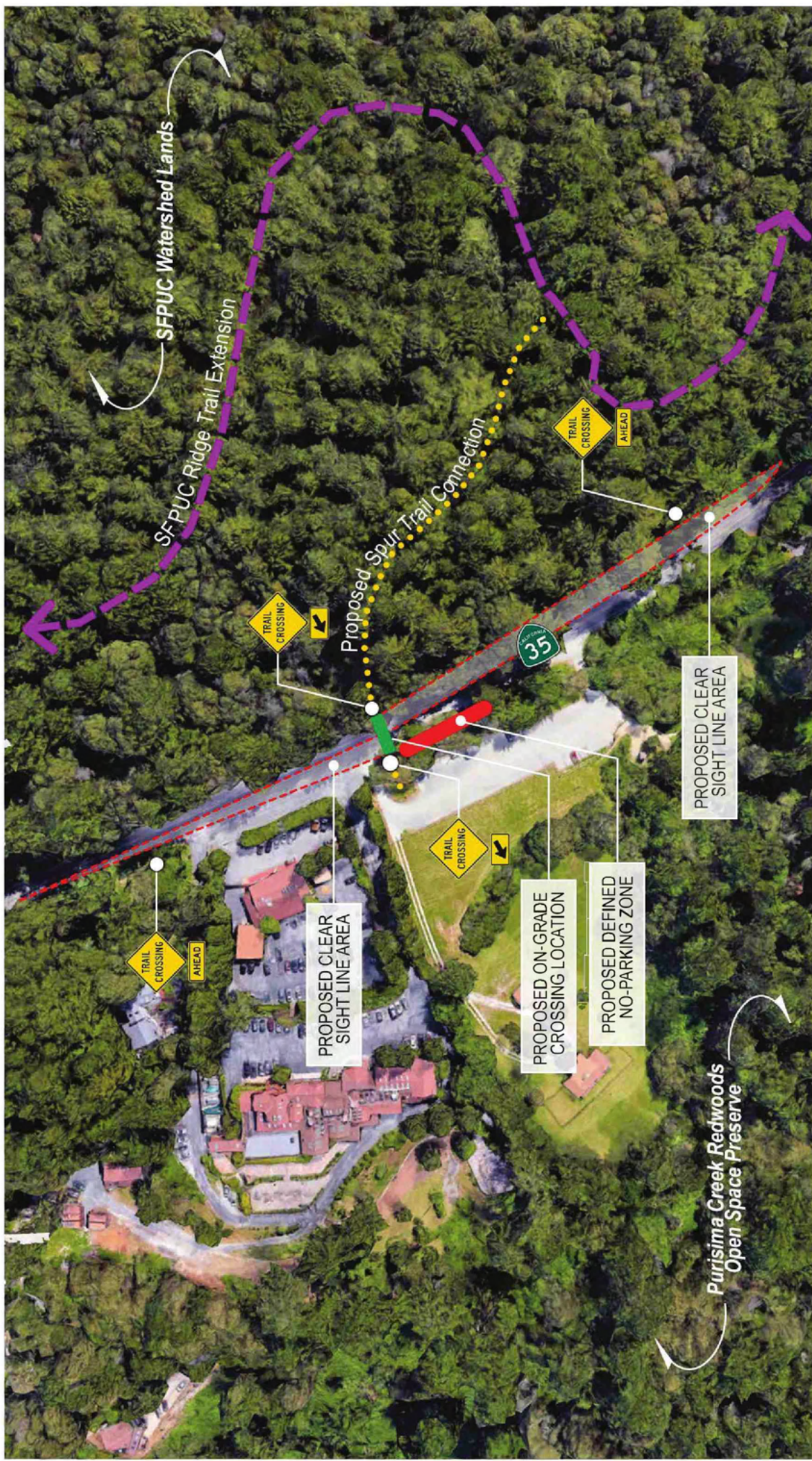
HWY 35 MULTI-USE TRAIL CROSSING AND PARKING EXPANSION FEASIBILITY STUDY

PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE

NORTH RIDGE PARKING LOT



Not to scale



ATTACHMENT 3 ON-GRADE CROSSING RECOMMENDATIONS



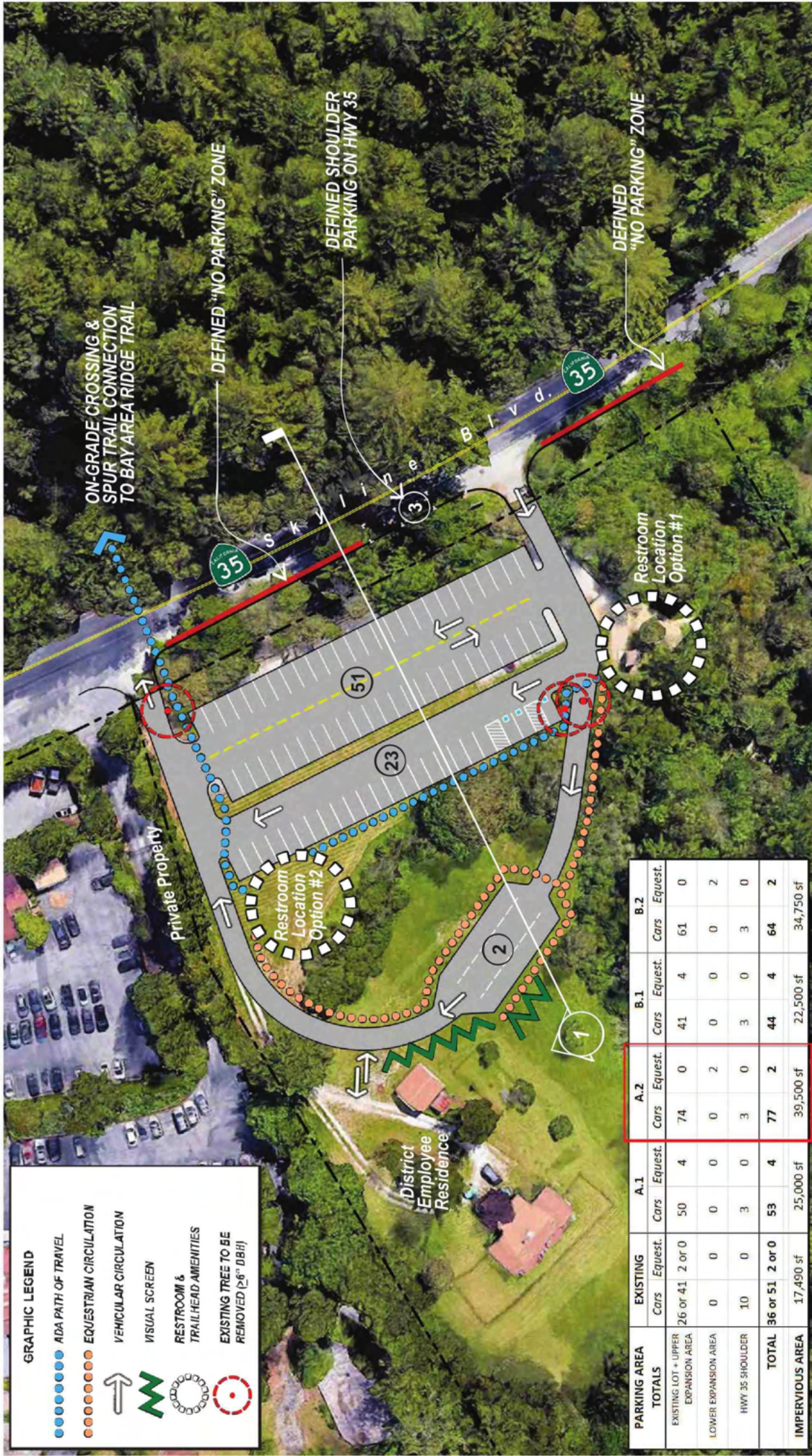
HWY 35 MULTI-USE TRAIL CROSSING AND PARKING AREA PREFERRED CONCEPT PLAN

PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE

NORTH RIDGE PARKING LOT



Not to scale



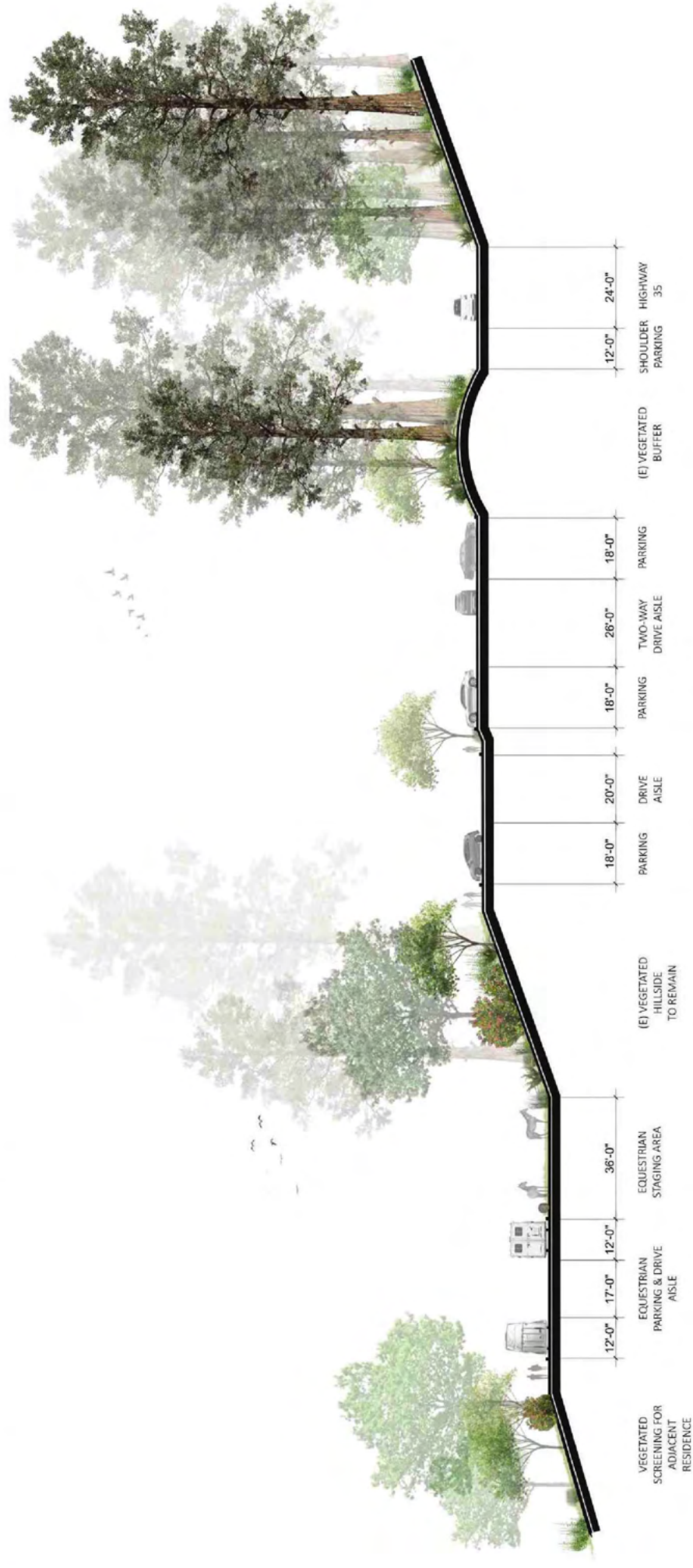


HWY 35 MULTI-USE TRAIL CROSSING AND PARKING AREA PREFERRED CONCEPT PLAN

PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE

NORTH RIDGE PARKING LOT

Not to scale





HWY 35 MULTI-USE TRAIL CROSSING AND PARKING AREA PREFERRED CONCEPT PLAN

PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE

NORTH RIDGE PARKING LOT



Not to scale



ATTACHMENT 5 CONCEPTUAL DESIGN OPTION A.1

NOVEMBER 8, 2023



HWY 35 MULTI-USE TRAIL CROSSING AND PARKING AREA PREFERRED CONCEPT PLAN

PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE

NORTH RIDGE PARKING LOT



Not to scale





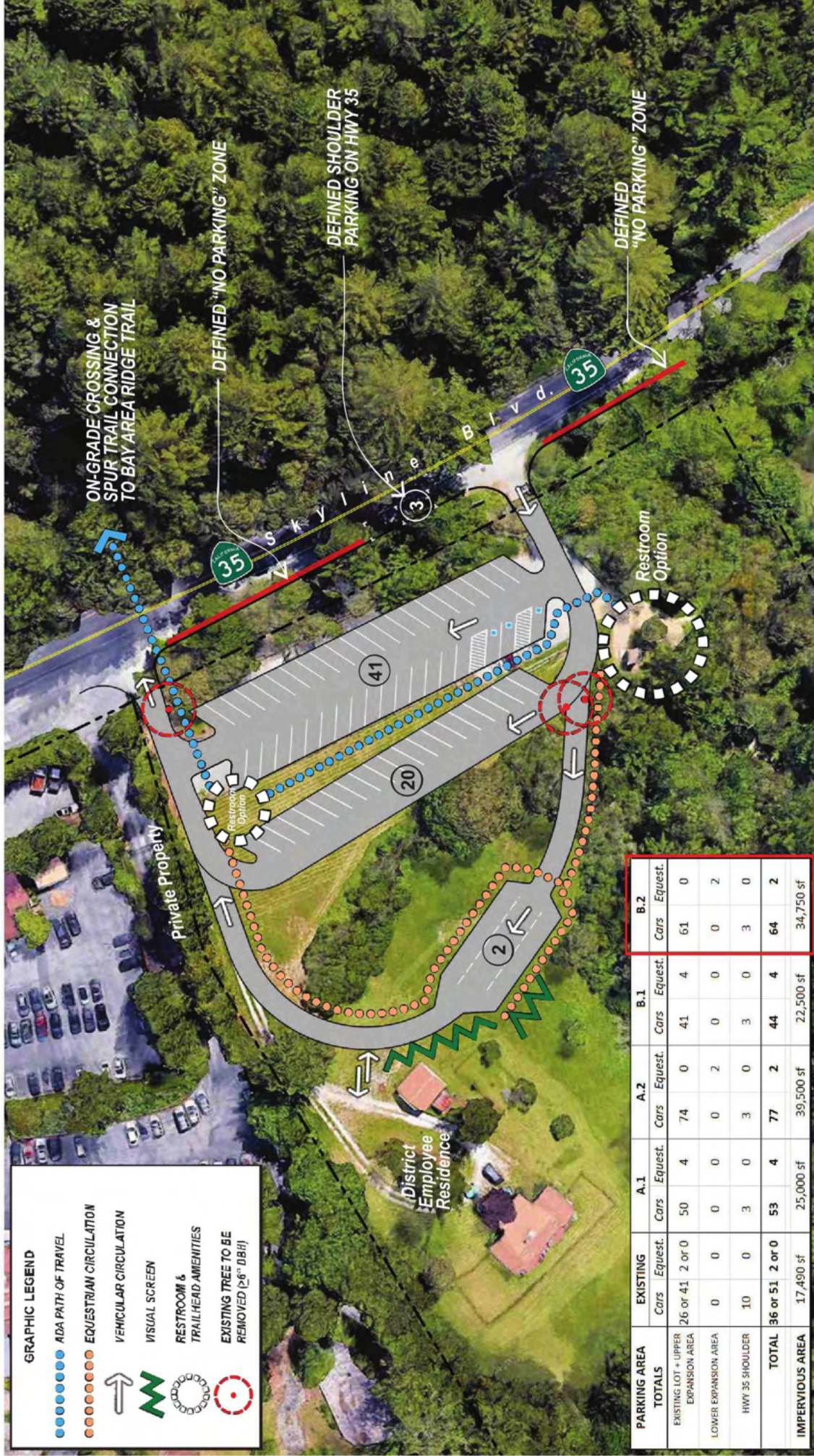
HWY 35 MULTI-USE TRAIL CROSSING AND PARKING AREA PREFERRED CONCEPT PLAN

PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE

NORTH RIDGE PARKING LOT



Not to scale



Attachment 8: Parking Area Design Alternatives Comparison

	Value – Parking Expansion vs. Cost*	Minimizing Impact to Site	Integration of TDMs	Alignment with Project Goals & Policies	Public Support (Parking)**
Option A.1	 Provides moderate value for the overall cost by increasing standard vehicle parking and providing designated equestrian spaces.	 Retains key site elements by keeping parking within the upper expansion area.	 Provides a second drive aisle that can be controlled for flexible or priority parking.	 Increases parking within the previously developed upper expansion area and increases traffic safety by providing two-way circulation within the parking area.	 Supports public interest in providing designated equestrian parking and internal circulation. Does not provide a significant increase in standard vehicle parking.
	 Provides a significant increase in standard vehicle parking and includes designated equestrian spaces, which has the greatest value for the cost of construction.	 Modifies the site's character by expanding parking to the lower expansion area, although this area has been previously disturbed. Vegetation clearing and grading is required for expansion into the lower area. Screening is recommended to provide separation from onsite residence.	 Provides a second upper drive aisle and lower expansion area that can both have controlled access for flexible or priority parking.	 Maximizes onsite parking within the previously developed upper and lower expansion areas and increases traffic safety by providing two-way circulation within the parking area.	 Supports public interest in providing more standard vehicle parking, internal circulation, and designated equestrian parking.
Option A.2					

Option B.1	Provides the lowest value for the overall cost. This option provides designated equestrian parking but does not provide an increase in total standard vehicle parking.	Retains the site's character by keeping parking at the upper expansion area with the least amount of impervious area.	Provides a second drive aisle that can be controlled for flexible or priority parking.	Does not significantly increase onsite parking and retains one-way circulation that requires vehicles to circulate onto Highway 35.	Supports public interest for designated equestrian parking but does not provide any additional standard vehicle parking. Does not support public interest in keeping circulation within the site (i.e., making circulation two-way).
Option B.2	Provides the second highest value for the number of additional standard vehicle spaces and provides designated equestrian parking.	Modifies the site's character by expanding parking to the lower expansion, although this area has been previously disturbed. Vegetation clearing and grading is required for expansion into lower area. Screening is recommended to provide separation from onsite residence.	Provides a second upper drive aisle and lower expansion area that can both have controlled access for flexible or priority parking.	Increases onsite parking within the previously developed upper and lower expansion areas, although retains one-way circulation that requires vehicles to circulate onto Highway 35.	Supports public interest for additional standard vehicle parking and designated equestrian parking. Does not support public interest in keeping circulation within the site (i.e., making circulation two-way).

*Analyzes the value of each option based on preliminary cost estimates and estimated increase in total standard vehicle parking spaces.

**The highway crossing and traffic safety remain priorities for the project, however, this comparison focuses on parking area design only.

● Strongest alignment with policy/goal

● Stronger alignment with policy/goal

● Medium alignment with policy/goal

● Weaker alignment with policy/goal

● Weakest alignment with policy/goal

EXISTING CONDITIONS & OPPORTUNITIES AND CONSTRAINTS

Table of Contents

1.0	Project Background and Goals	2
1.1	Project Background	2
1.2	Project Goals	3
2.0	Existing Conditions	4
2.1	Natural Resources	4
2.2	Public Access	4
2.3	Local and Regional Connectivity	5
2.4	Cultural Resources	6
2.5	Aesthetics	6
2.6	Operations and Maintenance	6
3.0	Technical Studies	7
3.1	Biological Resources Survey and Phytophthora Risk Assessment	7
3.2	Traffic Survey	8
3.3	Cultural and Historic Resources Survey	8
4.0	Opportunities and Constraints	9
4.1	Natural Resources	10
4.2	Public Access	11
4.3	Local and Regional Connectivity	13
4.4	Cultural and Historic Resources	13
4.5	Aesthetics	13
4.6	Operations and Maintenance	14
5.0	Public and Stakeholder Engagement	15
5.1	Partner and Agency Meetings	16
5.2	Neighborhood Meetings	16
5.3	Stakeholder Group Meetings	16
5.4	Prior Board and Committee Meetings	17
6.0	Program Elements	17
6.1	Purisima Multimodal Recommendations	18
7.0	Attachments	19

1.0 Project Background and Goals

1.1 Project Background

The District is conducting a feasibility study to identify a trail crossing location from the Purisima Creek Redwoods (Purisima, Preserve) North Ridge parking area across Skyline Boulevard (Highway 35) to connect existing segments of the Bay Area Ridge Trail within Purisima, west of Highway 35, to a new segment of the Bay Area Ridge Trail planned on the east side of Highway 35 (Ridge Trail Extension). The feasibility study will also analyze the potential expansion of the North Ridge parking area to serve visitors to both the existing trailhead and to the proposed Ridge Trail Extension. The Highway 35 Multi-use Trail Crossing and Parking Study (Project) is a partnership between the District, San Francisco Public Utilities Commission (SFPUC), Bay Area Ridge Trail Council (Ridge Trail Council), and Peninsula Open Space Trust (POST).

The intent of the Project is to enhance regional connectivity through a multi-use highway crossing allowing access to trails on both sides of Highway 35 and to identify ways to reconfigure and increase parking capacity of the North Ridge parking area.

The North Ridge parking area and trailhead is the northern-most entrance to Purisima, located on the west side of Highway 35, approximately midway between Highway 92 to the north and Highway 84 to the south (see Attachment 1a). To the east of Highway 35 are SFPUC's watershed lands, where SFPUC is planning to construct a new segment of the Bay Area Ridge Trail (Ridge Trail Extension). The Ridge Trail Extension would run approximately six miles south from Highway 92 on SFPUC watershed lands and terminate near the boundary of the Golden Gate National Recreation Area (GGNRA) Phleger Estate property. As part of the Ridge Trail Extension project, SFPUC will construct a new parking area at the north end of the new trail, just south of the intersection of Highways 92 and 35. The Purisima North Ridge parking area will be the nearest parking location to the south end of the six-mile Ridge Trail Extension and is likely to attract future trail users looking to access the new trail segment. Lack of a nearby highway crossing location from the North Ridge parking area to the east side of Highway 35 may potentially create safety concerns for users of the Ridge Trail Extension attempting to cross Highway 35 from the North Ridge parking area. In addition, an increase in visitors to the North Ridge parking area may exacerbate parking congestion in a lot that is prone to exceeding capacity on weekends from current visitors to Purisima.

To address these potential impacts from the Ridge Trail Extension, the District and its project partners (Ridge Trail Council, POST, and SFPUC) identified the need to study the feasibility of a crossing location on Highway 35 and an expansion of the existing North Ridge parking area. This Project will analyze expanded parking and multimodal access options at the North Ridge parking area, identify a multi-use trail crossing area on Highway 35, and an alignment of a spur trail to connect the Highway 35 crossing location directly to the SFPUC's planned Ridge Trail Extension. The North Ridge trailhead provides access to an existing segment of the Bay Area Ridge Trail within Purisima and the multi-use trail crossing and spur trail would connect it with the planned Ridge Trail Extension. Providing connections between Purisima and the Ridge Trail Extension will contribute an important regional connection for multiple trail users, including hikers, bicyclists, and equestrians.

The Project is occurring in parallel with two other planning studies at Purisima to improve public access and complete regional trail connections. In 2022, District staff completed the Purisima Creek Multimodal

Highway 35 Multi-use Trail Crossing and Parking Expansion

Access Study, which evaluated existing visitation at Purisima and developed a plan to address parking and traffic congestion issues, increase greener modes of transportation, and better manage visitation at the preserve. The Multimodal Access Study recommends a series of Transportation Demand Management strategies (TDMs) to be implemented preserve-wide as well as some strategies specific to the North Ridge parking area, in order of priority.

Planning for the Purisima-to-the-Sea Trail and Parking Area project is also underway, which is studying the addition of five miles of new trail within Purisima to link the California Coastal Trail to the Bay Area Ridge Trail. The project also includes planning of a new parking area to improve capacity for coastal access to Purisima.

The District is supporting the implementation of a regional trail network through the efforts of these projects and through ongoing partnerships to provide access to important trail connections. Purisima is located at a significant junction for regional trails that will provide north-south corridors along the Bay Area Ridge Trail, as well as east-west corridors through the Bay to Sea Trail with the Purisima-to-the-Sea component. These regional trail networks not only provide opportunities to connect trail users to a variety of open spaces, but also to understand the importance of regional conservation efforts and contiguous open spaces for maintaining natural ecosystems.

1.2 Project Goals

The intent of the Project is to enhance regional connectivity through a multi-use highway crossing allowing access to trails on both sides of Highway 35 and to identify ways to reconfigure and increase parking capacity of the North Ridge parking area. Project goals and strategies have been identified to guide the development of Project elements and evaluate Project success.

Goal 1: Support the implementation of the regional Bay Area Ridge Trail.

Strategies:

- *Identify a multi-use trail crossing and trail spur location to connect the SFPUC's new segment of the Bay Area Ridge Trail to the Preserve and the existing Ridge Trail segment within the Preserve.*
- *Maximize safety and minimize neighbor impacts when evaluating multi-use trail crossing locations and infrastructure.*
- *Develop the multi-use trail crossing and spur trail to accommodate low-intensity recreational use by hikers, bicyclists and equestrians, consistent with Bay Area Ridge Trail corridor goals.*
- *Collaborate with partner agencies to complete the planning, design and implementation of the multi-use trail crossing and spur trail.*

Goal 2: Improve public access and visitor experience at Purisima's North Ridge trailhead using ecologically sensitive design, construction practices, and long-term maintenance and management.

Strategies:

- *Add parking capacity through reconfiguration of existing parking spaces and expansion of the North Ridge Parking Area.*

Highway 35 Multi-use Trail Crossing and Parking Expansion

- *Improve the existing trailhead amenities, such as replacing the existing restroom with a new ADA compliant vault restroom, replacing dated signboards with current standard design, and adding bicycle parking.*
- *Incorporate Transportation Demand Management Strategies consistent with the Board-approved Purisima Multimodal Access Study recommendations.*
- *Design recreational amenities to protect the scenic corridor.*
- *Maximize safety and minimize neighbor impacts when evaluating the multi-use trail crossing, parking enhancements and vehicle circulation.*
- *Maintain routine patrols and maintenance and use adaptive management to address unforeseen issues that arise from increased visitation to the North Ridge trailhead.*

2.0 Existing Conditions

The Project site includes an area west of Highway 35 within Purisima Creek Redwoods Open Space Preserve, comprised of the existing North Ridge parking area and adjacent open areas west of the parking area. The site of the existing North Ridge parking area was purchased as an addition to the Preserve in 1983 (R-83-05). Prior to this land purchase, the District had acquired a public easement over the area that allowed for vehicular access and parking as part of the original Whitemore Gulch purchase, the first acquisition to form what is now called Purisima Creek Redwoods Open Space Preserve (R-82-30). The site was identified as having the potential to allow for a parking area adjacent to Skyline Boulevard to provide Preserve access. In 1988, with grant funds from the State of California, the North Ridge parking area was enlarged to the current capacity for passenger vehicles and horse trailers and trailhead improvements were completed. According to a review of the Use and Management Plan for the Preserve in 1989, public use of the Preserve increased sharply with the new public access improvements and the available parking associated with the three Preserve trailheads (North Ridge, Purisima Creek/Higgins Road, and Redwood) reached capacity on weekends (R-89-20).

The boundaries of the existing parking area and proposed parking expansion areas follow the Purisima property boundary with Fisher Investments to the north and Highway 35 right of way to the east. The employee residence defines the west boundary of the lower parking expansion area, and the southwest boundaries of the project site are defined by dense forest and other vegetation that signal the start of the preserve (see Attachment 1b). The Project site also includes the Caltrans Highway 35 right of way and approximately four acres of SFPUC Watershed lands east of Highway 35 for the spur trail study area.

2.1 Natural Resources

North Ridge trailhead is located along the upper ridge of a watershed that flows west into the preserve and into Purisima Creek. Due to the location of the trailhead on a ridge bordering two watersheds, many aquatic features such as creeks, rivers, and wetlands do not occur near the trailhead, but further west into the preserve where the topography slopes toward the coast.

2.2 Public Access

The North Ridge parking area and trailhead is the northern most entry point into Purisima Creek Redwoods Open Space Preserve and is located along Highway 35, approximately 4.5 miles south of its intersection with Highway 92 (Attachment 1c). From the North Ridge trailhead, visitors can access the 5,400-acre Purisima preserve located on the western slopes of the Santa Cruz Mountains. Purisima

offers twenty-two miles of public trails with access for hikers, bicyclists, and equestrians as well as views of the coast from various trails along the ridgelines that slope toward the coast from east to west.

The parking area is adjacent to the west side of Highway 35 with a vegetated barrier between the parking area and the highway right-of-way. The gravel parking area can accommodate perpendicular parking for 41 standard vehicle spaces and two ADA spaces. The parking area is unstriped and does not delineate parking stalls, except for the two ADA spaces that are identified by ADA parking signs and a blue curb. Wheel stops line the west and east sides of the parking area and help to define the boundaries of the existing lot. While the North Ridge parking area does not include designated equestrian parking spaces, approximately two equestrian trailers can be accommodated for parallel parking along the split-rail fencing on the northwest side of the parking lot. The North Ridge trailhead includes standard trailhead amenities such as an equestrian hitching post, map and sign boards, a boot brush, and a single-stall vault restroom. The vault restroom, installed in 1999, is in deteriorating condition and requires improvements and an accessible path to meet ADA accessibility standards.

The North Ridge parking area is accessible by a one-way entrance on the south end of the parking area and a one-way exit at the north end of the parking area, which circulate traffic in a single direction through the parking area from south to north. There are no entry or exit signs visible from Highway 35, aside from a “do not enter” sign at the north driveway that indicates that it is an exit only. Within the parking area, an exit sign is posted near the north driveway and a “not an exit” sign is posted near the south driveway. A preserve sign for Purisima Creek Redwoods is located next to the North Ridge entrance and is visible from Highway 35.

Of the four parking areas available for visitors to Purisima, the North Ridge parking area can accommodate the largest number of on-site vehicle parking. All four parking areas frequently exceed capacity on the weekends, during peak visitation, and visitors often use informal, roadside parking when the lots are full. The Purisima Multimodal Access Study (2022) found that during the peak summer months, the North Ridge parking area alone averaged between 225 to 525 vehicles and 500 to 1,225 pedestrians per day¹, despite its maximum 41-car capacity.

2.3 Local and Regional Connectivity

Highway 35 provides key access points not only to Purisima, but also to the greater Skyline region, including direct access to seven other preserves within the District and many other open spaces that together act as a protected, regional greenbelt throughout the mid-peninsula. Among the many trails and open spaces accessible from Highway 35 are a series of existing and planned regional trails that provide connections throughout the Bay Area. Purisima will provide important trail connections for many regional trails, including the Bay Area Ridge Trail and the planned Bay to Sea trail, lead by POST, which will be an approximately 40-mile regional trail that is envisioned to connect communities from the San Francisco Bay to the Pacific Ocean. A key component of the Bay to Sea trail will be the development of the District’s Purisima-to-the-Sea trail, which will create a five-mile trail connection through Purisima to the California Coastal Trail along Highway 1. Purisima also contains existing segments of the Bay Area Ridge Trail, of which these segments contribute to over 400 miles (and counting) of existing multi-use trail that follow the ridgelines encircling the San Francisco Bay. The alignment of the Ridge Trail

¹ [Purisima Creek Multimodal Access and Transportation Demand Management Study](#). Attachment 1, page 10.

Extension on SFPUC Watershed lands poses an opportunity to connect Purisima and its Bay Area Ridge Trail segment to the new trail extension through the Project's multi-use trail crossing on Highway 35.

2.4 Cultural Resources

The Project area is within a region that was historically occupied by tribes of the Ramaytush Ohlone people. Ohlone territory spanned from areas north of the San Francisco Bay down the coast as far as Carmel Valley, and inland to the coast range. San Mateo County is home to numerous historic Ohlone sites and villages, whose boundaries were typically defined by topographic features such as rivers, watersheds, and ridgelines. The nearest known cultural site of the Ramaytush Ohlone is a well-known and historically significant village site located at what is now the private Filoli Estate, approximately two miles northeast of the Project area on the eastern slope of the Santa Cruz Mountains.

2.5 Aesthetics

The North Ridge trailhead is surrounded by a rural, forested setting, primarily comprised of redwood forest with some annual grassland and Monterey cypress woodland. The area is also sparsely populated with single family residences and businesses along the Highway 35 corridor. The North Ridge trailhead is accessible from Highway 35, a rural, two-lane highway providing north and south-bound travel along the ridgeline of the Santa Cruz Mountains. The California Department of Transportation (Caltrans) has designated Highway 35 as a scenic highway, which is meant to preserve the visual character of highways and manage new development to preserve the scenic and natural features visible from the highways. The stretch of Highway 35 in the vicinity of the North Ridge trailhead is lined with heavy vegetation that contributes to its scenic beauty, but can also make roadway visibility challenging at high speeds.

2.6 Operations and Maintenance

Adjacent to the west boundary of the existing parking lot is an approximately 0.3-acre (13,000 square foot) open, flat area (Upper area) that is vacant aside from the hitching post. This Upper area is used as a helicopter landing zone by the California Department of Forestry and Fire Protection (CalFire) for emergency response. Further west of the Upper area, moving into the preserve, the land slopes down to another open, flat area (approximately 1.2 acres or 52,000 square feet) where a employee residence and separated garage are located (Lower area). This Lower area previously hosted an experimental fog collector, a device installed in 2016 to conduct initial studies of moisture collection from fog that occurs over the Santa Cruz mountains. The fog collector was removed in December of 2022 after the data collection ended in 2018 and the device was left idle for many years. The slope separating the two open areas west of the North Ridge parking area is also covered with dense vegetation, which provides visual and physical separation between the trailhead and the employee residence. The employee residence is accessed by a gated, gravel driveway along the north boundary of the preserve that connects the property to the North Ridge parking area.

The adjacent property to the north of the North Ridge parking area is owned and occupied by a private company, Fisher Investments. Their property is highly developed with offices and other support buildings as well as a parking area accessible from Highway 35. To the east of the North Ridge parking area and of Highway 35 are SFPUC watershed lands, which are undeveloped and primarily consist of dense redwood forest. Adjacent properties to the south of the North Ridge trailhead are private, single-family homes. The closest private driveway is 400 feet south of the entry driveway to the North Ridge trailhead.

The posted speed limit is 50 mph at the North Ridge trailhead, however, many nearby residents and frequent preserve visitors have provided public comments that vehicles often go at much higher speeds. The District is aware of safety concerns regarding the speed of vehicles travelling along Highway 35 and the feasibility study aims to identify potential safety concerns related to the Project.

3.0 Technical Studies

District staff contracted with professional consulting firms to complete various technical studies to analyze the biological, cultural, traffic, and topographic characteristics of the Project area (including both the Upper and Lower parking expansion areas). The methodology, key findings, and recommendations from these studies are summarized below.

3.1 Biological Resources Survey and Phytophthora Risk Assessment

In June, 2022, AECOM conducted a thorough Biological Resources Survey to identify any existing or potential biological resources within the proposed Project area. In particular, the survey was conducted to identify all San Francisco dusky-footed woodrat (SFDFW) middens present within the project area, any substantial or permanent nesting bird resources (e.g. suitable nesting trees) in the area, any aquatic features including jurisdictional wetlands or other waters, the presence of any bat maternity roosts within the onsite residence, and the suitability of the Project site for special-status wildlife habitat. A daytime biological survey analyzed an area consisting of the Project site, traffic survey area, spur trail study area, and included three buffer areas of up to 1,000 feet for nesting birds. A bat emergence survey was also conducted during the evening to monitor any bat activity near the employee residence and garage.

The surveys found one active SFDFW midden at a distance approximately 250 feet from the project area, which is unlikely to be affected by the Project. No active raptor, accipiter, or passerine bird nests or nesting platforms were found in the vicinity of the Project site; however, a Monterey cypress tree being used as an acorn woodpecker granary was found in the Spur Trail study area. The survey found no evidence of aquatic resources or jurisdictional wetlands and special status species within the Project area, nor was there evidence of the presence of bat maternity roosts within the onsite employee residence or garage.

Due to the project site's proximity to Huddart County Park which is a designated critical habitat for the endangered marbled murrelet, District staff conducted a site assessment for marbled murrelet and consulted with California Department of Fish and Wildlife (CDFW) about the potential need for special species protections. However, based on results of the site assessment and discussions with CDFW, both the District and CDFW staff confirmed that no suitable murrelet habitat within the project area and within the project vicinity, therefore the project will have zero species impacts. Noise and visual disturbance avoidance measures will likely not be necessary.

In February 2023, AECOM prepared a Phytophthora Risk Assessment in order to identify the modality of soil pathogen infection and to provide specific mitigation and best management practices to minimize the introduction or spread of Phytophthora species at the site. Analysis found that the project area has

relatively low levels of contamination risk; however, areas east of Hwy 35 are highly receptive to contamination and are considered sensitive sites.

3.2 *Traffic Survey*

TJKM Transportation Consultants (TJKM) evaluated the sight distance conditions for the two existing parking area driveways and the feasibility/design of a new on-grade trail crossing on Highway 35. TJKM performed a Sight Distance analysis using standards in “Highway Design Manual”, 2020 7th Edition by the California Department of Transportation, a policy on Geometric Design of Highways and Street, 2018 7th Edition, from the American Association of State Highway and Transportation Officials (AASHTO) and the California Manual on Uniform Traffic Control Devices (CA-MUTCD). In April 2022, TJKM measured vehicle speeds in the vicinity of the North Ridge parking area to determine the project design speed. The project design speed is the 85th percentile of actual speeds measured on the roadway; it is used to determine if adequate sight distance is available for vehicles exiting the existing driveways, and if northbound and southbound vehicles on Highway 35 have adequate stopping sight distance for the new on-grade trail crossing. Although the posted speed limit is 50 mph, the design speed measured on the road was 51.7 mph northbound and 51.0 mph southbound. TJKM rounded these findings up to 55 mph as the final design speed used in the feasibility analysis. TJKM also reviewed five years of traffic collision data within the vicinity of the project site to inform the final recommendations. There were no reported incidents directly in front of the parking area to prompt additional recommendations. The traffic collision data can be found as an appendix to the traffic report. Based on the available information, TJKM concluded that there is a feasible on-grade trail crossing location immediately adjacent to the existing exit driveway. TJKM recommended improvements within the right-of-way to preserve site distances and enhance visibility of the trail crossing (see Attachment 1d). Furthermore, TJKM concluded that the existing driveway configuration is the most favorable for ingress and egress. TJKM has sought concurrence with the California Department of Transportation (Caltrans) on their findings and recommendations. Caltrans reviewed the findings and requested additional information in the final report, which was provided by TJKM. Caltrans does not have any further comments at this time. Additional coordination with Caltrans will be required for future encroachment permits, which would occur after a Board-approved alternative is selected and analyzed as part of the CEQA environmental review process. Refer to roadway trail crossing graphics for more details (Attachment 1d).

3.3 *Cultural and Historic Resources Survey*

Cogstone Resource Management, Inc. conducted cultural and historic resource surveys in the fall and winter of 2022 to determine if any cultural or historic resources were present within the Project area that may be affected by implementation of the Project. Cogstone conducted background research involving a search for archaeological and historical records at the Northwest Information Center (NWIC) as well as a request for a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC). Cogstone also conducted a pedestrian survey of the Project area to determine whether any archaeological resources were present. No archaeological resources were observed during the survey and the background research did not find any previously recorded cultural or historical resources located within the Project area. The boundary of one historic resource, the Filoli Estate, was located within the half mile search radius, but is outside of the Project area and is unlikely to be affected by the proposed Project. The SLF search identified one tribal band and the NAHC recommended they be contacted for information on any tribal cultural resources in the vicinity of the Project. The District will

will contact the tribe directly once preliminary concept plans are available and again when a design alternative is selected and the Project proceeds to the environmental review phase, as required by the California Environmental Quality Act (CEQA) and in accordance with Assembly Bill (AB) 52 consultations. No archaeological monitoring is anticipated due to the geological age of the soils as well as the absence of any known cultural resources within the Project area.

Cogstone also conducted an Historic Resources Evaluation for the nearby onsite employee residence that was built over 50 years ago (circa 1948) given its proximity to the parking area. The residence includes Ranch style architectural elements such as a low pitch roof with a wide eave overhang. The entire exterior of the single-family residence was photographed and recorded on the Department of Parks and Recreation 523 (DPR 523) forms. Due to a lack of significance and notable architectural alteration, the residence was not found eligible for listing at the local, state, or national level. No further evaluation is recommended. No changes are proposed for this residence, which would remain in place as part of the Project and continued to be used as an employee residence to maintain onsite presence and vigilance of the property.

4.0 Opportunities and Constraints

This section describes the opportunities and constraints for the Project site, which are related to important attributes of the site and require consideration for Project program development. Opportunities and constraints are categorized by topic area (such as Natural Resources or Public Access) and some attributes may be listed as both an opportunity and a constraint based on their relationship to the Project goals. In addition, several policies and best management practices (BMPs) that may be relevant to the Project are listed below.

Potential applicable policies, guidelines, or regulations:

- **Caltrans Highway Design Manual**
- **District Best Management Practices**
- **District Good Neighbor Policy**
- **District Resource Management Policies**
- **Purisima Multimodal Access Study**
- **San Mateo County Active Transportation Plan**
- **San Mateo County General Plan. 4.22 Scenic Corridors.** Protect and enhance the visual quality of scenic corridors by managing the location and appearance of structural development.
- **San Mateo County General Plan. 4.24 Rural Development Design Concept.** Regulate the location and siting of structures in rural areas to encourage positive visual quality in relation to the scenic character of the natural landscape.
- **San Mateo County Heritage/Significant Tree Ordinance**
- **San Mateo County Trails Plan**
- **San Mateo Water Pollution Prevention Program**

*Relevant policies, guidelines or regulations are shown with corresponding opportunities or constraints and labeled with an asterisk.

Highway 35 Multi-use Trail Crossing and Parking Expansion

4.1 Natural Resources

Attribute	Opportunities & Constraints	Discussion
Biological Resources	O	The biological survey conducted for the Project site did not uncover any special-status wildlife species, nesting birds or raptors, aquatic resources, roosting bats, or other sensitive biological resources within the Project area. A Dusky-Footed Woodrat midden is present about 250 feet from the Project area, which is well beyond the minimum avoidance buffer of 3-10 feet established by the District. It is unlikely that midden would be affected by the Project at this distance. It is unlikely that marbled murrelet protections will be required during construction. Construction activities should avoid direct impacts to trees within the spur trail study area during bird nesting season (between March 15 and August 30). <i>* District wildlife BMPs: nesting bird surveys, SF dusky-footed woodrat midden avoidance buffer, marbled murrelet AMMs</i>
Biological Resources	C	There is dense vegetation along the east side of Highway 35 (on SFPUC Watershed lands), which may affect the spur trail alignment as well as the line of sight for the multi-use crossing. Some vegetation may need to be removed and/or trimmed back to improve line of sight for the crossing as well as develop the spur trail connection to the Ridge Trail Extension. <i>*San Mateo County Heritage/Significant Tree Ordinance</i>
Hydrology	C	Drainage from the existing parking area and trailhead flows west, into the preserve, while drainage on the east side of Highway 35 flows east, contributing to the SFPUC watershed. An existing drainage culvert is located just south of the North Ridge trailhead and parking entrance. Drainage from the site may be affected by construction activities related to parking expansion as well as an increase in impervious surfaces. Potential runoff from an expanded parking area will need to be evaluated to ensure there will be no impacts to water quality and buffers implemented where/if necessary. <i>*San Mateo Water Pollution Prevention Program</i>
Pathogens	O/C	The Phytophthora risk assessment determined that the project site has relatively low levels of pathogen contamination west of Highway 35. However, movement of Phytophthora pathogens may also migrate from the Project area and construction activities (e.g. reseeded) to SFPUC property east of Highway 35 and some sensitive areas will require particular protection from infection. <i>*Phytophthora Risk Assessment BMPs and AMMs</i>

Highway 35 Multi-use Trail Crossing and Parking Expansion

4.2 Public Access

Attribute	Opportunities & Constraints	Discussion
Parking Area	O	The existing North Ridge parking area and trailhead are frequently visited and familiar to visitors of Purisima, as it is currently the largest parking area available for the preserve. Expansion of the parking area coupled with multimodal access strategies are expected to significantly alleviate parking demands and potentially meet anticipated parking needs at this trailhead. The Project will maintain the existing vegetated buffer and berm between the parking lot and Highway 35 to minimize visibility of the parking area from the highway. The separate driveway for entrance and exit will also be preserved to better accommodate larger vehicles such as shuttle buses, emergency vehicles, and equestrian trailers. This will save space by not requiring a turn-around area. Minor improvements to signage may be implemented to better identify the entry and exit to vehicles travelling along Highway 35.
Parking Capacity	C	Although expansion of the parking area would add much needed parking at the North Ridge trailhead, the available expansion areas are limited in size. Future expansion will likely not fulfill the maximum parking demand at peak visitation hours and TDM strategies should be considered to manage parking. <i>*Good Neighbor Policy</i> <i>*Purisima Multitmodal Access Study</i>
Trail Crossing Location	O	Based on the traffic study conducted at the North Ridge trailhead, an adequate line of sight was identified that would allow for a safer crossing location just south of the exit driveway. The adequate line of sight indicates that vehicles traveling north and south bound along Highway 35 will have enough warning, visibility, and space to yield to trail users crossing at the recommended location. The traffic study also recommended the use of crossing signage that is consistent with many other highway crossing locations along Highway 35 and would be familiar to trail users and vehicles approaching the crossing. <i>*Caltrans Highway Design Manual Policy 405.1</i> <i>*SMC Active Transportation</i>
Trail Crossing Safety	C	During the stakeholder engagement process neighbors expressed concern over current excessive vehicle speeds along Highway 35 that are perceived to be much higher than the posted speed limit. While the traffic study analysis used current traffic data and accounted for greater vehicle speeds along Highway 35 in its recommendation of the highway crossing location, further consultation with Caltrans is required to determine the final crossing design and signage that would be appropriate for the recommended crossing location.
Parking	O	On the west side of Highway 35, the existing parking area and adjacent upper expansion area are generally flat with a very gradual

Highway 35 Multi-use Trail Crossing and Parking Expansion

		slope to the west, into the preserve. Adjacent to this area, a steep, vegetated slope separates the upper parking expansion area from the lower expansion area and employee residence. The terrain levels out again at the lower expansion area and residence with just a gradual slope to the southwest. The existing topography will influence the parking capacity for both the upper and lower parking expansion areas and neither expansion area will require significant grading. During the stakeholder engagement process, interest was expressed in adding designated equestrian parking at the North Ridge trailhead. Although equestrian parking is currently permitted at North Ridge, equestrians must share the space with standard vehicle parking and there is rarely enough available space to park equestrian trailers during peak visitation hours. Reconfiguring and expanding the parking area will provide an opportunity to address public interest in adding designated equestrian parking to the North Ridge parking area.
Parking	C	The steep, vegetated slope creates a barrier between the upper parking expansion area and the lower expansion area and employee residence. This slope limits the area that can be used for on-site parking expansion as well as internal circulation if the lower expansion area is utilized. The addition of designated equestrian parking would mean reducing the number of additional standard vehicle parking that could be accommodated onsite. Although feedback from the stakeholder engagement process showed interest in designated equestrian parking, it's unclear how many spaces are required to meet the demand for equestrian parking and whether this should be prioritized over the addition of standard vehicle parking, which is in high demand at this location.
Proximity to Adjacent Properties	O	There are limited adjacent properties and driveways in the vicinity of the Project site that could be impacted by an increase in visitation to the North Ridge parking area. The Fisher Investments property, adjacent to the north boundary of the North Ridge parking area, has an opposite visitation schedule from visitors to North Ridge where most Fisher Investments employees are working on site during the weekdays, while Purisima has peak visitation on weekends. <i>*Good Neighbor Policy</i>
Proximity to Adjacent Properties	C	The lower parking expansion area is adjacent to the existing employee residence. Use of the lower parking expansion area for additional visitor parking may require a buffer from the residence for privacy and to maintain District operational access to and from the residence. Although the Fisher Investments property is busiest on weekdays when visitation to Purisima is lower, the Ridge Trail Extension may increase weekday visitation that could contribute to more traffic congestion in the vicinity of the private property. <i>*Good Neighbor Policy</i>

Highway 35 Multi-use Trail Crossing and Parking Expansion

4.3 Local and Regional Connectivity

Attribute	Opportunities & Constraints	Discussion
Trail Crossing Location	O	Existing segments of the Bay Area Ridge Trail within Purisima can be accessed from the North Ridge trailhead, which makes a multi-use trail crossing at Highway 35 from the planned Ridge Trail Extension to the North Ridge trailhead a natural and direct connection point. <i>*San Mateo County Trails Plan</i>

4.4 Cultural and Historic Resources

Attribute	Opportunities & Constraints	Discussion
Cultural Resources	O	The cultural resources survey conducted for the Project site did not identify any previously recorded cultural resources within the Project area and no archaeological resources were encountered during the pedestrian survey. A Sacred Lands File search identified one Native American Tribe that will be consulted when preliminary concept plans are available and during the planning and CEQA environmental review process to obtain more information about any potential cultural resources within the Project site. Due to the results of the pedestrian survey, background research, and soil analysis, archaeological monitoring is not recommended during development of the Project. <i>*District Cultural Resources Policies</i>
Historic Resources	O	The historic resources evaluation thoroughly documented and analyzed the site's existing employee residence to determine if it is historically significant. Despite the age of residence, originally constructed sometime between 1941 and 1948, this building is not recommended as eligible for listing at the local, state, or national level due to lack of significance and the notable architectural alterations made to the residence since it was originally built. <i>*District Cultural Resources Policies</i>

4.5 Aesthetics

Attribute	Opportunities & Constraints	Discussion
Caltrans Scenic Highway Designation	O	Caltrans designates portions of Highway 35 as a state scenic highway, including the portion of Highway 35 adjacent to the Project site. Caltrans and San Mateo County have developed policies that regulate development along scenic corridors and provide guidance for other

Highway 35 Multi-use Trail Crossing and Parking Expansion

		visual resources. The existing North Ridge parking area is adjacent to Highway 35 and partially visible from the highway. A barrier of redwood trees along the east boundary of the parking lot separates the existing parking area from the highway right-of-way and provides a natural visual barrier, which will remain regardless of the final parking area program. In addition, the proposed lower parking expansion area is set back from the roadway and is lower in elevation as compared to the existing parking area, which will help to reduce visibility of the expanded parking area from the highway. The Project proposes to maintain the existing entry and exit driveways to the parking area along Highway 35 to minimize the Project's visibility from the scenic highway. <i>* San Mateo County General Plan. 4.22 Scenic Corridors California Streets and Highways Code Division 1, Chapter 2, Article 2.5</i>
Caltrans Scenic Highway Designation	C	Although the Project will direct new development to areas away from Highway 35, there is potential for changes to be visible from the highway, including the upper parking expansion area and the replacement vault restroom, which would be relocated to a more central location to address ADA barriers. In addition, the Project will require a crossing sign and two crossing warning signs to be installed along Highway 35 to identify the multi-use trail crossing location. While these traffic features will be minimal, they are meant to be highly visible to vehicles travelling on Highway 35 to promote safer crossing. Vegetation clearing along Highway 35 right-of-way will also occur, both to support the traffic study recommendations for improving line of sight to the multi-use trail crossing as part of the Project and separately through Fire Safe San Mateo County to support fuel reduction efforts for wildfire prevention. <i>*San Mateo County General Plan. 4.24 Rural Development Design Concept. California Streets and Highways Code Division 1, Chapter 2, Article 2.5</i>

4.6 Operations and Maintenance

Attribute	Opportunities & Constraints	Discussion
Utilities and Services	O	Above-ground power lines run along Highway 35 adjacent to the Project site and underground electric lines currently serve the employee residence, garage, and the existing parking area entry and exit gates. A water main line also runs beneath Highway 35, including a water distribution line that serves the employee residence. Cellular service is also available at the existing North Ridge parking area.
Utilities and Services	C	Sewer service is not available at the employee residence nor at the North Ridge trailhead. The trailhead provides a vault restroom for public use. Relocating the vault restroom would be a challenge due to

Highway 35 Multi-use Trail Crossing and Parking Expansion

		the existing topography and vegetation near the trailhead that limits alternative locations. The vault restroom will be replaced with an ADA-accessible model. Vault restrooms, as opposed to plumbed restrooms, are only permissible on a case-by-case basis through an exemption with the County of San Mateo. Preliminary inspection by District staff indicates that the site meets the criteria to allow the exemption.
CalFire Landing Zone	C	District staff have reached out to the agencies and organizations that may utilize the landing zone at the upper expansion area, including CalFire, San Mateo County Fire, and the Kings Mountain Volunteer Fire Department. These organizations are aware of the Project and have not requested further coordination at this time. In addition, there are other landing zones located in the vicinity of the Project area that are currently used by these organizations. These nearby alternative landing zone locations include private properties on Cyprus Ridge Road, less than a mile north of the Project site, and Tunitas Creek Road, approximately two miles south of the Project site. The nearest alternative landing zone on District lands is located at El Corte de Madera Creek Preserve, approximately five miles south of the Project site. Should a Project alternative be selected for CEQA review that would change the use of the landing zone, District staff will engage in additional coordination with these agencies at that time to confirm the site can be formally retired.

5.0 Public and Stakeholder Engagement

From 2021 to 2022, the District engaged with stakeholder groups and partners as part of the Project focused meetings and at meetings that included the Purisima-to-the-Sea project and the Purisima Multimodal Access Study. These engagement activities were used to gather initial feedback on existing challenges at the North Ridge parking area and any desired amenities that should be considered for this parking area. Feedback received includes the following²:

Theme/Topic	General Feedback/Comments
Traffic and Safety	- Concerns related to providing a safe pedestrian roadway crossing due to current vehicle speeds on Highway 35 - Neighbors would like to see roadway striping and advanced warning beacon for trail crossing - Concerns related to roadside parking that create potentially unsafe roadway conditions for pedestrians and vehicles - Suggestion to modify parking area entrance to allow vehicles to turn into the parking area quickly

² This feedback has been received in addition to previous feedback that was presented to the PNR Committee and the Board as part of the Purisima Multimodal Access engagement on [August 2nd, 2022](#) (see attachment 5) .

Highway 35 Multi-use Trail Crossing and Parking Expansion

	• Suggestion to review historic traffic accident data in the vicinity of North Ridge to better understand safety issues • Concerns related to foggy conditions on Highway 35 that could limit visibility
Parking and Visitor Capacity	• Allowing E-bikes within the Preserve may reduce parking demand • Request for better equestrian parking and access at this trailhead • Better/clearer roadway parking signage can discourage parking along the roadway that impacts neighboring properties
Amenities	• Support for the proposed trailhead amenities • Suggestion to include emergency response information on trailhead signage
General	• General support for the Project if concerns are addressed • New regional trail connection may result in additional traffic and trash • Concerns regarding relocating the CalFire helicopter landing zone and how this would impact fire response

5.1 Partner and Agency Meetings

On October 19th, 2022, District staff made a presentation at a monthly meeting of the Peninsula Trails Team, a working group made up of regional trails partners and land managers, including representatives from POST, SFPUC, Ridge Trail Council, California Coastal Conservancy, County of San Mateo, National Parks Service, Golden Gate National Recreation Area, and the District. Following the presentation of the Project scope, updated schedule, and the results of the completed technical studies, the group discussed regional implications for the new trail connection as well as the potential timing for future planning and CEQA environmental review.

5.2 Neighborhood Meetings

District staff met with representatives from local organizations including members of the Kings Mountain Association, a neighborhood association, and the facilities manager of Fisher Investments, the neighboring property to the north of the Project site. District staff presented the Project to the Kings Mountain Association in March and November of 2022 and engaged in group discussions. District staff also provided a presentation to the facilities manager of Fisher Investments on November 9th, 2022 to notify them of the Project, answer questions, and receive initial feedback.

5.3 Stakeholder Group Meetings

District staff invited individuals who were familiar with Purisima and other District preserves to participate in focused virtual stakeholder meetings held on November 15th and 17th, 2022. The individuals invited to the stakeholder meetings were identified from their previous participation in public engagement activities with the District and represented a range of user groups, including hikers, cyclists, equestrians, ADA-accessibility interests, and District docents and volunteers. The virtual

Highway 35 Multi-use Trail Crossing and Parking Expansion

stakeholder meetings were organized with a brief presentation by District staff, followed by polling questions and open discussion.

5.4 Prior Board and Committee Meetings

To date, the Highway 35 Multi-use Crossing and Parking Expansion Feasibility Study has been brought before the District's Legislative, Funding and Public Affairs Committee (LFPAC) at the following meetings:

- **September 29, 2020:** The LFPAC reviewed the partnership agreement with SFPUC and provided comments. The LFPAC voted unanimously to forward a recommendation to the full Board of Directors to adopt the resolution authorizing the General Manager to execute the grant agreement. ([R-20-101](#), [Meeting Minutes](#))

The Highway 35 Multi-use Crossing and Parking Expansion Feasibility Study has also been brought before the full District Board at the following meetings:

- **October 28, 2020:** The Board adopted a resolution authorizing the General Manager to accept grant funding from SFPUC for the proposed Project. ([R-20-32](#), [Meeting Minutes](#))

6.0 Program Elements

The Project proposes to expand parking for passenger vehicles and horse trailers. The trailhead would have amenities typical to District preserves, including a vault restroom, trailhead sign boards, boot brush, bike racks, and an equestrian mounting block. The parking lot, trailhead, and restroom would meet ADA accessibility requirements.

The Committee is asked to provide feedback on the share of passenger vehicle, horse trailer, and shuttle spaces that should be accommodated as part of the proposed parking expansion design. The share of spaces is based on the expansion potential that exists at the Upper Area, comprised of the existing parking area and the adjacent vacant area to the west, and the Lower Area, comprised of the vacant area adjacent to the employee residence. District staff completed a spatial analysis for the Upper and Lower Areas, which is detailed below (refer also to Attachment 1e).

The Upper Area could accommodate any of the following scenarios:

Capacity Scenarios	Number of Passenger Vehicle Parking ³	Number of Horse Trailer Parking ⁴	Number of Shuttle Bus Parking ⁵
Scenario 1	65	0	0
Scenario 2	45	4	0
Scenario 3	45	0	4

³ AASHTO Geometric Design of Highways and Streets Exhibit 2-3 Passenger Car (P)

⁴ AASHTO Geometric Design of Highways and Streets Exhibit 2-21 Passenger Car and Trailer (P/T)

⁵ AASHTO Geometric Design of Highways and Streets Exhibit 2-8 Conventional School Bus (S-BUS-11 [S-BUS-36])

Highway 35 Multi-use Trail Crossing and Parking Expansion

The Lower Area could accommodate any of the following scenarios:

Capacity Scenarios	Number of Passenger Vehicle Parking	Number of Horse Trailer Parking	Number of Shuttle Bus Parking
Scenario 1	15	0	0
Scenario 2	0	2	0
Scenario 3	0	0	2

Staff seeks the Board's direction on the scenarios to develop final parking program alternatives, which may be a combination of the scenarios listed above and may include other parking elements. For example, one possible combination of these scenarios that maximizes all three uses is to provide 45 passenger vehicles, 2 horse trailer spaces and 2 shuttle spaces in the Upper Area; and 15 passenger vehicle spaces in the Lower Area. The above scenarios are only to demonstrate maximum available space at each expansion area and are not the only parking alternatives that should be considered for the Project.

6.1 Purisima Multimodal Recommendations

The Purisima Multimodal Access Study, approved by the Board on November 9, 2022, recommends a series of transportation demand management strategies (TDMs) for the preserve's parking areas, including the North Ridge parking area. The TDMs considered for the North Ridge parking area are categorized by priority level based on a variety of factors such as ease of implementation, overall effectiveness for improving public access, and interest from the public. The expectation is that many of these strategies will be suitable for the site and be incorporated into the design and long-term management of the parking area TDMs that are being considered for the North Ridge trailhead include the following:

Highest priority TDMs

- Peak period parking reservations/priority parking
- Bicycle parking and facilities (including bicycle repair stations)
- Temporarily redesignate spaces on specific days/times to best meet demands
 - May include designating special parking areas temporarily for carpool, equestrian, shuttle pick-up/drop-off, or other uses
- Real-time parking lot occupancy sensors and signage
- Electric Vehicle (EV) charging infrastructure

Lower priority TDMs

- Vehicle way-finding signage
- Clearly identify permitted on-street / shoulder parking
- Accommodate future shuttle / transit systems

7.0 Attachments

Attachment 1a: Project location

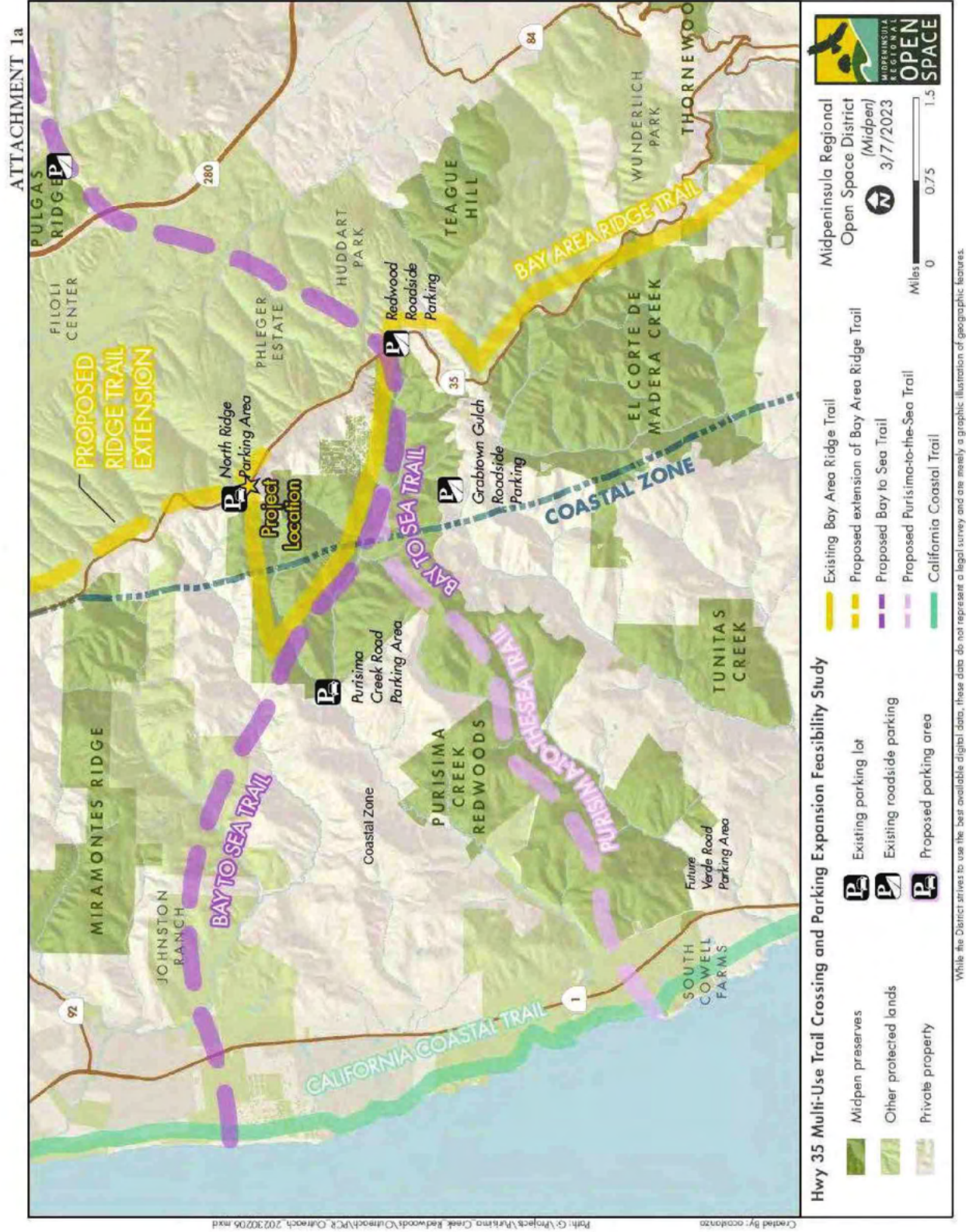
Attachment 1b: Project area

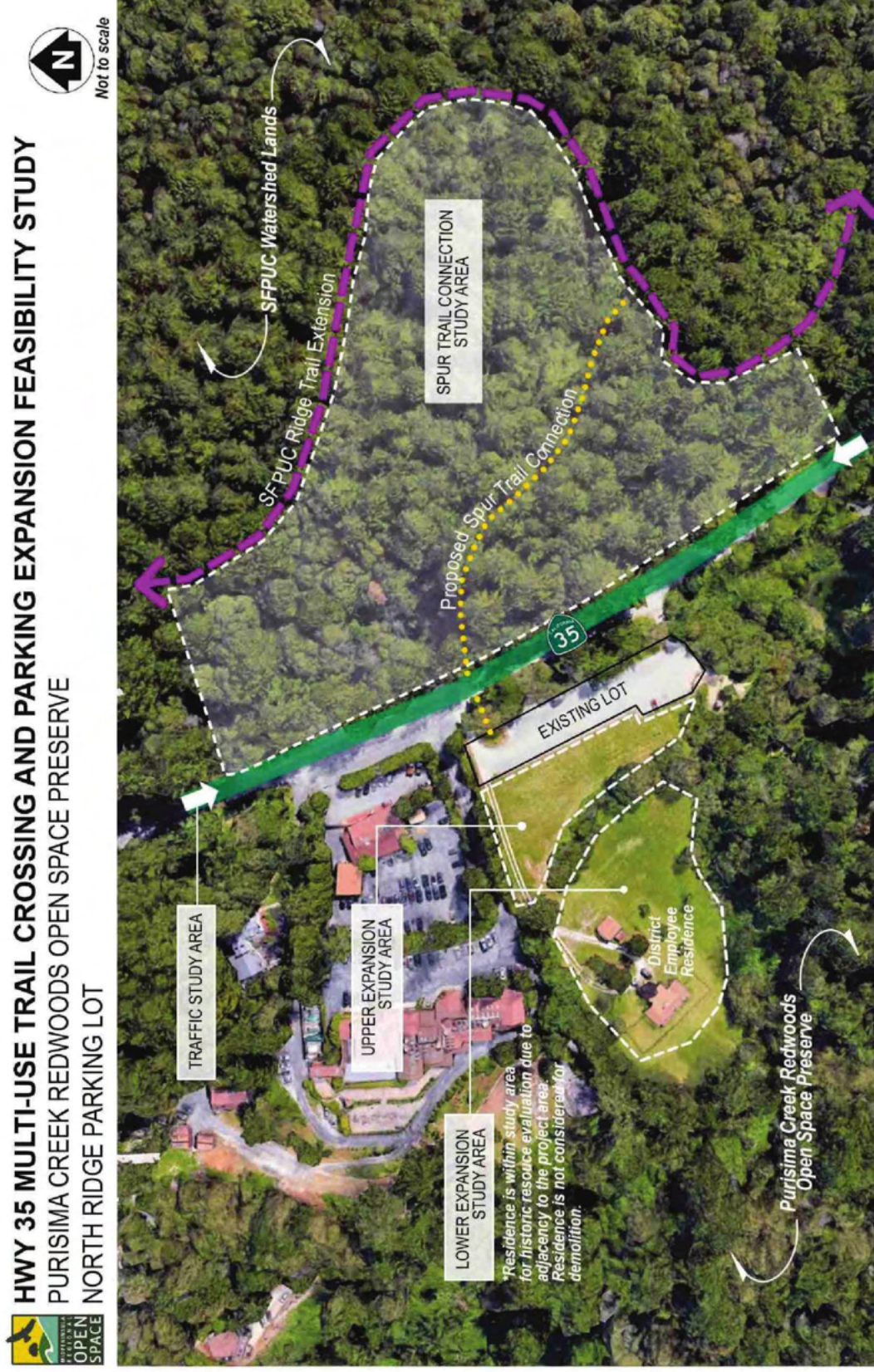
Attachment 1c: Existing Conditions

Attachment 1d: On-grade Crossing Recommendations

Attachment 1e: Spatial Analysis

Highway 35 Multi-use Trail Crossing and Parking Expansion

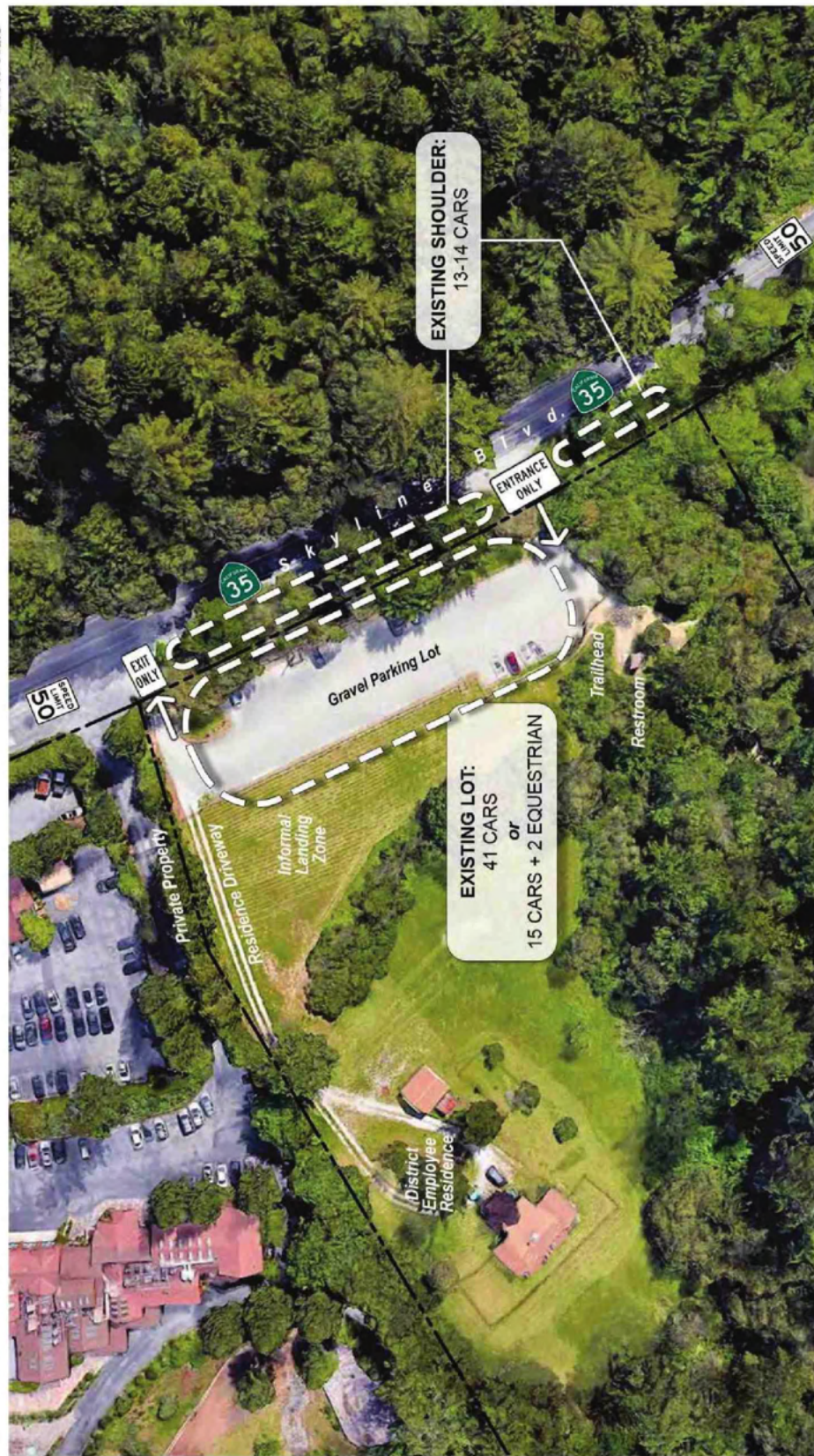




ATTACHMENT 1.b PROJECT STUDY AREAS



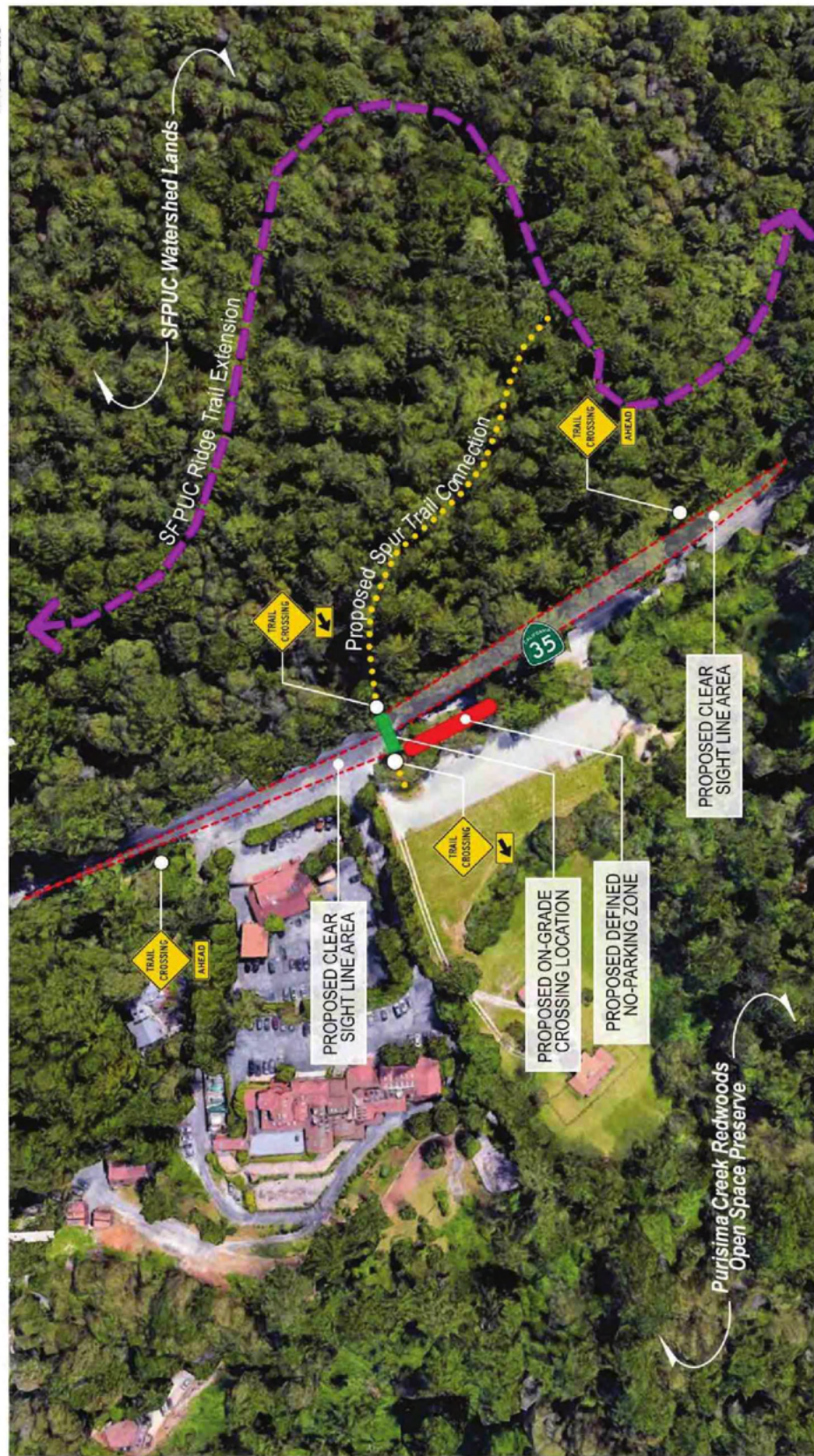
HWY 35 MULTI-USE TRAIL CROSSING AND PARKING EXPANSION FEASIBILITY STUDY
PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE
NORTH RIDGE PARKING LOT



ATTACHMENT 1.c EXISTING CONDITIONS



HWY 35 MULTI-USE TRAIL CROSSING AND PARKING EXPANSION FEASIBILITY STUDY
PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE
NORTH RIDGE PARKING LOT

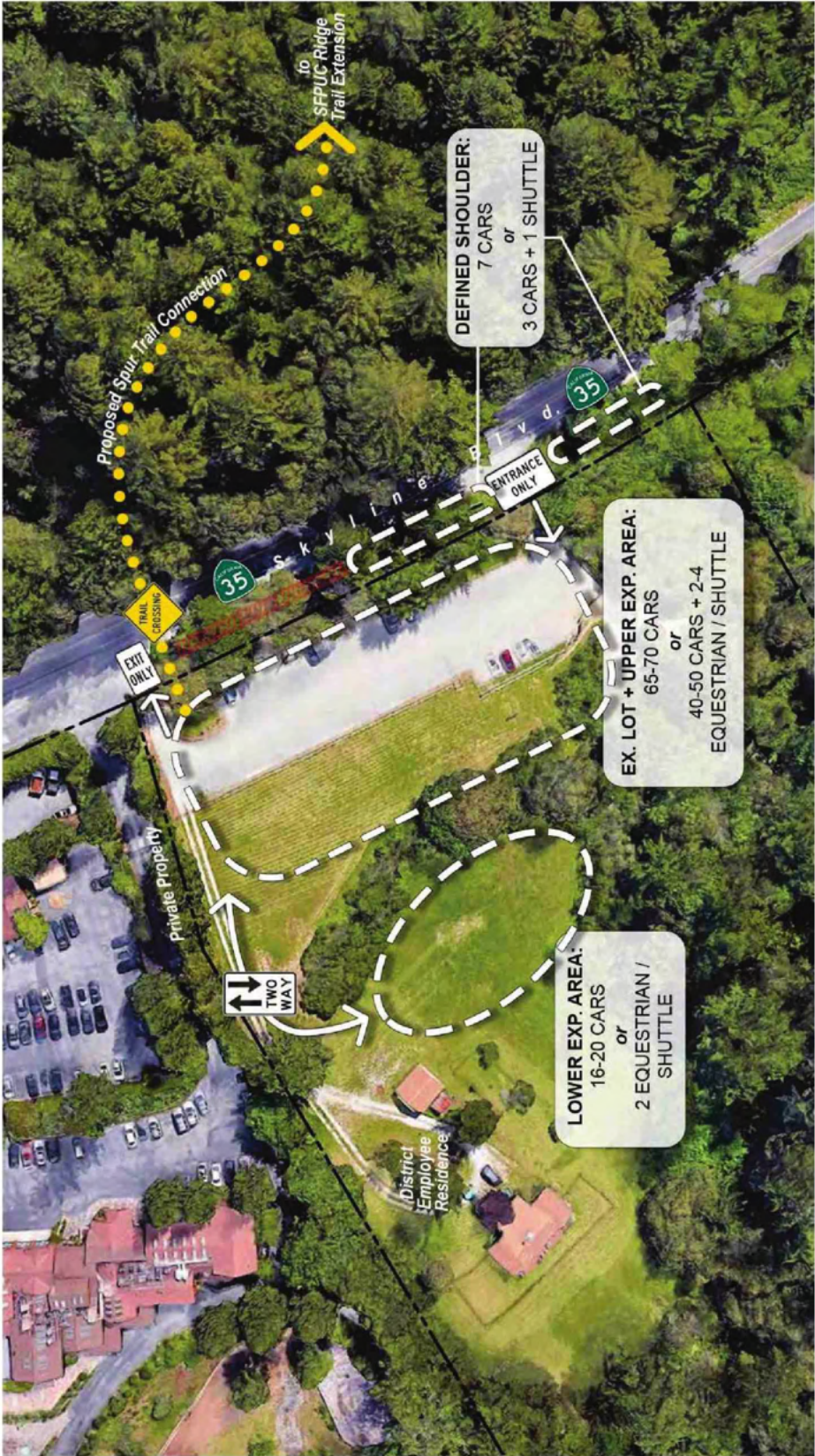


ATTACHMENT 1.d ON-GRADE CROSSING RECOMMENDATIONS



HWY 35 MULTI-USE TRAIL CROSSING AND PARKING EXPANSION FEASIBILITY STUDY
PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE
NORTH RIDGE PARKING LOT





ATTACHMENT 01.e PARKING SPATIAL ANALYSIS

APPENDIX C

Purissima-to-the-Sea Parking and Trails Feasibility Study



Midpeninsula Regional
Open Space District

R-23-52
Meeting 23-14
May 24, 2023

SPECIAL MEETING AGENDA ITEM 1

AGENDA ITEM

Purisima-to-the-Sea Trail and Parking Area Feasibility Study, Preferred Trail Alignment and Parking Area Conceptual Design

GENERAL MANAGER'S RECOMMENDATIONS *den*

1. Review and affirm, with any final modifications as directed by the Board of Directors, the findings and recommendations of the Purisima-to-the-Sea Trail and Parking Area Feasibility Study.
2. Accept the recommended Trail Alignment 1, Connector Trails A, B, C and D, Trail Crossings 1, 2 and 3 and the Conceptual Parking Area Design Alternative C as the project scope and description to initiate environmental review under the California Environmental Quality Act.
3. Direct staff to collaborate with partners in identifying the lead agency for the implementation of Connector Trail D and Trail Crossing 1.

SUMMARY

The Purisima-to-the-Sea Trail and Parking Area (Project) Feasibility Study (Study) seeks to identify a new regional trail alignment to facilitate a link between Purisima Creek Redwoods Open Space Preserve (Preserve) and the existing Cowell-Purisima Coastal Trail as well as a new public access trailhead and parking area. This trail alignment will create a critical east-west link in the regional trail network between the Bay Area Ridge Trail and the California Coastal Trail and is intended to be a contributing alignment of the more extensive Bay to Sea Trail. Staff will present the findings and recommendations of the Study, including recommendations for the primary trail alignment, connector trails, trail crossings of Verde Road and Highway 1 and the conceptual parking area design. If the General Manager's recommendations are accepted by the Board of Directors (Board), staff will initiate comprehensive planning and environmental review of the project and will collaborate with partners to identify the appropriate agency for implementing the project elements not located within Midpeninsula Regional Open Space District (District) lands. Completion of the trail is a priority project as identified in the public-supported and Board-approved 2014 Vision Plan, with significant funding approved by the voters as part of Measure AA Portfolio #03: *Purisima Creek Redwoods, Purisima-to-the-Sea Trail, Watershed Protection and Conservation Grazing*.

FEASIBILITY STUDY BACKGROUND

The purpose of the Feasibility Study is to analyze several key elements, including new trail alignment options, a new trailhead location with a parking area off Verde Road or Highway 1, and trail crossings at Verde Road and Highway 1 to ultimately facilitate a link between the Preserve and the existing Cowell-Purissima Coastal Trail. Ultimately, the Project would result in a critical 15-mile east-west link in the regional trail network between the Bay Area Ridge Trail and the California Coastal Trail and is anticipated to be a significant alignment of the more extensive Bay to Sea Trail. The Feasibility Study includes field investigations, as well as technical and planning studies and design exercises to analyze opportunities for a multi-use trail alignment, connector trails, parking area, trailhead, and pedestrian roadway crossings. This effort also includes significant stakeholder engagement and public outreach, as well as consultation with appropriate agencies, organizations, and neighbors. (Attachment 1: Study Area and Project Elements Map).

Since initiation of the Feasibility Study in 2020, the following key tasks have been completed:

Technical Studies

- Biological Assessment
- Archaeological / Cultural Resources Study
- Boundary and Topographical Survey
- Culvert Drainage Study
- Traffic Study
- Riparian Setback Analysis
- Geotechnical Engineer Assessment

Planning and Design

- Vision and Goals
- Existing Conditions / Opportunities and Constraints Analysis
- Trail Alignment Alternatives
- Conceptual Parking Area Design Alternatives
- Caltrans / San Mateo County Road Consultation
- Permitting Requirements Analysis
- Preliminary Cost Estimates

Engagement and Consultation

- Neighbor, Stakeholder and Public Outreach and Engagement
- Farm Bureau Consultation
- Partner Coordination
- Caltrans and County of San Mateo Consultation

At the December 1, 2021 Board of Directors (Board) meeting, staff presented the results of the preliminary technical studies and the opportunities and constraints analysis (R-21-157). Staff also presented the proposed Project vision and goals, designed to guide the development and selection of elements to be incorporated into a comprehensive use and management plan, including trail alignment alternatives and conceptual parking area designs, as well as other use and management considerations for the Project. The vision and goals were informed by the findings of the opportunities and constraints analysis, public comments, and the 2014 Board-

approved Vision Plan and 2014 voter-approved Measure AA expenditure plan. The Board approved the Project's vision and goals at the December 15, 2021 meeting (R-21-174).

At the October 11, 2022 Planning and Natural Resources (PNR) Committee meeting, staff presented the identified trail alignment options and the conceptual parking area design alternatives. Staff described the trail scouting and alternatives analysis process, the factors considered, the design for the parking area layouts and the public engagement process and feedback received. The PNR Committee accepted the General Manager's recommended Trail Alignment 1 and Connectors A and B, and the Conceptual Parking Area Design Alternative C to forward to the Board for consideration as the proposed project description to initiate environmental review (R-22-111).

With the support of the PNR Committee on the preferred trail alignment and conceptual parking area design, staff initiated further analysis of the potential trail crossing locations and additional connector trails needed to connect the overall trail alignment to the Cowell-Purisima Coastal Trail. Following the fall PNR meeting, staff conducted an additional biological assessment, archaeological and cultural resources study, and boundary and topographical survey, developed conceptual trail crossing designs and consulted with regulatory agencies to confirm the feasibility of the necessary connector trails and trail crossings.

DISCUSSION

The intent of this agenda item is to present the findings and recommendations of the Feasibility Study. The following sections of the report describe the trail and parking area alternatives and the supporting information justifying the recommended project elements. The Board is asked to consider affirming the findings of the Feasibility Study and accepting the recommended Trail Alignment 1, Connector Trails A, B, C and D, Trail Crossings 1, 2 and 3 and the Conceptual Parking Area Design Alternative C as the project scope and description to initiate environmental review under the California Environmental Quality Act (Attachment 2: Trail Alignment Options, Connectors and Crossings Map).

Trail Alignment Options

District trail crews began field scouting efforts in late 2020 to evaluate potential trail connections from the existing Irish Ridge Trail to the proposed parking area on Verde Road. Staff evaluated a trail connection from the proposed Verde Road parking area to the Peninsula Open Space Trust (POST) Trail Easement that would provide access to the Cowell-Purisima Coastal Trail. Based on the District's trail design standards that aim to provide an optimal trail user experience in an ecologically sensitive way, the trail crew evaluated various trail options, including re-use of existing ranch roads, conversion of abandoned or poorly maintained roads to trails, and construction of new single-track trails. Potential trail alignments were identified using Lidar, contours, and satellite imagery maps and then ground-truthed in the field.

During the trail scouting effort, staff considered many factors in evaluating feasible alignments. Some of these considerations included constructability and long-term maintenance, impacts to sensitive natural resources and associated regulatory permitting requirements, proximity to private property, visibility of trails from the Highway 1 scenic corridor, the onsite conservation grazing operation, trail user experience, and patrol/emergency access. As part of the feasibility assessment, consulting biologists and cultural resource experts joined District staff to complete

reconnaissance-level surveys for rare plants and plant communities, wetlands and riparian habitats, and determine the potential for cultural and archaeological resources. The findings of these surveys factored into defining the proposed trail alignments.

Through the field scouting effort and subsequent biological and cultural resource surveys, three primary trail alignment alternatives were identified, along with two connector trail options. For all trail options, relocation of critical cattle grazing infrastructure may be necessary to balance public access with the grazing operation. Due to site constraints, the three trail alternatives converge in the eastern portion of the project area where there is only one feasible connection (shown in gold on Attachment 2) that connects to the existing Irish Ridge Trail in the current Preserve trail network. The existing Irish Ridge Trail is steep in certain locations, and staff will evaluate opportunities to re-route this existing trail in the future, however, this area is constrained due to steep topography, intermittent and ephemeral drainages, and property boundaries. The two connector trails provide access to the primary trail alignment. Connector A provides the most direct access to the Preserve trail system while Connector B, which would parallel Verde Road, would provide a more direct access to the Coastal Trail via the POST trail easement. Connector B would cross the front of the South Cowell residence, which is scheduled to be under District ownership by the end of June (R-23-40).

The table below further describes each trail alignment alternative:

Alternative	Mileage	Opportunities	Constraints
Irish Ridge to Lobitos Creek Connection	3.5	- The only feasible, sustainable trail alignment to connect from the existing trail network to the convergence of Alignments 1 - 3 - The trail is a combination of new trail and segments of repurposed legacy and ranching road	- Proximity to riparian habitat and other sensitive resources - Multiple crossings of Lobitos tributaries and one crossing of Lobitos Creek mainstem
1	2.2	- New trail with low average trail grade - Minimizes interaction with conservation grazing and associated infrastructure - Offers vistas of the Pacific Coast to the west, Purisima Creek Canyon to the north, and Lobitos Creek drainage to the south	- Construction cost will be higher due to proposed new trail development - New trail construction is typically more impactful than repurposing existing/legacy roads due to a new development footprint on the land - Several self-closing gates would be necessary due to trail crossing in and out of grazing lease area
2	2	- Utilizes existing ranch road to minimize natural resource concerns - Traverses the ridgeline, providing panoramic vistas - Provides highest potential for patrol and emergency access	- Overlaps with existing grazing infrastructure resulting in higher potential for cattle/visitor interactions - Grades are steep in some locations (>18%) and require rock surfacing to allow for increased use

3	2.5	• Avoids drainage crossings since it stays high in the watershed • New trail with low average trail grade • Offers panoramic vistas	• Higher visibility of trail with switchbacks on the hillside • Closest alignment to adjacent private property (>100') • Trail is near stock ponds and traverses an active pasture • New trail construction is more costly and typically more impactful than repurposing existing/legacy roads due to a new development footprint on the land
Connector A	1	• Utilizes existing ranch road • Provides excellent vistas after short climb to hilltop • Opportunity for short loop trail in conjunction with Connector B	• Requires use of the main ranch road that connects to Verde Road; same road is also used by the grazing tenant to access the property • Will likely require additional fencing and relocation of grazing infrastructure • May require periodic closure to allow for grazing tenant to move cattle to the corral
Connector B	0.5	• Provides the most direct route from the proposed Verde Road parking area to the POST trail easement • Opportunity for short loop trail in conjunction with Connector A • Encourages the public to use the trail adjacent to Verde Road rather than the road itself	• Requires multiple minor/ moderate drainage crossing improvements • Crosses the driveway of the South Cowell residence • Likely will require fence relocation to separate visitors/ cattle

Alignment 1 has been identified as the preferred trail alignment as it provides a sustainable new trail alignment with panoramic vistas of the Pacific Coast to the west, Purisima Creek Canyon to the north, and the Lobitos Creek Drainage to the south. Alignment 1 minimizes the overlap of public access with grazing activities and infrastructure. Alignment 1 provides an enjoyable trail user experience while avoiding/minimizing impacts to known sensitive resources and supporting the ongoing operation of working/grazing lands. Moreover, Connector Trails A and B are also recommended to provide a unique loop trail opportunity from the proposed parking area.

The total mileage of this proposed trail alignment is over seven (7) miles, and encompasses the Lobitos Ridge to Irish Ridge connection, Alignment 1, and the Trail Connector Loop (Connectors A & B). Approximately 4.4 miles would be new trail construction and 2.8 miles would be improvements to existing roads/trails. Adjustments to the final trail alignment may be required as a result of future resource surveys, technical studies, and the design and engineering process.

Additional Trail Connections and Crossings (Outside of District Lands)

Trail Connections

Connector Trail C (Attachment 2) would provide a link between the proposed parking area and the primary trail alignment's Connectors A and B. Connector C runs along the edge of the South Cowell Farm Property. As part of the ongoing South Cowell land division, the District would receive a Public Trail Easement across the Farm Property along a short segment of Verde Road to provide for a safe crossing of the road (R-23-40).

Connector Trail D allows for a trail link between Verde Road and Highway 1 across the Purisima Farms Property. The Purisima Farms Property is subject to a trail easement held by POST and allows for public trails. The 25-foot-wide trail easement area runs along the southern boundary of the farm parcel and is adjacent to active agricultural fields. The site is designated as Unique Farmland according to the Farmland Mapping and Monitoring Program and currently serves as an agricultural access road.

Trail Crossings

Trail Crossing 1 (Attachment 2) would connect the Trail Connector D to the Cowell-Purisima Trailhead and parking area that are located on the west side of Highway 1. The crossing of Highway 1 is within the Caltrans Right-of-Way. The conceptual design of the crossing infrastructure is based on the sight distance, posted vehicle speeds and traffic volumes in accordance with the Caltrans Highway Design Manual (HDM) and the Manual on Uniform Traffic Control Devices (MUTCD). The conceptual design identifies the minimum standards to meet Caltrans design guidelines and consultation with Caltrans confirmed that the minimum standards have been correctly identified. Caltrans agreed that over or under crossings structures are not warranted based on the site conditions. The conceptual design includes advanced warning pedestrian crossing signage, rectangular rapid flashing beacons, ladder crosswalk, and yield to pedestrian signage. However additional pedestrian safety measures can be proposed during the design and permitting process (Attachment 3: Conceptual Trail Crossing Designs).

Trail Crossings 2 and 3 are within San Mateo County Right-of-Way. Trail Crossing 2 would connect the primary Trail Alignment 1 (and Connectors A and B) to Trail Connector D. Trail Crossing 3 would connect the proposed new trailhead and parking area to the primary Trail Alignment 1 (and Connectors A and B). The conceptual designs for both crossings are identical to Crossing 1 and include the advanced warning pedestrian crossing signage, rectangular rapid flashing beacons, ladder crosswalk, and yield to pedestrian signage. Based on the site conditions along Verde Road, including line of sight, traffic speeds and volume, the rapid flashing beacon is not a requirement. However, the design includes these minimum measures to provide consistency among all three proposed crossings that are within close proximity and for added safety.

Conceptual Parking Area Design Alternatives

Staff developed various preliminary parking area site designs for two locations, one on the east side of Verde Road, and one on the west side of Verde Road. Key considerations of the design process include public safety, sensitive habitats, riparian setbacks, scenic resources, the grazing operations, and adjacent farmlands. Additionally, the designs incorporate transportation demand

management (TDMs) strategy recommendations from the Purisima Multimodal Access Study (R-22-123). The potential for locating a parking area to the east side of Verde Road that meets the Project's goals is highly limited due to required riparian setbacks and existing grazing infrastructure that limit the number of viable parking spaces.

Three conceptual parking area design alternatives have been identified that primarily focuses development on the west side of Verde Road (Attachment 4: Conceptual Parking Area Design Alternatives).

Design elements common to each alternative are as follows:

- Works with existing topography
- Incorporates the necessary riparian corridor protections
- Minimizes environmental impacts
- Minimizes impacts to the existing grazing infrastructure
- Incorporates TDM strategies
- Includes ADA-accessible trailhead and restroom, pathways, signage and overlook
- Includes a setback from the scenic corridor along Highway 1

The parking area alternatives differ in the following ways:

- Parking lot size and capacity
- Entry road configuration and trailhead location
- Equestrian parking layout and capacity
- Use of the potential parking area to the east of Verde Road

Alternative A

- Smallest project footprint (~40 general parking spaces, ~20 priority spaces, including ADA-parking spaces, 4 equestrian/shuttle/large vehicle spaces)
- Minimizes user conflicts with grazing operations and avoids grazing infrastructure
- Central pull-through for equestrian trailer/bus lot
- Entry road is located to the north of the trailhead and trail access pathway
- No development east of Verde Road

Alternative B

- Intermediate project footprint west of Verde Road (~40 general parking spaces, ~35 priority spaces, including ADA-parking spaces, 2 equestrian/shuttle/large vehicle spaces)
- Limited development footprint east of Verde Road (restroom, education area, equestrian/bus parking)
- Entry road is located to the south of the trailhead and trail connector pathway

Alternative C (*Recommended*)

- Larger project footprint (~70 general parking spaces, ~35 priority spaces, including ADA-accessible parking spaces, ~6 equestrian/shuttle/large vehicle spaces)
- Equestrian/shuttle/large vehicle lot along perimeter of the parking lot for ease of circulation and pull-through parking
- Most effectively incorporates TDM strategies, including an overflow parking/expansion area (potential for ~80 additional parking spaces)
- Entry road is located to the south of the trailhead and trail access pathway

- No development east of Verde Road
- Minimizes impacts on the existing grazing operation by avoiding existing grazing infrastructure

Alternative C is identified as the preferred parking area design alternative. First, this alternative provides the parking capacity that most effectively accommodates the recommended TDM strategies, such as priority parking spaces, additional parking supply, and bicycle infrastructure. In addition, Alternative C includes the potential for overflow parking, or a future parking expansion, with minimal impacts to the initial site improvements. Finally, Alternative C minimizes the impact of the new public access improvements on the existing grazing operation by avoiding the area with existing grazing infrastructure.

Conservation and Trail Easements

The project area parcels are subject to conservation and trail easements.

South Cowell Conservation Easement

The parking area and much of the primary trail alignment are located on the South Cowell Ranch property, which is subject to a Restated and Amended Grant of Conservation Easement (conservation easement) recently entered into by the tenants-in-common owners (Marsh Trust, POST, and the District). The conservation easement was recorded in September 2022 and is now held by POST. The conservation easement combines and modernizes the 1989 conservation easement, which was held by the California Coastal Conservancy, and a 1991 conservation easement held by POST over the South Cowell property. The conservation easement continues to protect the land's conservation values (agriculture, scenic, habitat and natural resources, open space and recreation), and modifies the conditions of the allowable subdivision for the ownership of the South Cowell Upland property by the District, providing flexibility in locating public trails and eliminating the potential to develop a second residential site on the Upland parcel. Additionally, a third trail easement will be granted to the District to allow for the potential public trail connector along Verde Road (Connector C) from the proposed parking area to the southern Verde Road trail crossing (Crossing 3).

Purisima Upland Conservation Easement

A segment of preferred Trail Alignment 1 traverses the Purisima Upland Property. The Purisima Upland Property is subject to a conservation easement and a trail and conservation easement, both held by POST. The conservation easement protects the land's conservation values and the trail and conservation easement allows flexibility in locating public trails on the Purisima Upland Property.

Purisima Farms Conservation Easement

Connector Trail D traverses the Purisima Farms Property. The Purisima Farms Property is subject to a trail easement and a trail and conservation easement, both held by POST. The trail easement was established because the site was identified as highly desirable for a future trail linkage to be managed in a manner that is compatible with the existing agricultural use. The trail easement allows for a public trail within a 25-foot wide easement running from Verde Road to Highway 1 along the southern parcel boundary. The conservation easement protects the conservation values and agricultural use of the Property.

Construction Cost Estimates (2027 Dollars*)

Project Element	Conceptual Cost Estimate
Trail Alignment Options (with Connector A and B)	
Trail Alignment 1 (<i>Preferred Alignment</i>)	\$3.4 M
Trail Alignment 2	\$3.3 M
Trail Alignment 3	\$3.8 M
Connector Trails C and D	\$500K
Trail Crossings 1, 2, and 3	\$400 K
Conceptual Parking Area Design Alternatives	
Alternative A	\$3.1M
Alternative B	\$4.1 M
Alternative C (<i>Recommended Alternative</i>)	\$4.5 M

*Construction costs have been escalated to Fiscal Year 2026-27 dollars to reflect likely construction costs based on the tentative project schedule.

Preliminary cost estimates are based on the findings of the site assessment and geotechnical assessment and include recommended construction methods and soil treatments to address the highly expansive soils within the project location. These cost estimates were developed after the Fiscal Year 2023-24 budget and action plan process therefore these refined estimates are not reflected in the MAA03-009 and MAA03-010 budgets listed in the fiscal impact section below. Budget refinements will be included in the Fiscal Year 2024-25 budget and action plan cycle.

Public Engagement and Feedback

Public engagement has consisted of focused stakeholder meetings, one-on-one meetings, public workshops and open houses, visitor surveys and pop-up events in the community, many of which were held with the Purisima Multimodal and Highway 35 Multi-use Trail Crossing and Parking Study Projects. Attachment 5 lists the various meetings and events held to date and the groups involved, which include Purisima neighbors and visitors, agricultural community members, local agencies, advocacy groups and subject matter experts.

The Purisima-to-the-Sea and Purisima Multimodal project teams collaborated to develop and release a joint visitor survey that ran online from April 2022 to May 2022. The goal of the survey was to solicit feedback on the desired trail experience, parking lot size preference, configuration, amenities, parking needs, proposed TDMs and visitor likelihood of using them, e.g., bicycling to the Preserve, taking a shuttle, using a reservation system, paying for parking, utilizing a carpool priority lot, etc. Over 400 responses were received. The project team also solicited input on the preferred parking area conceptual design alternatives at two community open house events (in-person and virtual).

Attachment 6 summarizes the key themes and topics emerging through the visitor surveys and public and stakeholder engagement. The feedback confirmed the preference for prioritizing biological site attributes balanced with maximizing parking capacity to accommodate TDMs recommended from the Purisima Multimodal project. The additional feedback received revealed the following:

- Regardless of activity, most visitors will not travel the entire distance of the proposed trail network, supporting the need for mid-trail facilities. Survey

respondents expressed a strong preference for a rest area/bench and a restroom along the trail route.

- Equestrian amenities would also be suitable mid-trail, including a hitching post, mounting block, and water trough.
 - Additionally, there was interest in a backpack camp along the proposed trail network (Note: camping is prohibited within the District's Coastal Service Plan Area, therefore, consideration of this use, if pursued, would need to be restricted to areas within the Preserve that are outside of the Coastal Service Plan Area).
- Preference for multi-use trail. Cyclists expressed interest in narrow, purpose-built trail with a moderate gradient.
- Preference for a loop trail experience.
- Support for the largest parking area (Alternative C) to accommodate TDM strategies.
- Importance of educating the public on the value of the conservation grazing program and sharing the trail with cattle.
- Visitors coming to Purisima primarily come to see the Preserve's unique features.
- Minimize trail user conflicts with vehicles by locating the pedestrian crossing away from the driveway entrance.
- Interest in maximizing the quantity of equestrian parking and locating it on the perimeter of the proposed parking area. A little over a third of survey respondents identifying as an equestrian indicated they would use the proposed Verde Road lot at least once a month.
- Support for flexible parking uses during different times.
- Support for interpretive signage, in particular discussing wildlife, Native American history, and ecosystems.

Feedback also garnered concerns such as:

- Road safety and emergency vehicle access.
- Trespassing over private property.
- Lack of stormwater drainage on the coastside as it relates to impervious surfaces.
- Safety of the at-grade crossing along Highway 1.
- Overdevelopment of the site, quantity of infrastructure and amenities.
- Compliance with the San Mateo County Local Coastal Program
- Delineated parking as it relates to parking capacity and the need to pave surfaces.
- Impacts to prime agricultural land, sensitive habitats, and views.
- Designation of trail uses, balancing user conflict, and allowing for various user types.

The Project and the recommendations before the Board have been informed by the public and stakeholder feedback received through these extensive outreach and engagement opportunities.

FISCAL IMPACT

The General Manager's recommendation has no immediate fiscal impact. The FY23 adopted budget includes \$176,000 for the Purisima-to-the-Sea Trail and Parking Area - Phase I Feasibility Study project. Funding for future implementation efforts will be requested and incorporated in future years budgets in the MAA03-009 Purisima-to-the-Sea Parking, MAA03-010 Purisima-to-the-Sea Trail, and MAA03-012 Purisima-to-the-Sea Comprehensive Use and Management Plan projects.

Purisima-to-the-Sea Trail and Parking Area - Phase I Feasibility Study MAA03-005	Prior Year Actuals	FY23 Adopted	FY24 Projected	Estimated Future Years	TOTAL
District Funded (Fund 30):	\$288,596	\$115,237	\$0	\$0	\$403,833
Grant Amount:	\$154,063	\$60,763	\$0	\$0	\$214,826
Total Budget:	\$442,659	\$176,000	\$0	\$0	\$618,659
Spent-to-Date (as of 05/01/23):	(\$442,659)	(\$82,110)	\$0	\$0	(\$524,769)
Encumbrances:	\$0	(\$81,249)	\$0	\$0	(\$81,249)
Budget Remaining (Proposed):	\$0	\$12,640	\$0	\$0	\$12,640

The following table outlines the Measure AA Portfolio #03 *Purisima Creek Redwoods* — *Purisima-to-the-Sea Trail, Watershed Protection and Conservation Grazing* allocation, costs-to-date, projected future project expenditures and projected portfolio balance remaining. There is a ~\$7.8 million funding gap projected in the portfolio. A future reallocation of MAA funds, allocation of interest earnings, or general fund reserves will be needed to close the funding gap.

MAA03 Purisima Creek Redwoods — Purisima-to-the-Sea Trail, Watershed Protection and Conservation Grazing Portfolio Allocation:	\$7,608,000
Grant Income (through FY26):	\$292,306
Interest Income Allocation:	\$450,000
Total Portfolio Allocation:	\$8,350,306
Life-to-Date Spent (as of 5/01/23):	(\$6,885,401)
Encumbrances:	(\$83,441)
Remaining FY23 Project Budgets:	(\$1,334,863)
Future MAA03 project costs (projected through FY26):	(\$7,836,189)
Total Portfolio Expenditures:	(\$16,139,894)
Portfolio Balance Remaining (Proposed):	(\$7,789,588)

The following table outlines the Measure AA Portfolio 03 allocation, costs to date, and the fiscal impact related to the Property purchase.

MAA03 Purisima Creek Redwoods — Purisima-to-the-Sea Trail, Watershed Protection and Conservation Grazing Portfolio Allocation:	\$7,608,000
Grant Income (through FY26):	\$292,306
Interest Income Allocation:	\$450,000
Total Portfolio Allocation:	\$8,350,306
Projected Project Expenditures (life of project):	

03-001 Purisima Uplands Lot Line Adjustment and Property Transfer	(\$425,113)
03-002 Purisima Upland Site Clean up and Soil Remediation	(\$922,823)
03-003 Purisima Creek Fence Construction	(\$169,190)
03-004 Harkins Bridge Replacement	(\$516,916)
03-005 Purisima-to-the-Sea Trail and Parking Area - Phase I Feasibility Study	(\$618,659)
03-006 South Cowell Upland Land Conservation	(\$6,252,707)
03-007 Purisima-to-the-Sea Habitat Enhancement and Water Supply Improvement Plan	(\$568,674)
03-008 Rieser-Nelson Land Purchase	(\$16,715)
03-009 Purisima-to-the-Sea Parking*	(\$3,991,687)
03-010 Purisima-to-the-Sea Trail*	(\$2,120,000)
03-011 Lobitos Creek Fisheries Restoration	(\$397,410)
03-012 Purisima-to-the-Sea Comprehensive Use and Management Plan	(\$140,000)
Total Portfolio Expenditures:	(\$16,139,894)
Portfolio Balance Remaining (Proposed):	(\$7,789,588)

* The MAA03-009 and MAA03-010 project budget allocations in the proposed FY24 Budget (separate Agenda Item) were developed prior to the refined preliminary cost estimates shown in the above table. Budget refinements will be included in the Fiscal Year 2024-25 budget and action plan cycle. Based on the preliminary numbers, the funding shortage in this portfolio will increase.

PRIOR BOARD AND COMMITTEE REVIEW

October 28, 2020 Board Meeting: Proposed purchase of an undivided 54% interest in the Peninsula Open Space Trust (POST) South Cowell Property, located at 1000 Verde Road, Half Moon Bay, in unincorporated San Mateo County, as an addition to Purisima Creek Redwoods Open Space Preserve ([R-20-122](#), [meeting minutes](#))

December 1, 2021 Special Board Meeting: Purisima-to-the-Sea Regional Trail and Parking Area Feasibility Study – Opportunities and Constraints Analysis and Project Vision and Goals ([R-21-157](#), [meeting minutes](#))

December 15, 2021 Board Meeting: Purisima-to-the-Sea Regional Trail and Parking Area Project Vision and Goals ([R-21-174](#), [meeting minutes](#))

March 15, 2022 PNR Committee Meeting: Preliminary Findings from the Purisima Creek Preserve Multimodal Access Project ([R-22-38](#), [meeting minutes](#))

August 2, 2022 PNR Meeting: Proposed Transportation Demand Management Strategies and Preliminary Recommendations from the Purisima Creek Preserve Multimodal Access Project ([R-22-87](#), [meeting minutes](#))

October 11, 2022 PNR Committee Meeting: Purisima-to-the-Sea Trail and Parking Area Feasibility Study – Trail Alignment Options and Parking Area Conceptual Design Alternatives ([R-22-111](#), [meeting minutes](#))

November 9, 2022 Board Meeting: Affirmation of the Findings and Recommendations of the Purisima Multimodal Access and Transportation Demand Management Study Report ([R-22-123](#), [meeting minutes](#))

April 12, 2023 Board Meeting: Proposed Purchase of a Remaining 33% Undivided Interest in the 611.7-acre South Cowell Property from Peninsula Open Space Trust, which is located at 1000 Verde Road, Half Moon Bay, in unincorporated San Mateo County, as an addition to Purisima Creek Redwoods Open Space Preserve ([R-23-40](#)).

PUBLIC NOTICE

Public notice was provided as required by the Brown Act. In addition, post cards were sent to project area neighbors within the Coastal Service Area and public email notices were sent to interested parties of the Preserve and hiking, biking, equestrian, accessibility, Regional Trails, and Coastal interested parties.

CEQA COMPLIANCE

If the Board of Directors accepts the General Manager's recommendation, staff will conduct environmental review under the California Environmental Quality Act (CEQA) with Trail Alignment 1, Connectors Trails A, B, C and D, Trail Crossings 1, 2 and 3 and the Conceptual Parking Area Design Alternative C as the project scope and project description

NEXT STEPS

If the Board of Directors accepts the General Manager's recommendation, staff will initiate environmental review under CEQA and incorporate the Project recommendations into a Comprehensive Use and Management Plan (CUMP). The CUMP would include recommendations from this Project and other ongoing Preserve projects, including:

- Purisima-to-the-Sea Preferred Project Elements (Trail Alignment 1, Connectors Trails A, B, C and D, Trail Crossings 1, 2 and 3 and the Conceptual Parking Area Design Alternative C)
- Highway 35 Multi-use Trail Crossing and North Ridge Parking Expansion (pending Board approval of preferred project alternative)
- Purisima Multimodal Access Study Priority Recommendations

Additional future tasks and the related schedule for the Project is as follows:

Project Phase	Tentative Project Schedule
Develop Purisima Comprehensive Use and Management Plan / Conduct Environmental Review	FY 24 – 25
Partner Collaboration on Connector Trail D and Trail Crossing 1	Ongoing
Design Development / Permitting	FY 24 – 26
Parking Area Construction	FY 27 – 28
Trail Construction	FY 27 – 29

Attachment(s)

1. Study Area and Project Elements Map
2. Trail Alignment Options, Connectors and Crossings Map
3. Conceptual Trail Crossing Designs
4. Conceptual Parking Area Design Alternatives
5. Summary of Engagement Activities
6. Summary of Public Feedback

Responsible Department Head:
Jane Mark, AICP, Planning Department

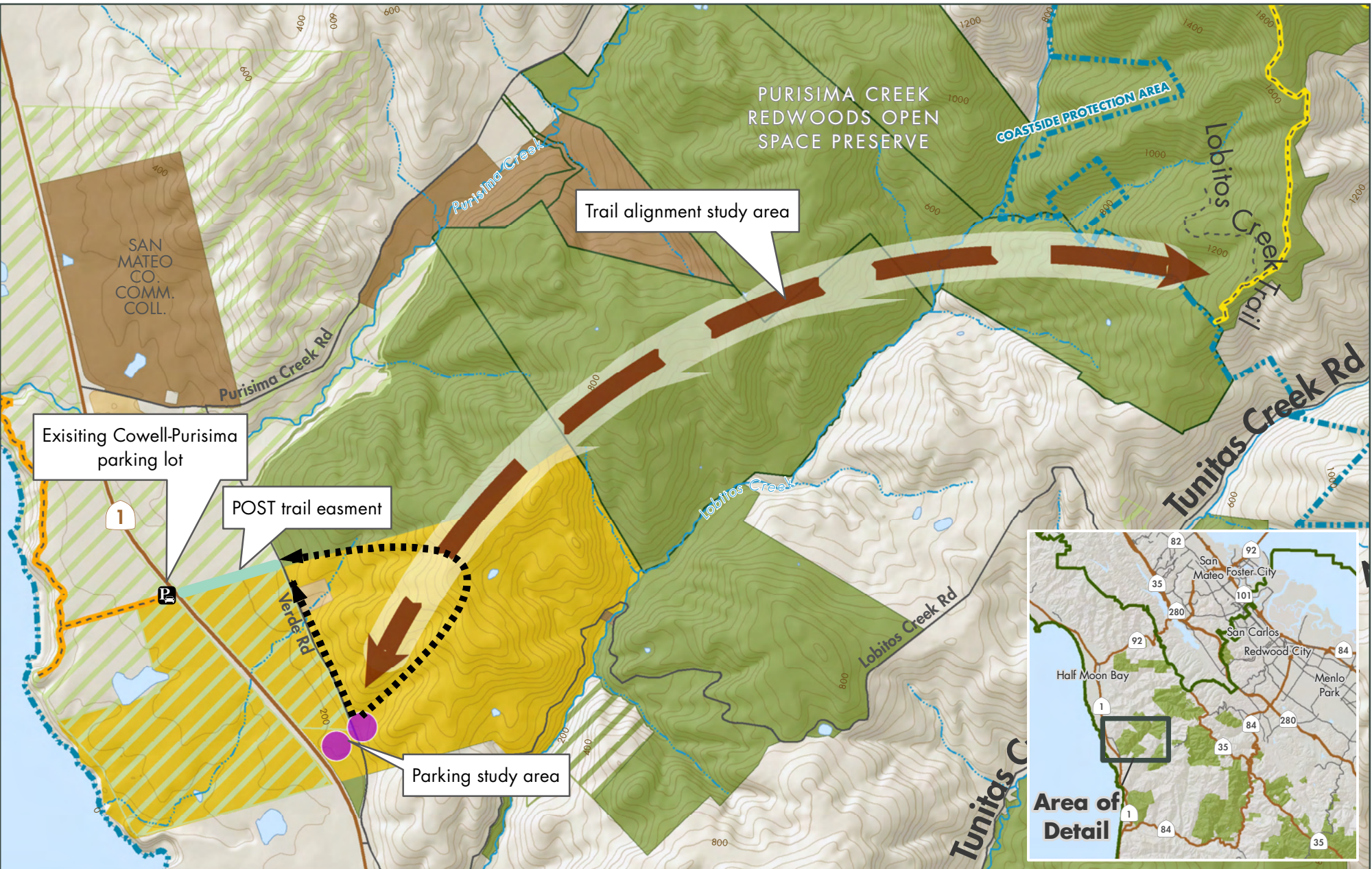
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Graphics prepared by:
Anna Costanza, GIS Technician, IST Department
Bryan Apple, Capital Projects Field Manager, Land and Facilities Department
SWCA Environmental Consultants

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Created By: acostanza



Purisima-to-the-Sea Trail and Parking Area Feasibility Study Area and Project Elements

- | | |
|---|---|
|  Midpen preserves |  Existing public trail |
|  South Cowell property |  Existing Purisima-to-the-Sea Trail |
|  POST easement |  Cowell-Purisima Trail & Coastal Trail |
|  Midpen easement |  Connector trail options |

Study Areas

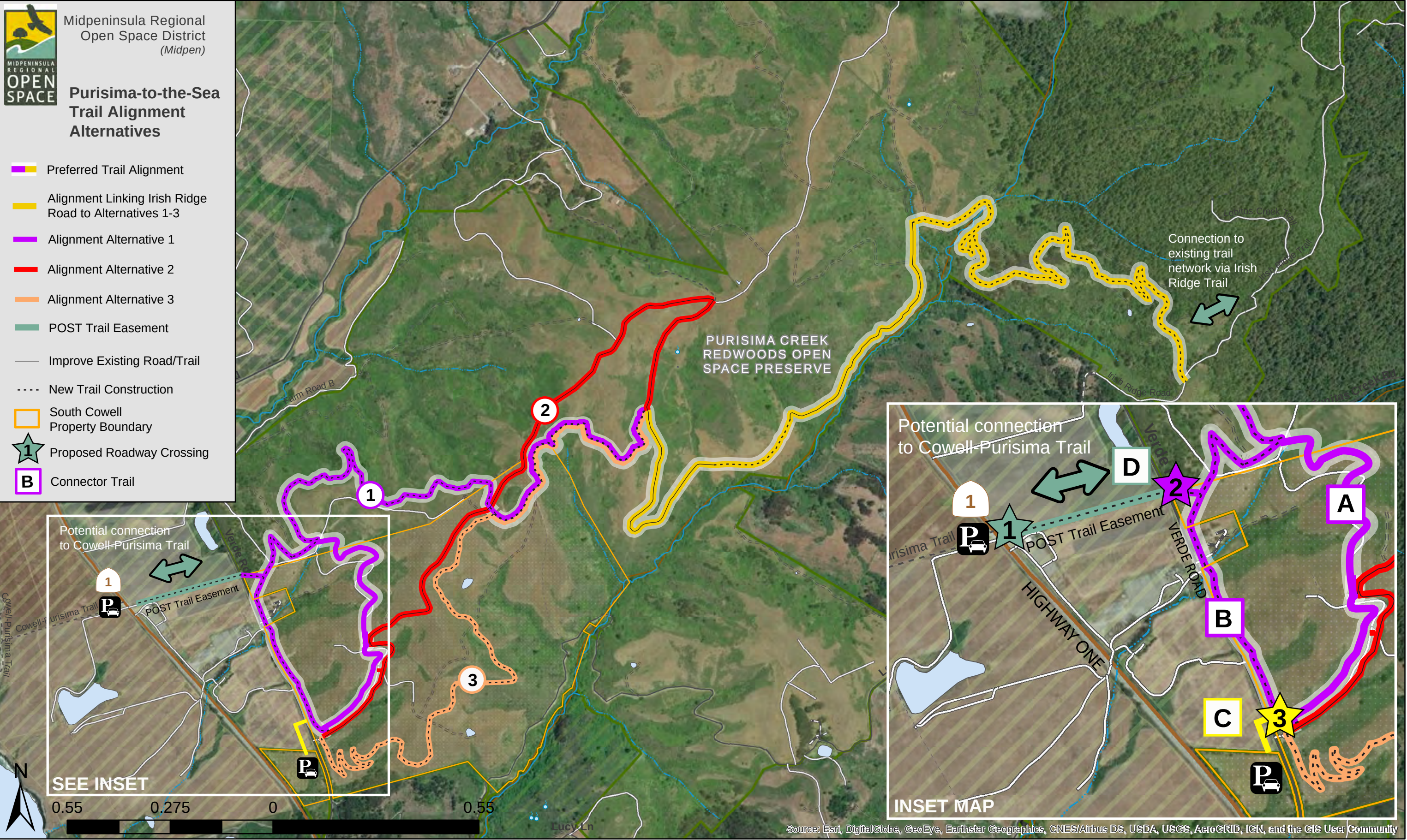
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|  Trail alignment study area |
|  Parking study area |
|  Pedestrian crossing and connector trail study area |

Midpeninsula Regional
Open Space District
(Midpen)
7/29/2022

Miles 0 0.25 0.5



While the District strives to use the best available digital data, these data do not represent a legal survey and are merely a graphic illustration of geographic features.





Purisima-to-the-Sea Parking Area & Trails Feasibility Study

Conceptual Design | Alternative A

Attachment 4



Purisima-to-the-Sea Parking Area & Trails Feasibility Study

Conceptual Design | Alternative B



Purisima-to-the-Sea Parking Area & Trails Feasibility Study

Conceptual Design | Preferred Alternative C



Attachment 5:**Purisima-to-the-Sea – Summary of Engagement Activities**

May 24, 2023

Date	Meeting / Event
July 13, 2021	Purisima-to-the-Sea Neighbor Meeting
July 27, 2021	Coastal and Trail User Community Meeting
August 18, 2021	Peninsula Trails Team (Bay Area Ridge Trail, Santa Cruz Mountains Stewardship Network, National Park Service, San Francisco Public Utilities Commission, County of San Mateo)
September 28, 2021	Agricultural Community Onsite Meeting
November 4, 2021	Make It Main Street (Half Moon Bay community event)
November 9, 2021	Pescadero Municipal Advisory Council
December 1, 2021*	Purisima-to-the-Sea Public Open House and Special Meeting
December 15, 2021*	Purisima-to-the-Sea Revised Vision and Goals
December 18, 2021	Tabling at Coastside Farmers Market (Half Moon Bay)
February 23, 2022	Midcoast Community Council
March 15, 2022	Kings Mountain Association
May 14, 2022	College of San Mateo Farmer's Market
May 15, 2022	Purisima hike with Spanish speaking group
June 07, 2022	San Mateo County Farm Bureau consultation
June 29, 2022	Purisima projects open house (in-person)
July 12, 2022	Purisima projects open house (virtual)
July 27, 2022	Green Foothills staff
September 21, 2022	Trail User Stakeholder Meeting
September 29, 2022	Trail User Stakeholder Meeting
October 11, 2022*	Purisima-to-the-Sea Feasibility Study Trail Alignment and Conceptual Parking Area Design Alternatives
May 1-2, 2023	Neighbor Consultation
May 8, 2023	Partner Consultation
May 24, 2023*	Purisima-to-the-Sea Feasibility Study Findings and Recommendations

* Board or Committee Meeting

Attachment 6: Summary of Public Feedback Received to Date

Purisima-to-the-Sea Feasibility Study – Trail Alignment Options and Parking Area Conceptual Design Alternatives

May 24, 2023

Theme/Topic	General Feedback/Comments ¹
Visitor Behavior	• 95% are hikers, with a preference for 4 to 7-mile hikes. • 45% ride their bicycle or horse, with a preference for 10 to 15-mile rides. • 90% prefer a loop trail, as opposed to 7% preferring out and back, and 3% preferring a one-way with shuttle. • 75% stated they come to Purisima either on weekday mornings or afternoons; 50% visit on weekday mornings.
Destinations people are interested in seeing when coming to Purisima	• 50% prefer Purisima's unique features. • 19% prefer the nearby inland vistas and viewpoints. • 15% prefer the coastal overlooks and beaches.
Priorities of survey respondents	• When asked about the most important factors that should be considered in planning for the Purisima-to-the-Sea project, 50% prioritized biological site attributes, and 25% prioritized physical site attributes.
Preferred parking design alternative	• At open house events, members of the public overwhelmingly supported a larger parking area to accommodate TDM strategies. • Survey respondents heavily favored standard and larger parking area sizes.
Impacts to Parking Lot Design and amenities	• Trail Access ○ Preference for accessing the trail without having to cross the drive aisle near the parking area's drive entrance. • Shuttle Pick-Up/Drop-Off ○ 50% reported that they would use a shuttle if their preferred parking area was full; 25% said that they may be interested. ○ Design should consider shuttle pick-up/drop-off area and parking quantity to accommodate those taking the shuttle in addition to parking for those using the trailhead. • Electric vehicle parking: ○ Public expressed interest in electric vehicle parking. • Flexible Parking Uses ○ 66% were open to flexible parking uses at different times. ○ Commenters noted that flexible parking areas would need to be clearly signed. Education would be necessary to inform the public.

	• Bikes ○ ~50% indicated they would visit by bike ○ Interest in bike racks, bike lockers, and bike repair stations ○ Bike brushes to remove debris off tires and prevent spread of Sudden Oak Death ○ E-bike charging station • Equestrians ○ Majority of those parking with equestrian trailers would like to see at least 4 equestrian trailer spaces at the new lot. ○ ~66% prefer having a natural surface parking area and pathways ○ ~50% expressed interest in having hitching posts and mounting blocks available. ○ Preference for having equestrian parking on the outer ring in the parking alternatives • Parking / Parking Surface ○ Interest in loading zone adjacent to / back of parking spaces ○ Commenters note that the coastal areas lack storm water drainage and that the proposed parking should incorporate impervious surfaces into the design ○ If overflow lot is proposed, there was interest in natural surface for overflow parking. • Restroom ○ Interest in having a second vault toilet near equestrian parking. • Other amenities suggested: ○ Availability of restrooms ○ Stroller and wheelchair rentals ○ Seating / rest area ○ Potable water / drinking fountains ○ Trash collection ○ Pay phone ○ Connections to other transit ○ Signboard w/ maps, showing nearby points of interest ○ Interpretive signage ○ WiFi ○ Cell phone charging ○ Wayfinding signage ○ Animal waste bags ○ Fire lanes / loading zones
Mid-Trail facilities	• 89% expressed interest in a rest area / bench and 82% in a restroom as mid-trail (interior preserve) amenities. • 22% were interested in a picnic area as a mid-trail amenity • Hitching post, mounting block, and non-potable water trough received support from 8% of respondents

	• Over half of survey respondents identifying as equestrians would like to see a hitching post, mounting block, and water trough at a mid-trail location. • Backpack camping
Impacts to Grazing	• When asked what measures the District should consider to ensure compatibility of the existing conservation grazing and future recreational access, 50% supported providing on-site education about the value of the conservation grazing program. ~25% supported providing education on sharing the trail with cattle.
Interpretive Signage Topics	• Survey respondents had a preference for interpretive signage topics discussing wildlife (20%), Native American history (19%) and Ecosystems (19%).
Trail Uses	• Interest in allowing multi-uses on trails • Interest in single-track bike trails
Highway Crossing	• Concerns about at grade crossing • Suggestions for above grade or below grade crossings ◦ Underpass study to accommodate wildlife crossing
Equity	• Signage available in English and Spanish
Additional comments / concerns	• Road safety and emergency vehicle access • Traffic circulation safety for vehicles traveling to and from parking lot • Concerns about preserve visitors trespassing over private property • Consider that Cowell Ranch Beach trailhead exceeds capacity on good weather days, this lot may be used as an overflow lot for beach use and other nearby open space destinations. • Ensure project is compatible with San Mateo Local Coastal Program. • Consider impacts to prime agricultural land, sensitive habitats, views. • Balance square footage of parking area with protecting habitat • Allow backpacking and reservation camping • Allow dog access • Real-time parking information • Clear signage, and enforcement of violations • Strong etiquette education program • Allow e-bike use • Limit equestrian use / limit bike use • Minimize infrastructure in parking areas

¹Feedback noted above is based on visitor survey and input received during engagement activities; percentages reflect respondent responses from the visitor survey.

APPENDIX D

Purisma Multimodal Access Implementation Report



Midpeninsula Regional
Open Space District

R-24-155
Meeting 24-32
December 11, 2024

AGENDA ITEM 11

AGENDA ITEM

Shuttle and Parking Management Concepts for Purisima Creek Redwoods Open Space Preserve

GENERAL MANAGER'S RECOMMENDATION

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Accept the recommended shuttle and parking management concept options for Purisima Creek Redwoods Open Space Preserve, with any final modifications as directed by the Board of Directors, as the project description to initiate environmental review under the California Environmental Quality Act as part of the Purisima Comprehensive Use Management Plan. Final approval of a shuttle option occurs at a later time.

SUMMARY

The Midpeninsula Regional Open Space District (District) is exploring the feasibility of implementing a shuttle program and/or parking management strategies, including carpool parking, reservation parking, and real-time parking information systems, at Purisima Creek Redwoods Open Space Preserve (Purisima, Preserve) as identified in the 2022 Purisima Multimodal Access Study (Study). These transportation demand management (TDM) strategies support the Study's goals of managing visitation, improving the visitor experience, and increasing greener modes of travel. On September 10, 2024 ([R-24-111](#)), the Planning and Natural Resources Committee (PNR or Committee) reviewed and provided feedback on shuttle and parking management concepts for Purisima, and associated implementation details. The PNR's feedback has been incorporated into the draft Purisima Multimodal Implementation Project Report (Report - Attachment 1) and this board report for the full Board to consider. Pending Board input, the District would incorporate the proposed shuttle and parking management concepts into the California Environmental Quality Act (CEQA) project description for conducting the required environmental review as part of the Purisima Comprehensive Use and Management Plan (CUMP) that will be presented to the Board in early 2025. Note – approval of the CEQA project description as recommended in this report allows the project to move forward into the next phase, completing the environmental review analysis. The CEQA findings and other pertinent information will be presented to the Board at a later date, at which time the Board would consider approval of a shuttle option for implementation.

BACKGROUND

In January 2024, the District contracted with Parametrix to evaluate the feasibility of implementing a shuttle program, carpool parking, reservation parking, and real-time parking information systems as part of the Highway 35 Multi-Use Trail Crossing and Parking Implementation Project (MAA03-013) and Purisima-to-the-Sea Parking Project (MAA03-009).

Parametrix conducted background analysis, developed core and expanded shuttle service concepts and initial implementation details, and evaluated various parking management strategies. During the September 10, 2024 PNR meeting, the Committee reviewed the shuttle and parking management concepts and associated implementation details. The Committee (1) provided feedback on technical aspects of the proposed TDM programs, (2) requested additional neighbor outreach, (3) expressed preference for a free shuttle service that is set up to be successful from initial implementation and provides a level of service that adequately satisfies the visitor experience and includes a corresponding marketing budget for public education and instruction, and (4) requested additional information on shuttle performance measures and thresholds to implement the parking management programs (see Attachment 2 for detailed PNR comments). Specific Committee questions and comments are included in relevant sections of this report.

DISCUSSION

Shuttle Program

Shuttle Program Concepts

The 2022 Study recommends a shuttle service connecting the future Purisima-to-the-Sea parking area at Verde Road (Verde Road parking area) to the Purisima Creek Trailhead (accessed by the Purisima Creek Road parking area). Parametrix developed two shuttle program concepts:

- Concept 1 Shuttle Service – Verde Road parking area to Purisima Creek Trailhead (Attachment 1, Page 12, Figure 1), would provide a point-to-point shuttle service between the Verde Road and Purisima Creek Road parking areas. Concept 1 is the most cost-effective option in fulfilling the District’s goal of better managing parking and addressing congestion issues along Purisima Creek Road.
- Concept 2 Shuttle Service - Expanded Service Area (Attachment 1, Page 14, Figure 2) would provide shuttle service from Half Moon Bay to the Verde Road Parking Area and/or Purisima Creek Road parking area and potentially south to Pescadero.

Concept 1 directly addresses the parking and congestion challenges at the Purisima Creek Trailhead with quick, reliable access through a point-to-point shuttle route. With just two shuttle stops, this concept offers simplicity and ease of use, making it intuitive for visitors to navigate the system. The 4.5-mile distance between stops allows a trip to be completed in 15 minutes which could increase the likelihood of strong program adoption. Additionally, Concept 1 is the most cost-effective option requiring significantly lower operating expenses than an expanded model.

Concept 2 could improve access and equity by connecting the Preserve to the broader coastline community, however it requires significant operational investments. This Concept may require partnerships to offset costs. With the District’s immediate goal of addressing parking and congestion issues near the Purisima Creek Trailhead, Concept 2 is not recommended for initial implementation, so the District can focus its resources on establishing a successful core shuttle service. Successful outcomes for both shuttle concepts are described in the PNR report (Page 2). Due to Concept 2’s speculative and conditional nature, Parametrix only developed implementation details for Concept 1, as provided below. If a pilot shuttle program is pursued,

Parametrix recommends moving forward with Concept 1 Shuttle Service – Verde Road Parking Area to Purisima Creek Trailhead.

Shuttle Service Scenarios for Concept 1

Parametrix developed two shuttle service scenarios for Concept 1 that were presented to the PNR in September, one scenario that emphasizes visitor demand (Service Scenario 1) and a second scenario that emphasizes the visitor experience (Service Scenario 2).

Service Scenario 1 (visitor demand) represents the lowest level of service needed to be responsive to peak visitation patterns and sufficiently address visitation levels, and Service Scenario 2 (visitor experience) incorporates more shuttles in service to provide shorter wait times throughout most of the year. **Service Scenario 2 is recommended to support a positive visitor experience that promotes ongoing use**, which is particularly critical at the initial launch of the shuttle program for best success. During the PNR Meeting, a majority of the Committee members expressed preference for Service Scenario 2. The District can consider implementing Service Scenario 2 only on weekends and holidays for initial implementation to reduce costs. Operating costs and overall program costs as described later in this report are based on Service Scenario 2.

A PNR Committee member requested the proposed shuttle program rely on more granular visitor data to refine shuttle service scenarios for Board consideration. Using 2022 average hourly and maximum hourly visitation counter Preserve data, Parametrix refined Shuttle Service Scenarios 1 and 2, generally resulting in more frequent service throughout the year. Using 2022 average hourly and maximum hourly visitation counter Preserve data, Parametrix refined Shuttle Service Scenarios 1 and 2, generally resulting in more frequent service than previously estimated throughout the year. Most hourly visitor counts consisted of 10 to 40 visitors, who could be accommodated by a single shuttle vehicle. During peak use, when visitation exceeds 50 visitors per hour, Parametrix recommends providing a second shuttle vehicle, limited to peak hours, to provide sufficient coverage.

Parametrix determined that seasonal service hours align well with Preserve hours. To minimize schedule changes that may diminish the visitor experience, Parametrix recommends offering extended hours (14 hours) in the summer, 12 hours in the spring and fall, and 9 hours in the winter. Parametrix notes that three service changes per year are common and can be done with minimum disruption to the overall schedule or confusion to the public. To respond to visitor demand over time, monitoring ridership and adjusting shuttle frequency and schedules is recommended. Calculations for hours and operating costs as detailed later in the report in Table 6 are based on seasonal daylight hours.

Service Delivery Model (Attachment 1, Pages 22 & 23)

Parametrix evaluated three shuttle service delivery options as described in their report (see Attachment 1 for details of each service delivery model):

- District-operated,
- public transit agency partnership, and
- privately contracted operator.

Parametrix recommends a privately contracted operator service delivery model as providing the most efficient way to provide shuttle service that offers the District maximum

flexibility in adapting to service demand and funding availability, as well as certainty and control over contractual terms. PNR members expressed support for the use of a privately contracted operator for a District shuttle program. The subsequent sections in this report are based on pursuing a privately contracted shuttle program.

Overall Costs to Implement Concept 1 (Verde Road to Purisima Creek Road), Service Scenario 2 (Visitor Experience) using a Privately Contracted Operator Service Model (Attachment 1, Page 34).

Table 1 illustrates the total costs over a six-year period to implement and support a 3-year pilot shuttle program based on Concept 1, Service Scenario 2 using a privately contracted operated service model. The line-item costs summarized in Table 1 are discussed in detail further in the report.

Table 1 – Summary of Improvements and 3-Year Pilot Program Costs Service Scenario 2 (Visitor Experience)				
		Capital Costs⁽²⁾	Operating Costs⁽³⁾	Total Costs
Phase	Year	Range	Range	Range
Design	1	\$46,000- \$69,000	Staff Time: \$22,100	\$68,100- \$91,100
Permitting	2	\$77,000- \$130,200	Staff Time: \$22,700	\$99,700- \$152,900
Site Improvements/ Shuttle Start Up	3 ⁽⁴⁾	\$159,200- \$216,600	Operations: \$15,000 - \$75,000 Marketing: \$46,000 - \$206,000 Staff Time: \$36,000 - \$126,100	\$256,200- \$623,700
Shuttle Pilot Operation	4	-	Operations: \$866,700 - \$1,155,600 Marketing: \$47,400 - \$212,000 Staff Time: \$148,200 - \$241,000	\$1,062,300- \$1,608,800
	5	-	Operations: \$892,700 - \$1,190,300 Marketing: \$36,600 - \$163,900 Staff Time: \$33,200 - \$128,800	\$962,500- \$1,483,000
	6	-	Operations: \$919,500 - \$1,226,000 Marketing: \$18,800 - \$84,400 Staff Time: \$34,200 - \$132,700	\$972,500- \$1,443,100
6-Year Total				\$3,421,300- \$5,402,600
⁽¹⁾ Adjusted to account for inflation and rate increases. ⁽²⁾ Includes capital improvements across first three years. ⁽³⁾ Includes District staff time with benefits to support with managing program. ⁽⁴⁾ Year 3 Shuttle Start-Up Operating Costs \$95,700-\$405,700.				

Contractor Staffing (Attachment 1, Pages 24 & 25)

A privately contracted operator would provide and train the necessary staff as part of their payroll to meet the requirements of a District contract. A private operator can distribute their staffing positions and costs across multiple contracts that they may hold with other groups, lessening the direct costs to the District. Private operator staff that would spend a portion of their hours on the District's shuttle program include: a project manager, administrative staff, drivers, and dispatchers.

District Staffing to Support a Privately Contracted Operator Model

Table 2 illustrates District staff time required to support implementation of necessary capital improvements and ongoing shuttle program operations under a privately contracted operator model. These costs are incorporated in the operating costs column of Table 1, which encompass a six-year timeline and includes a three-year shuttle pilot. District staff will be required in Years 1-3 to design and implement capital improvements for the Purisima Creek Road parking area. District staff time to support shuttle program operations will also be required, initially focusing on shuttle start up-activities (Year 3) and then ongoing program management (Years 4-6). The District would launch a shuttle marketing campaign (Years 3-6) alongside shuttle start-up activities and rolling out the shuttle pilot. During the first year of the shuttle program, it would be helpful for the District to have staff present onsite at the Purisima Creek Road parking area to assist visitors of the shuttle and communicate/trouble-shoot with shuttle service staff.

Table 2 - District Staffing Costs for a Shuttle Pilot Program			
Year	Position	Annual FTE	Annual Cost^(1,2)
Year 1	Capital Project Manager III	0.10	\$22,100
<i>Year 1 Total</i>			\$22,100
Year 2	Capital Project Manager III	0.10	\$22,700
<i>Year 2 Total</i>			\$22,700
Year 3	Planner II	0.025	\$4,700
	Management Analyst II	0.125 - 0.5	\$25,900 - \$103,600
	Administrative Assistant	0.015 - 0.05	\$2,200 - \$7,200
	Public Affairs Specialist II	0.015 - 0.05	\$3,200 - \$10,600
<i>Year 3 Total</i>			\$36,000 - \$126,100
Year 4	Management Analyst II	0.125 - 0.5	\$26,700 - \$106,700
	Administrative Assistant	0.015 - 0.05	\$2,200 - \$7,400
	Public Affairs Specialist II	0.015 - 0.05	\$3,300 - \$10,900
	Ranger Aide	1	\$116,000
<i>Year 4 Total</i>			\$148,200 - \$241,000
Year 5	Management Analyst II	0.125 - 0.5	\$27,500 - \$109,900
	Administrative Assistant	0.015 - 0.05	\$2,300 - \$7,600
	Public Affairs Specialist II	0.015 - 0.05	\$3,400 - \$11,300
<i>Year 5 Total</i>			\$33,200 - \$128,800
Year 6	Management Analyst II	0.125 - 0.5	\$28,300 - \$113,200
	Administrative Assistant	0.015 - 0.05	\$2,400 - \$7,900
	Public Affairs Specialist II	0.015 - 0.05	\$3,500 - \$11,600
<i>Year 6 Total</i>			\$34,200 - \$132,700
Total for all years			\$296,400 - \$673,400
⁽¹⁾ Costs have been rounded to the nearest hundred, includes all six years of implementation, including up-front three years of prep work ahead of a three-year pilot shuttle program.			
⁽²⁾ Annual costs are based on the highest step of a position's combined salary and benefits and position's full-time equivalent (FTE).			

Contractor-Owned Vehicles (Attachment 1, Pages 25-28)

Parametrix identifies three different types of shuttle vehicles for the program, each of a different size and passenger capacity, that would be owned by the contracted operator. The District would outline contract terms to address vehicle maintenance and ADA access to accommodate the needs of preserve users and allowed trail uses such as bikes, other power-driven mobility devices, wheelchairs, and service animals on their vehicles. Specific vehicle branding needs, such as use of the District's branding colors and logo, and preserve logo, could be included in an agreement with the operator.

Funding & Partnerships (Attachment 1, Pages 29 & 30)

Parametrix recommends the District build partnerships with local and regional agencies that receive federal funds and potentially partner to pursue subrecipient funds for the shuttle program. Grants could help cover start-up costs, though ongoing operational funds may be harder to secure and will require further exploration.

Parking Policies & Enforcement (Attachment 1, Pages 28 & 29)

The Study recommends restricting roadside parking and the Purisima Creek Road parking area while the shuttle operates to ensure program success. Installing a hardwired automatic gate at the Purisima Creek Road parking area would be the most effective way to restrict general vehicle access to the parking area and grant remote access to shuttle drivers. The District would need to coordinate with the County of San Mateo to permit the automatic gate and update parking regulations to expand the area of restricted roadside parking along Purisima Creek Road. As part of Year 1 (design phase), the District will evaluate and re-design the Purisima Creek Trailhead/parking area with the proposed site improvements to support the program to ensure adequate space requirements for shuttle and safety for preserve visitors, a path of travel will need to be defined.

Performance Measures (Attachment 1, Page 36)

Performance measures have been identified to ensure the shuttle service maintains quality standards, remains financially sustainable, and reflects goals of the service while recognizing the tradeoff of service efficiency and service quality. Parametrix identified potential performance measures listed in Table 3. In addition to providing a shuttle service that alleviates current access issues and provides a positive visitor experience, the District should look for positive results in quality-focused metrics such as ridership, on-time performance, and visitor feedback. Evaluating these measures during an initial pilot program would equip the District with actionable information to guide future decision making. If the District chooses to implement Service Scenario 2, but over time ridership is consistently lower than expected, the District would have a strong rationale for either reducing or terminating future service.

Table 3 - Proposed Shuttle Performance Measures		
Measure	Purpose	Potential Target
Total Cost	Ensure financial sustainability	No cost overruns
On-Time Performance	Ensure operator maintains service reliability (typically a contract provision)	>90% on-time performance; schedule changes if not feasible
Ridership	Monitor overall usage, peak visitor flows, and growth trends (all by month, day of week, and hour)	Daily and peak-hour rider counts not exceeding shuttle capacity; conversely, ridership counts that fall below a minimum target]

Table 3 - Proposed Shuttle Performance Measures		
Measure	Purpose	Potential Target
Cost per Rider	Assess overall efficiency of service	To be determined; balance with goals for quality of service
Shuttle Feedback	Assess Preserve visitors' experience with shuttle system, overall access, and likelihood to return. Assess preserve neighbor experience with parking and traffic conditions.	Sustained average ratings of "satisfied" or better

Marketing & Outreach (Attachment 1, Pages 30, 33)

At the request of a PNR member, Parametrix developed a proposed budget associated with a typical marketing campaign to support a successful launch of a shuttle pilot program. The cost estimates assume a heavy initial investment in the marketing campaign that is reduced during the second and third years of a shuttle pilot program. Table 4 describes the proposed marketing campaign elements, itemized costs, and timelines. Cost estimates are included in the operating cost columns of Table 1.

Table 4 – Marketing Campaign Costs	
Marketing Campaign Element	Line Item Costs
Campaign Management Content Development	\$24,000 - \$96,000 per year, typically paid to a public relations consultant on a monthly basis (could be performed in-house)
Digital and Social Media Advertising	\$10,000 - \$40,000 per year
Local Print Advertising	\$5,000 - \$30,000 per year
Local Mailers	\$2,000 - \$10,000 per year
Community Outreach Events	\$3,000 - \$20,000 per year
Branded Merchandise	\$2,000 - \$10,000 per year
Signage	Included in capital costs for installation near the Purisima Creek Road and Verde Road parking areas.
Timeline	Total Annual Costs
One year prior to pilot program launch,	\$46,000 - \$206,000 per year (100% of budget)
First year of pilot program	\$46,000 - \$206,000 per year (100% of budget)
Second year of pilot program ⁽¹⁾	\$36,600 - \$163,900 per year (75% of budget)
Third year of pilot program ⁽¹⁾	\$18,800 - \$84,400 per year (50% of budget)
⁽¹⁾ Adjusted to account for inflation and rate increases.	

Capital Costs (Attachment 1, Pages 30 & 31)

If shuttle vehicles are unable to turnaround at the Purisima Creek Trailhead and parking area based on the current configurations of the site, capital improvements are recommended to improve the area. Parametrix recommends an ADA landing pad, bench with shelter, and informational signage for the Purisima Creek Trailhead and Verde Road parking area. The Purisima Creek Trailhead would require an automatic gate at the parking area entrance to restrict private vehicle access while the shuttle program operates. Capital improvements associated with the proposed shuttle program are estimated to cost \$282,200 to \$415,800 across three years as described in Table 5. Capital improvements for Verde Road have been included in the Purisima-to-the-Sea construction project. Private operator vehicle costs are expected to be passed on to the District through the vendor's contract fee and are not considered a direct capital cost. Expansion of cell coverage would aid with mobile device communications for a fixed-route shuttle service and improve the visitor experience. There may be indirect costs associated with installing cell communications infrastructure and ongoing cell service fees to facilitate visitor use of shuttles.

Table 5 – Capital Costs Associated with Shuttle Program			
Cost Element	Year of Expenditure (YOE)	YOE Cost Range _(1,2)	Total by YOE
Design – Year 1	1	\$23,000-\$34,500	\$46,000-\$69,000
Technical Studies – Year 1	1	\$23,000-\$34,500	
Design – Year 2	2	\$23,700-\$35,500	\$77,000-\$130,200
Technical Studies – Year 2	2	\$23,700-\$35,500	
Permitting	2	\$29,600-\$59,200	
Materials & Construction:			
Bus Stop ADA Landing Pad	3	\$6,100-\$18,300	\$159,200-\$216,600
Bus Stop Shelter, Bench & Attached Signs	3	\$54,900-\$73,200	
Additional Signage	3	\$600-\$3,100	
Automatic Gate	3	\$97,600-\$122,000	
Total Site-Related Capital Cost	1-3	\$282,200 - \$415,800	
(1)Expenditures in Years 2 and 3 escalated to account for inflation			
(2)Assumes 15% contingency			

Operating Costs (Attachment 1, Page 31 & 32).

The breakdown of proposed service hours and costs associated with a private contractor operated program are described in Table 6, assuming a contract cost range of \$150 to \$250 per hour. These costs are included in the operating costs column of Table 1.

Table 6 Projected Annual Operating Costs – Service Scenario 2 (Visitor Experience)⁽¹⁾						
Season	Service Hours (Daylight Hours)	Buses on the Road	Operating Days per Week	# of Days	\$150/Hour	\$200/Hour
Winter	9	Bus #1	Sat-Sun	43	\$58,050	\$77,400
Fall/ Spring	12	Bus #1	All days	122	\$219,600	\$292,800
	9	Bus #2	All days	122	\$164,700	\$219,600
Summer	14	Bus #1	All days	123	\$258,300	\$344,400
	9	Bus #2	All days	123	\$166,050	\$221,400
Total					\$866,700	\$1,155,600
⁽¹⁾ Includes eight winter holidays observed by District						

Neighbor Engagement

Project staff facilitated neighbor engagement through one in-person event in Half Moon Bay on November 14, and one virtual event on November 19. Preserve neighbors in the vicinity of the proposed shuttle route were notified, and the events were attended by neighbors and the broader Half Moon Bay community. Staff presented information on the proposed core shuttle service and potential parking restrictions that would be required to support the service. Attendees expressed general support for the shuttle program and potential parking restrictions near the Purisima Creek Trailhead and provided feedback on the opportunities and challenges they anticipate with implementation of a proposed shuttle program. They provided suggestions on how the District can make the proposed shuttle program more successful through greater community outreach.

Feedback was shared for both an expanded shuttle schedule on weekdays and not providing a 7-days per week operation. Several attendees commented on the need to address the lack of cell coverage at the Purisima Creek Trailhead. Other key themes include implementing a strong marketing campaign to communicate changes to Preserve access and interest in parking restrictions along Verde Road. Detailed feedback received is summarized in Attachment 3.

Staff will continue to conduct public outreach to provide updates on the project status and timeline, as well as raise awareness about the proposed shuttle program and further gauge interest in the service.

Parking Management Concepts

Along with providing a shuttle service for the Purisima Creek Trailhead, the Study recommends implementing reservation parking, real-time parking information, and carpool/vanpool parking (as described in Attachment 1, Page 39) at the North Ridge and Verde Road parking areas to address the Preserve's parking demand and congestion issues. Separately, the District has been working on establishing parking capacity improvements for the North Ridge and Verde Road parking areas that should improve the Preserve's parking capacity issues in the near-to-medium term. As a result, Parametrix recommends the District wait to understand the new baseline parking demand once the additional parking is constructed and open for use before implementing other parking management strategies. Once parking demand regularly exceeds 80% of capacity during peak periods, which is a threshold that aligns with the transportation planning industry standard, Parametrix recommends implementing reservation parking and/or carpool parking.

The Committee expressed interest in establishing a real-time parking information program for the Preserve (similar to Rancho San Antonio) and preferred to defer implementing carpool parking and parking reservations at the Verde Road and North Ridge parking areas until they were necessary. The Committee inquired about any additional thresholds for implementing these TDM programs, and staff identified the following additional thresholds for implementing carpool parking or parking reservations:

- Reduced visitor experience (observed or reported)
- Increased parking area congestion
- Parking queues overflowing onto Verde Road, creating safety hazards and delaying shuttle performance
- Infrequent parking turnover reducing parking supply, resulting in excessive vehicle circulation potentially increasing queues.
- Visitors leaving preserve before finding parking spot

The District can collect information using intercept or online visitor surveys, shuttle logs (if a shuttle pilot program is implemented), real-time parking data (if a real-time parking information system is implemented), and Visitor Services staff observations to understand if these thresholds are met and determine whether other parking-related TDM strategies should be pursued.

Reservation Parking (Attachment 1, Pages 40-46)

While Parametrix notes that this strategy works best when a nominal fee is included to reduce parking "no shows", the Committee was not interested in changing Board policy regarding entrance/parking fees at this time, and requested additional information on the potential range of parking reservation fees, and whether other agencies have implemented a no-fee parking

reservation system. Parametrix identified a range of \$2 to \$3 as a typical parking reservation fee and found an open space destination that has implemented a no-fee reservations for carpool and accessible parking. Parametrix indicates that the administrative requirements for users to reserve parking – going online, often in advance, and securing the reservation via a user account or other contact information – can provide a sufficient incentive to prevent most “no-show” occurrences, thus eliminating the need for a fee.

Parametrix identified potential operational parameters for a reservation system, including when to require reservations, number of parking spaces to designate, and how to manage/verify reservations. Parametrix outlined considerations to maintain a positive visitor experience, including the ease of how reservations can be made and how to use the system. This TDM strategy requires software, signage, possibly a kiosk and/or a vehicular gate to manage access, enforcement, wireless connectivity and power, education, and staffing.

Reservation System Costs: \$15,000 annually for web platform/software application. \$15,000 for signage. Approximately \$125,700 - \$251,500 for 1 to 2 FTEs for parking enforcement and management of software.

Real-Time Parking Information (Attachment 1, Pages 47-50)

Due to the Preserve’s geography, a digital messaging sign, like the one at Rancho San Antonio Preserve is not recommended. For an online-only system, parking sensors would be installed at each parking area entry/exit. The Committee requested additional information about providing parking counts based on different parking uses (i.e., carpool areas, parking reservation areas). Parametrix notes that a real-time parking information system could provide data on the specific parking uses, but typically requires these parking spaces be in an area accessed by a separate entry/exit point, or involves an upgraded system which is more expensive due to individual sensors at each stall. Visitors would access information online helping them to plan their visit. This strategy requires enforcement, wireless connectivity, and public education to implement.

Real-Time Parking Information Costs: Installation costs are \$20,000-30,000 per parking area. Implementation costs are approximately \$5,000 per parking area (sensors and repeaters). Maintenance costs are up to \$2,000 per parking area. Approximately \$53,400 is estimated for a 0.25 FTE to administer and manage the real-time parking information system.

Carpool/Vanpool Parking (Attachment 1, Pages 51-54)

Given the large number of visitors who already travel in pairs or groups to the open space preserves, the District may consider requiring a higher carpool occupancy for carpool areas. This strategy could be enhanced by allowing carpools/vanpools to reserve a parking space. Parametrix outlines potential operating scenarios for this strategy, including number of parking spaces to allocate toward carpool parking, enforcement needs, and potentially combining with a reservation system. This strategy requires enforcement, signage, defining a carpool area with striping and paint, and education.

Carpool/Vanpool Parking Costs: Signage is \$100-\$1,000 per sign, and \$5,000 to \$10,000 for installation depending on size, style, and foundation. Approximately \$125,700 - \$251,500 is estimated for 1 to 2 FTE for parking occupancy verification and enforcement.

09/10/24 Planning & Natural Resource Committee Feedback

Attachment 2 includes the Committee's detailed comments and questions that staff have responded to and addressed for further development of the pilot shuttle program and potential parking transportation demand management programs.

FISCAL IMPACT

There are no fiscal impacts associated with Board acceptance of the recommended concept options as the CEQA project description. Funding to advance design and implementation will be requested as part of the annual Budget and Action Plan process.

The following table summarizes the different strategies under study and the associated estimated costs. Most costs would be funded under the General Fund 10 Operating Budget – with most of these operating costs not currently budgeted or rolled into the 30 year fiscal model. The shuttle program cost estimate includes \$282,200 - \$415,800 for capital improvements, which are being incorporated into and budgeted for within the following capital projects: *Purissima-to-the-Sea Parking* (MAA03-009), *Hwy 35 Multi-Use Trail Crossing and Parking Implementation Project* (MAA03-013), and a future fund 40 capital project. The parking management concept estimates includes \$70,000 - \$95,000 for capital improvements, which are currently being incorporated into and budgeted for within the following capital projects: *Purissima-to-the-Sea Parking* (MAA03-009) and *Hwy 35 Multi-Use Trail Crossing and Parking Implementation Project* (MAA03-013). Also included are costs associated with possible improvements to cell communications infrastructure, which would be Fund 40 – General Fund Capital eligible.

Strategy	One-time/ Capital Costs	Operating Costs	Overall Costs	Funding Source
Shuttle Program				
<i>Concept 1, Scenario 2 using contracted operated service model for a 3-year pilot program</i>	\$282,200 - \$415,800	\$3,139,100 - \$4,986,800 ⁽¹⁾	\$3,421,300- \$5,402,600	Mostly Fund 10 - General Fund Operating*
Parking Management Concepts				
<i>Reservation Parking</i>	\$15,000	\$140,700- \$266,500 ⁽²⁾	\$155,700 - \$281,500	Mostly Fund 10 - General Fund Operating**
<i>Real-Time Parking Information</i>	\$50,000 - \$70,000	\$55,400 ⁽²⁾	\$105,400 – \$125,400	Mostly Fund 10 - General Fund Operating**
<i>Carpool/Vanpool Parking</i>	\$5,000 - \$10,000	\$125,700 - \$251,500 ⁽²⁾	\$126,200 - \$261,500	Mostly Fund 10 - General Fund Operating**
⁽¹⁾ Annual operating cost is estimated at +/- \$1.5 million; amount shown in the table is the total for a 3-year shuttle pilot.				
⁽²⁾ Based on 1-year operating costs for FY28-29 ² Based on 1-year operating costs for FY28-29				

*Mostly General Fund 10 Operating, with a minor amount of MAA Capital Fund 30 for the *Purissima-to-the-Sea Parking* (MAA03-009) and *Hwy 35 Multi-Use Trail Crossing and Parking Implementation* (MAA03-013) projects, and possibly some General Fund 40 Capital.

**Mostly General Fund 10 Operating, with a minor amount of MAA Capital Fund 30 for the *Purissima-to-the-Sea Parking* (MAA03-009) and *Hwy 35 Multi-Use Trail Crossing and Parking Implementation* (MAA03-013) projects.

The following table outlines the Measure AA Portfolio #03 *Purissima Creek Redwoods — Purissima-to-the-Sea Trail, Watershed Protection and Conservation Grazing* allocation, costs-to-date, projected future project expenditures and projected ending balance at the portfolio

level. For the proposed shuttle program and TDM strategies, only the one-time capital costs (not operating costs) would be eligible for Measure AA reimbursement.

On June 14, 2023 (R-23-67), the Board reallocated \$6.4 million to Measure AA Portfolio #03 from other completed portfolios to reduce the funding gap to about \$1 million. During the FY25 budget development process, construction costs for MAA03-009 *Purisima-to-the-Sea Parking* escalated by \$3.4M. The cost estimate from FY24 was based on conceptual designs. As the project was further refined, the cost estimate increased. Project MAA03-013 *Highway 35 Multi-Use Trail Crossing and Parking Implementation* (a \$4.6M project) was also added to the Action Plan after project 31903 *Hwy 35 Multi-use Trail Crossing and Parking Study* was completed in FY24. Staff will continue to seek outside grant funds to fill the remaining \$9.2M funding gap.

MAA03 Purisima Creek Redwoods — Purisima-to-the-Sea Trail, Watershed Protection and Conservation Grazing	\$13,965,920
Grant Income (through FY28):	\$342,832
Fund 40 Allocation:	\$450,000
Total Portfolio Allocation:	\$14,758,752
Life-to-Date Spent (as of 11/18/24):	(\$8,646,629)
Encumbrances:	(\$483,142)
Remaining FY25 Project Budgets:	(\$728,002)
Future MAA03 project costs (projected through FY28):	(\$14,122,766)
Total Portfolio Expenditures:	(\$23,980,539)
Portfolio Balance Remaining (Proposed):	(\$9,221,787)

The following table outlines the Measure AA Portfolio #03 *Purisima Creek Redwoods — Purisima-to-the-Sea Trail, Watershed Protection and Conservation Grazing* allocation, costs-to-date, projected life-to-date project expenditures and projected portfolio balance remaining.

MAA03 Purisima Creek Redwoods — Purisima-to-the-Sea Trail, Watershed Protection and Conservation Grazing	\$13,965,920
Grant Income (through FY28):	\$342,832
Fund 40 Allocation:	\$450,000
Total Portfolio Allocation:	\$14,758,752
Projected Project Expenditures (life of project):	
03-001 Purisima Uplands Lot Line Adjustment and Property Transfer	(\$425,113)
03-002 Purisima Upland Site Clean up and Soil Remediation	(\$1,144,098)
03-003 Purisima Creek Fence Construction	(\$169,190)
03-004 Harkins Bridge Replacement	(\$516,917)
03-005 Purisima-to-the-Sea Trail and Parking Area - Phase I Feasibility Study	(\$609,818)
03-006 South Cowell Upland Land Conservation	(\$6,223,772)
03-007 Purisima-to-the-Sea Habitat Enhancement and Water Supply Improvement Plan	(\$277,820)
03-008 Rieser-Nelson Land Purchase	(\$16,715)
03-009 Purisima-to-the-Sea Parking	(\$8,081,202)

03-010 Purisima-to-the-Sea Trail	(\$1,152,921)
03-011 Lobitos Creek Fisheries Restoration	(\$677,641)
03-012 Purisima-to-the-Sea Comprehensive Use and Management Plan	(\$109,321)
03-013 Highway 35 Multi-Use Trail Crossing and Parking Implementation	(\$4,576,011)
Total Portfolio Expenditures:	(\$23,980,539)
Portfolio Balance Remaining (Proposed):	(\$9,221,787)

PRIOR BOARD AND COMMITTEE REVIEW

November 9, 2022: The Board reviewed and approved the Purisima Multimodal Access Study Report and directed the General Manager to begin implementing the first set of prioritized TDM strategies and recommendations.

[Board Report](#)

[Minutes](#)

May 24, 2023: The Board reviewed and affirmed, with any final modifications as directed by the Board of Directors, the findings and recommendations of the Purisima-to-the-Sea Trail and Parking Area Feasibility Study.

[Board Report](#)

[Minutes](#)

November 8, 2023: The Board accepted conceptual parking design Option A.2 (upper and lower parking area expansion with two-way circulation and the associated multi-use trail crossing location and design) as the project description and scope to initiate environmental review under the CEQA for the Highway 35 Multi-use Trail Crossing and Parking Project.

[Board Report](#)

[Minutes](#)

September 10, 2024: The Planning and Natural Resources Committee reviewed and provided feedback on shuttle and parking management concepts for Purisima Creek Redwoods Open Space Preserve, including information on the associated implementation details.

[Committee Report](#)

Draft Minutes (see Attachment 4)

PUBLIC NOTICE

Public notice was provided as required by the Brown Act. In addition, public notices were sent to the Preserve and Coastside interested parties and project area neighbors along Purisima Creek Road, Verde Road, Higgins Canyon Road, and Lobitos Creek Road.

CEQA COMPLIANCE

The exploration of shuttle and parking management programs is equivalent to a feasibility or planning study to inform possible future actions within the meaning of CEQA Section 15262. If the Board decides to move forward with implementing a shuttle pilot program and other TDM programs, including real-time parking, carpool parking, and/or reservation parking, these actions and associated capital improvements will be evaluated as part of the CEQA review for the Purisima Comprehensive Use and Management Plan (CUMP). A final decision on the shuttle

pilot program and TDM strategies would be made by the Board once the CEQA findings are prepared and ready for Board consideration.

NEXT STEPS

Following Board acceptance of the proposed shuttle and parking management concept options as the CEQA project description to initiate environmental review, staff would proceed with the following steps:

- Return to the full Board at a later date for consideration of CEQA Certification and project approval (anticipated in late 2025).
- Identify capital improvements that maybe necessary at the Purisima Creek Trailhead and the future rollout of parking restrictions to support a shuttle program.
- Engage vendors to understand vehicle options, contracting pathways, and best practices that align with District needs.
- Develop a scope of services and monitoring framework.
- Foster relationships with key stakeholders to support future shuttle phases.
- Continue researching funding opportunities.
- Explore integrating interpretive programming with a shuttle program.
- Continue communication with the adjacent neighbors to address concerns and remedies.

Attachment(s)

1. Purisima Multimodal Access Implementation Project Draft Report
2. PNR Committee Feedback
3. Neighbor Feedback
4. 09/10/24 Draft PNR Meeting Minutes

Responsible Department Head:

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Prepared by:

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Purisima Multimodal Access Implementation Project

Prepared for
Midpeninsula Regional Open Space District



November 2024

Purisima Multimodal Access Implementation Project

Prepared for

Midpeninsula Regional Open Space District
5050 El Camino Real
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Contents

1. Introduction.....	1
2. Transit Shuttle Concepts	1
2.1 Concept 1 – Core Service.....	2
2.2 Concept 2 – Expanded Service Area	3
3. Transit Shuttle Recommendations.....	4
3.1 Methodology to Set Service Levels.....	4
3.2 Minimum Service Levels	5
3.2.1 Supply Versus Demand: Average Visitors.....	6
3.2.2 Supply Versus Demand: Maximum Visitors.....	7
3.3 Estimating Ridership	9
3.4 Proposed Service	11
3.5 Implementation Considerations and Recommendations	12
3.5.1 Service Delivery Options	12
3.5.2 Staffing	14
3.5.3 Vehicles	15
3.5.4 Vehicle Maintenance	18
3.5.5 Parking Policies and Enforcement.....	18
3.5.6 Funding and Partnerships	19
3.5.7 Marketing and Outreach.....	20
3.6 Estimated Costs.....	20
3.6.1 District Capital Costs.....	20
3.6.2 Shuttle Operating Costs.....	21
3.6.3 Combined Six-Year Shuttle Pilot Costs	24
3.6.4 District Staff Considerations	25
3.6.5 Performance Measures	26
3.7 Next Steps	27
4. Parking Management Concepts and Recommendations.....	28
4.1 Key Findings.....	28
4.1.1 Site Feasibility	28
4.1.2 Expected Demand.....	28
4.1.3 Enforcement.....	28

Contents (continued)

4.1.4	Concept Evaluation and Recommendations	28
4.2	Reservation Parking	30
4.2.1	Effectiveness in Managing Transportation Demand	31
4.2.2	Implementation Considerations and Challenges	31
4.2.3	Potential Operations at Purisima	33
4.2.4	Costs and Capital Requirements	33
4.2.5	Case Studies	36
4.3	Real-Time Parking Information	37
4.3.1	Effectiveness in Managing Transportation Demand	37
4.3.2	Implementation Considerations and Challenges	38
4.3.3	Potential Operations at Purisima	39
4.3.4	Costs and Capital Requirements	39
4.3.5	Case Studies	40
4.4	Carpool and Vanpool Parking	41
4.4.1	Effectiveness in Managing Transportation Demand	42
4.4.2	Implementation Considerations and Challenges	42
4.4.3	Potential Operations at Purisima	43
4.4.4	Costs and Capital Requirements	43
4.4.5	Case Study	44
5.	Glossary	45

FIGURES

Figure 1.	Proposed Route for Transit Shuttle Concept 1 – Core Service	2
Figure 2.	Potential Service Area for Transit Shuttle Concept 2 – Expanded Service	4
Figure 3.	Average Daily Visitors by Month – 2022	6
Figure 4.	Maximum Daily Visitors by Month – 2022	6
Figure 5.	Sample Vehicle Branding Schemes (<i>Clockwise from top left: King County Metro Trailhead Direct; Columbia Area Transit Columbia Gorge Express [2 photos]; Marin Transit Muir Woods Shuttle</i>)	17
Figure 6.	Sample App-Based Reservation System (<i>ParkMobile</i>)	30
Figure 7.	Typical Reservation Parking System User Interface (<i>VEVS</i>)	35
Figure 8.	Typical Reservation Parking System Management Dashboard (<i>VEVS</i>)	35
Figure 9.	Sample Real-Time Parking Information Signage and Equipment (<i>Rancho San Antonio</i>)	38

Contents (continued)

Figure 10. Sample Real-Time Parking Information Online Interfaces (<i>Acadia National Park; University of Michigan</i>).....	38
Figure 11. Sample Carpool Parking System and Signage (<i>Park Heavenly; CommutePA; California State University</i>)	41

TABLES

Table 1. Proposed Amenities and Capital Requirements for Concept 1 – Core Service.....	3
Table 2. Maximum Shuttle Capacity, 18- to 25-Passenger Vehicle.....	5
Table 3. Average Visitors by Hour and Month, 2022.....	7
Table 4: 2022 Maximum Visitor Counts by Hour, Day of Week, and Month.....	8
Table 5. Shuttle Design Considerations that Impact Ridership	10
Table 6. Key Characteristics of Typical Transit Shuttle Vehicles	16
Table 7. Capital Costs	21
Table 8. Projected Annual Operating Costs for Service Scenario 1 – Visitor Demand.....	22
Table 9. Projected Annual Operating Costs for Service Scenario 2 – Visitor Experience.....	22
Table 10. Estimated Range of Cost Estimates, Service Scenario 1 (Meeting Visitor Demand), Excluding District Staff Hours	24
Table 11. Estimated Range of Cost Estimates, Service Scenario 2 (Emphasizing Visitor Experience), Excluding District Staff Hours	24
Table 12. Potential Shuttle Performance Measures	26
Table 13. Summary of Parking Management Concepts.....	29
Table 14. Potential Operations for Reservation Parking	33
Table 15. Reservation Parking System Estimated Costs	34
Table 16. Potential Operations for Real-Time Parking Information	39
Table 17. Real-Time Parking System Estimated Costs.....	40
Table 18. Potential Operations for Carpool and Vanpool Parking	43
Table 19. Carpool signage Vanpool Parking System Estimated Costs.....	43
Table 20. Glossary	45

Acronyms and Abbreviations

ADA	Americans with Disabilities Act
District	Midpeninsula Regional Open Space District
DMS	Dynamic Message Signs
Preserve	Purissima Creek Redwoods Open Space Preserve
SamTrans	San Mateo County Transit District
SR	State Route
TDM	Transportation Demand Management

1. Introduction

This report summarizes the initial findings of the Purisima Multimodal Access Implementation Project, which is developing program scenarios and implementation details for potential transit shuttle service and parking management strategies for the Purisima Creek Redwoods Open Space Preserve (Preserve). The project is being conducted by the Midpeninsula Regional Open Space District (District) with support from consultant Parametrix.

This report is organized into the following sections:

- Transit Shuttle Concepts
- Transit Shuttle Recommendations
- Parking Management Concepts and Recommendations
 - Reservation Parking
 - Real-Time Parking Information
 - Carpool and Vanpool Parking

2. Transit Shuttle Concepts

The Purisima Creek Trailhead accessed by the Purisima Creek Road parking area is a popular recreational destination constrained by limited parking and constrained roadways. The parking area frequently reaches capacity at peak times, resulting in traffic and parking impacts on the narrow Purisima Creek Road.

To increase recreational access to the Preserve, the District is currently designing a new trail called the Purisima-to-the-Sea trail connecting the Purisima Creek trailhead to coastal resources, along with a new parking area on Verde Road near Highway 1. The Purisima-to-the-Sea (Verde Road) parking area is over 4 miles from the Purisima Creek trailhead, and if visitors are directed to use the new parking area instead of the small parking area at the trailhead, a shuttle service would be needed to make the connection.

Implementing shuttle service in this context—from a parking area to a recreational facility—requires balancing demand for service with the cost to provide service. As such, the shuttle strategies are organized into two broad concepts:

- **Concept 1 – Core Service.** This concept would connect the Purisima Creek Road parking area to the Verde Road parking area. This concept most directly addresses District goals.
- **Concept 2 – Expanded Service Area.** This concept would connect the Purisima Creek Road parking area and/or the Verde Road parking area to additional destinations such as Half Moon Bay.

The feasibility of each concept is a function of two critical factors: the high cost of providing transit services and facilities, and the realities of procuring those services and facilities which limit the universe of viable options. As discussed in detail in the sections that follow, contracted equipment or services (which are likely to be required) would require a well-designed scope of services to attract potential bidders.

2.1 Concept 1 – Core Service

A simple bi-directional route would maximize the number of trips a single bus could make in an hour. This would help keep operating costs as low as feasible and would also be easy for visitors to understand.

A direct, point-to-point route between the Purisima Creek Road parking area and the new Verde Road parking area would travel along Purisima Creek Road and Verde Road as shown in Figure 1. There would be two stops:

- Verde Road parking area
- Purisima Creek Road parking area

The route is approximately 4.5 miles one way, or 9 miles round trip. As discussed in Section 3, Transit Shuttle Recommendations, this concept assumes that buses have room to turn around at the Purisima Creek parking area that is currently open to cars for general public parking.

If buses cannot turn around in the Purisima Creek parking area, a one-way loop traveling over a greater distance would be the operational solution, or capital improvements of the roadway or parking area would be needed to avoid a less direct and more costly route.

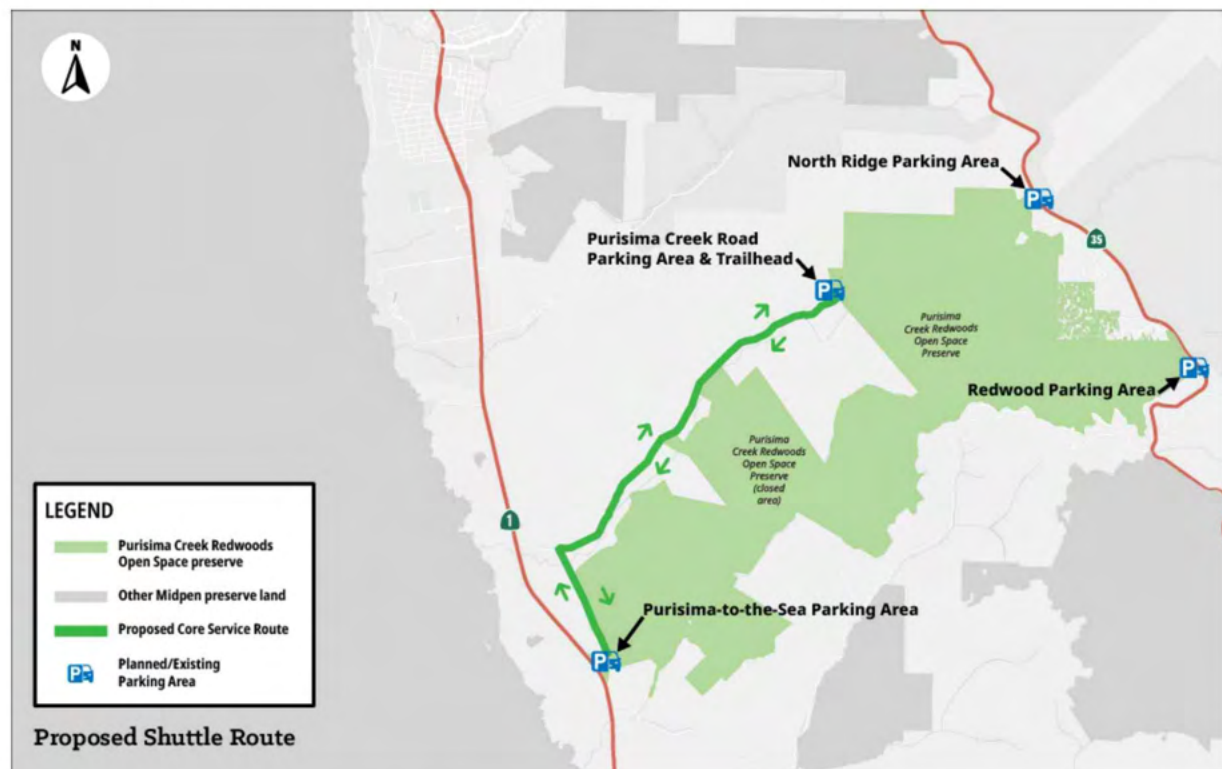


Figure 1. Proposed Route for Transit Shuttle Concept 1 – Core Service

Table 1 lists the proposed stops including potential amenities and implementation considerations.

Table 1. Proposed Amenities and Capital Requirements for Concept 1 – Core Service

Stop	Proposed Amenities	Implementation Considerations
Verde Road parking area	ADA landing pad; bench with shelter; informational signage.	- Draft design plans from June 2024 include shuttle stop with amenities described at left. - Turnaround may require travel through parking area and associated congestion in drive aisles. Potential for bus charging infrastructure could be needed.
Purisima Creek Road parking area	ADA landing pad; bench with shelter; informational signage.	- Amenities at left would require capital improvements. - Turnaround could require a three-point turn in the existing parking area.

ADA = Americans with Disabilities Act

2.2 Concept 2 – Expanded Service Area

A shuttle serving an expanded service area could enhance the catchment area of those wishing to visit the trails at Purisima Creek and the Preserve more broadly. It could connect to the SamTrans bus system and improve access for those without a car, thus improving equitable access to the Preserve. Because the main goal of the transit shuttle is to reduce congestion, particularly at the trailhead, consideration for an expanded service area would likely be the most feasible with the cooperation of other partners since the costs to provide the service could be considered cost prohibitive.

Potential shuttle destinations include the following:

- **Half Moon Bay.** City approximately five miles north of the Preserve with over 11,000 residents and substantial tourism, including a cluster of local businesses near the intersection of State Route (SR) 1 and SR 92.
- **Hotels or Shopping Centers.** Nearby hotels, shopping centers, or other businesses that may wish to partner with the District. For example, the nearby Ritz-Carlton resort previously operated a recreational shuttle to the Preserve for resort guests.
- **Cowell-Purisima Trailhead and Parking Area.** Coastal trail west of SR 1 whose southern terminus will be connected to the Preserve by the new Purisima-to-the-Sea trail.
- **James Johnston House.** Local historic landmark and community activity center and the site of a future parking improvement and trailhead project.
- **Moon Ridge Apartments.** Affordable housing development, largely for farm workers, that is the closest multifamily housing to the Preserve and one of the last stops for existing SamTrans service near the Preserve.
- **Pescadero.** Unincorporated San Mateo County community approximately ten miles south of the Preserve near SR 1, characterized by agricultural land uses and recreational tourism.
- **SR 35 Destinations.** Destinations on the east side of the Preserve include the North Ridge and Redwood Roadside parking areas, and a future connection to the Bay Area Ridge trail and Bay to Sea trail east of SR 35.

Potential locations for expanded service are shown in Figure 2. The stops should focus on activity hubs, transportation junctions, or tourism destinations to best align with where Preserve visitors may be traveling from.

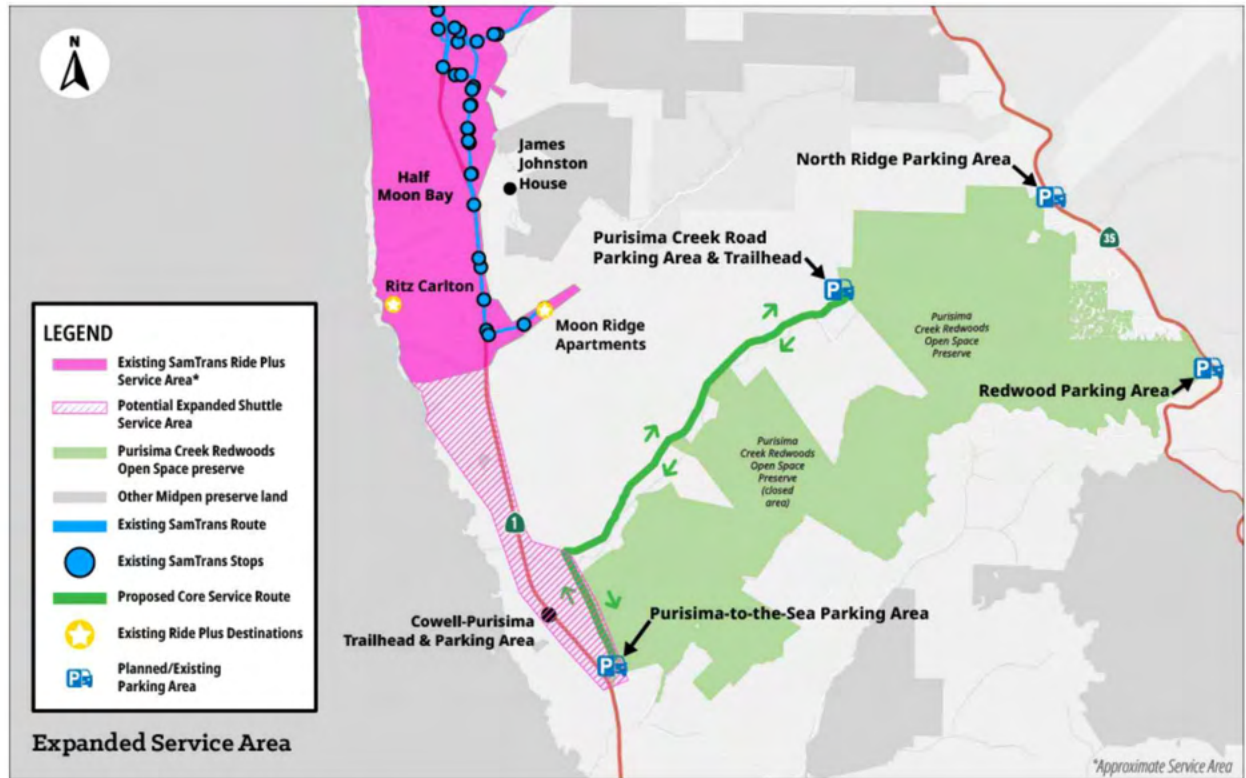


Figure 2. Potential Service Area for Transit Shuttle Concept 2 – Expanded Service

3. Transit Shuttle Recommendations

This section describes a base level of shuttle service that addresses the core project goals. Recommendations for the level of service address how to successfully move people between the Verde Road and Purisima Creek Road parking areas. Costs and service delivery methods associated with the recommendations follow.

This shuttle is intended, at least initially, as a first-last mile connector between two destinations—similar to an airport shuttle—which is different from traditional transit service that connects population centers to major destinations and serves multiple trip purposes. In this setting, the key questions to answer are the following:

- What is the minimum amount of service that can carry visitors at normal and peak times?
- How frequent must service be to be considered useful to visitors?

3.1 Methodology to Set Service Levels

To analyze the appropriate amount of transit service to provide, two key components are the level of demand and the availability of sustainable funding to operate the service. When funding is constrained, service is designed to meet the needs of as many people as possible. Performance metrics such as ridership by time-of-day help set and monitor service levels, and efficiency metrics such as cost per trip help monitor whether the service is meeting the goals with the resources available.

Demand Estimates: The project team evaluated overall annual visitation data for the Preserve, as well as more granular visitation data pulled from automated counters at the Purisima Creek trailhead as a proxy to estimate demand and potential shuttle ridership. Hourly visitation data from 2022 was used due to the completeness of the dataset. Weekend visitation was grouped to include Fridays. The automated counters track people traveling in and out and therefore all people are counted twice, but the specific direction is unknown. The ambiguity in this dataset required the project team to make assumptions about the direction of demand. Counts earlier than 9:00 AM were assumed to be entering the park, counts after 7:00 PM were assumed to be leaving the park, and all counts between these hours were halved to avoid double-counting inbound and outbound trips. The project team evaluated both average levels of demand and maximum (peak) counts by hour, day of week, and month.

Vehicle Capacity: The number of people each vehicle can carry per trip is the core factor in meeting visitor demand. Calculating how quickly one vehicle can be available for a second trip dictates how many people can be moved over the course of an hour or day. Calculations assumed each vehicle can seat between 18 to 25 passengers, based on the physical constraints at the proposed shuttle turnaround location at the Purisima Creek Road parking area.

These initial estimates allow the project team to determine the level of service that one vehicle could provide, and then compare that to the estimated demand to identify any potential gaps in service. The next steps were to determine the factors at play that were likely to increase or decrease demand over time and to make assumptions about peak demand by time of day.

3.2 Minimum Service Levels

The Concept 1 – Core Service described above assumes the 9-mile round trip can be completed in 30 minutes. This includes a short recovery period to account for traffic, passenger loading delays, or a driver break. Table 2 illustrates the range of passengers that could be carried in a day depending on the frequency of service, hours of the day the service operates, and vehicle size. On the low end, one 18-passenger vehicle running for 10 hours per day can accommodate 720 riders per day. On the high end, two 25-passenger vehicles operating for 14 hours per day can carry 2,800 people per day.

Table 2. Maximum Shuttle Capacity, 18- to 25-Passenger Vehicle

Vehicles and Frequency	Seats	Hourly Capacity (Passengers)		Daily Capacity (Passengers)
		One Way	Round Trip	Round Trip
Two vehicles: 15-Minute Service	18	72	144	10-hour day: 1,440
				14-hour day: 2,016
	25	100	200	10-hour day: 2,000
				14-hour day: 2,800
One vehicle: 30-Minute Service	18	36	72	10-hour day: 720
				14-hour day: 1,000
	25	50	100	10-hour day: 1,008
				14-hour day: 1,400

3.2.1 Supply Versus Demand: Average Visitors

Figure 3 shows the average visitors to the Purisima Creek trailhead per day, by month in 2022. Figure 4 shows the maximum number of daily visitors by month. Weekends are consistently higher ridership days, and are relatively consistent for 9 months of the year. The 3 months with the highest average daily weekend visitation were February, July, and August. Weekday visitation ranged from a low of 56 in December to a high of 116 in July. Average visitation Friday through Sunday ranged from a low of 77 in December (which was an outlier) to a high of 214 in August.

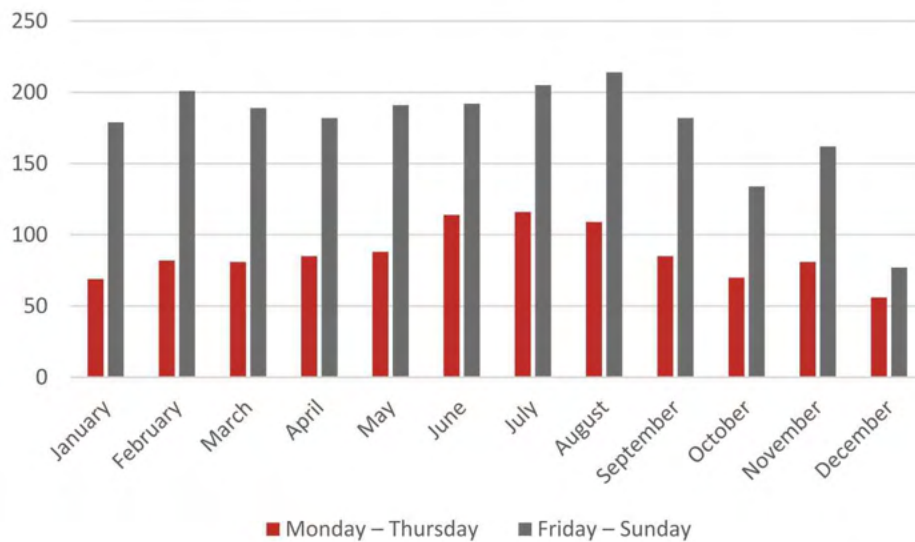


Figure 3. Average Daily Visitors by Month – 2022

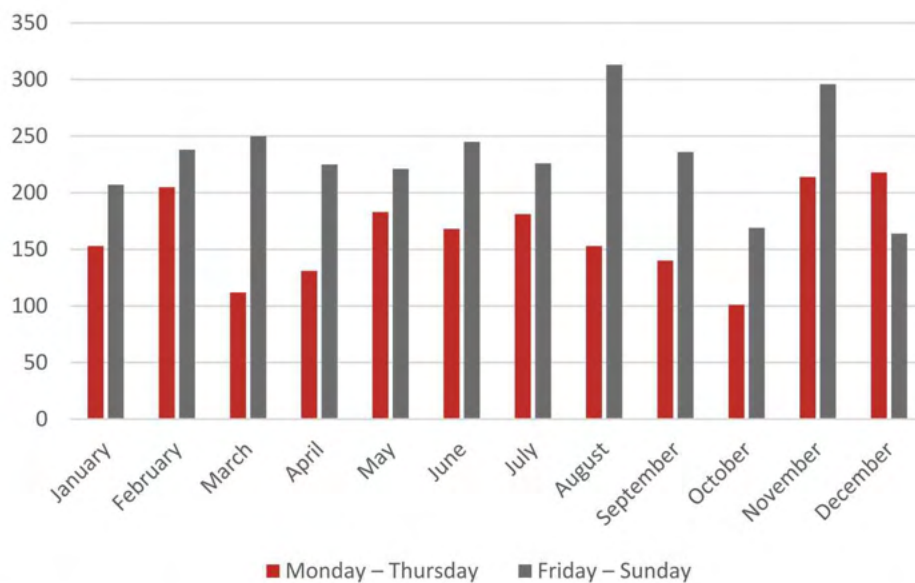


Figure 4. Maximum Daily Visitors by Month – 2022

Table 3 shows hourly visitation rates measured by the Purisima Creek trailhead pedestrian counter. With most hourly counts below 30 and a peak average counts of 34, one 25-passenger vehicle with two trips per hour would be capable of carrying the demand on an average day.

Table 3. Average Visitors by Hour and Month, 2022

Friday	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM
Jan	0	0	4	5	7	7	9	9	15	12	7	8	5	1	0	0	0
Feb	0	0	3	7	6	15	12	9	14	10	10	8	4	1	0	0	0
Mar	0	2	2	7	7	8	11	13	15	10	8	9	8	2	1	0	0
Apr	0	1	2	6	10	15	14	14	12	11	10	7	5	4	5	5	0
May	0	1	2	10	9	10	11	11	10	7	14	9	8	6	5	2	1
Jun	0	2	5	12	5	11	13	19	10	13	12	9	7	3	5	2	1
Jul	1	1	6	8	8	11	13	13	16	13	11	12	7	3	3	2	0
Aug	0	1	4	11	6	13	13	14	11	13	15	8	8	6	5	5	1
Sep	0	0	4	8	8	14	12	12	10	10	8	15	10	4	2	0	0
Oct	0	0	2	11	6	6	11	13	10	11	8	8	6	3	3	0	0
Nov	0	2	3	6	10	16	17	20	15	16	13	11	4	2	0	0	0
Dec	0	0	1	4	3	7	8	7	7	5	7	4	1	0	0	0	0
Saturday	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM
Jan	1	1	12	18	12	19	21	25	24	22	21	15	8	1	0	0	0
Feb	0	1	17	30	20	20	24	24	24	23	17	15	9	2	0	0	2
Mar	0	3	15	18	11	18	27	27	20	20	22	13	8	4	0	0	0
Apr	0	3	9	24	15	11	20	19	19	26	16	16	11	6	5	0	0
May	0	1	10	21	18	17	19	17	19	21	22	15	10	7	6	1	1
Jun	1	3	12	27	14	23	17	19	18	18	20	16	15	7	5	5	1
Jul	1	1	18	30	15	17	20	27	23	19	24	16	8	7	6	1	0
Aug	1	4	15	30	17	22	22	22	34	30	19	17	13	9	9	0	0
Sep	1	5	18	26	15	19	21	23	22	16	17	14	14	11	6	1	0
Oct	0	2	10	17	11	16	19	17	13	14	14	10	5	4	1	0	0
Nov	1	0	3	16	9	14	19	33	29	26	16	14	7	2	0	0	0
Dec	0	1	5	9	4	9	9	7	8	8	7	3	1	0	0	0	0
Sunday	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM
Jan	0	1	8	21	15	15	22	24	25	23	20	11	6	0	0	0	0
Feb	0	2	13	25	15	19	27	25	18	23	22	20	7	2	0	0	0
Mar	1	2	19	19	23	24	23	19	23	18	13	14	9	4	1	0	0
Apr	0	3	9	33	15	17	25	19	24	17	19	15	10	6	2	1	0
May	0	2	16	26	14	21	19	21	22	21	19	14	13	8	7	1	0
Jun	1	2	11	20	17	17	19	17	20	21	22	14	10	10	12	5	0
Jul	0	2	14	19	20	19	19	23	27	21	22	14	12	6	6	1	0
Aug	0	5	18	27	14	19	23	22	19	20	15	16	13	5	3	1	1
Sep	1	3	11	26	18	16	23	21	17	15	16	11	9	5	4	1	0
Oct	1	1	6	18	13	16	13	15	12	14	14	11	5	4	1	0	0
Nov	0	1	5	13	10	15	23	21	19	17	16	13	7	1	0	0	0
Dec	0	0	4	5	6	8	15	11	13	16	12	6	1	0	0	0	0

* Counts between 9:00 am and 6:59 pm are halved to avoid double-counting inbound and outbound trips.

3.2.2 Supply Versus Demand: Maximum Visitors

After evaluating average visitation rates to determine typical demand, the project team also examined maximum observed visitation rates. This enables an understanding of demand on peak days and whether any additional vehicles may be needed for those times.

Table 4 shows the maximum counts by hour, day of week, and month in 2022. Most hourly maximum counts remain in the 10-40 range and could be accommodated with a single vehicle. However, there are a handful of days each year (highlighted in green) where two buses likely would be needed to accommodate visitor demand with minimal waiting time. Providing a second vehicle during these times, likely with more limited hours, would provide sufficient coverage, and these provisions could be incorporated into an agreement with the shuttle operator.

Table 4: 2022 Maximum Visitor Counts by Hour, Day of Week, and Month

Friday	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM
Jan	0	1	9	8	10	10	10.5	15	21	19	11.5	10.5	9	1.5	0	0	0
Feb	0	1	5	12	9	34	15	12.5	18	11.5	11	9.5	5	1.5	1	0	0
Mar	0	2	3	9	10.5	11	14	16.5	22.5	13	12.5	13.5	10.5	2	3	0	0
Apr	0	2	5	8	15	23.5	21.5	18	15	18.5	15	10	7.5	7	11	10	0
May	1	3	3	19	13	12	13	15.5	17.5	11	26.5	14.5	15.5	8.5	9	3	2
Jun	0	3	7	27	7	17	14	38.5	12	18	19	14	11.5	7	8	4	3
Jul	2	3	10	13	10.5	14	18	18	22	18.5	16.5	19	9.5	4	4	6	1
Aug	0	2	5	16	7	15	17	17.5	14.5	14.5	23	13	11	8.5	6	8	2
Sep	0	1	8	12	15	23.5	19.5	16.5	15.5	14	11.5	19.5	18.5	8	4	2	0
Oct	0	0	2	17	9	8.5	13.5	18	11.5	12.5	11.5	11	7.5	4.5	6	0	0
Nov	0	6	7	11	18.5	28.5	30.5	38.5	23	26	25	16.5	7	4.5	0	0	0
Dec	0	0	3	10	7	20.5	16	15	14	10	12	9	2	1.5	2	1	0
Saturday	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM
Jan	7	3	21	26	21.5	25	29	29.5	30.5	29	27	19	12.5	1	0	0	0
Feb	0	2	22	33	28.5	29.5	30	27	32.5	25.5	21.5	21.5	15.5	5	1	0	6
Mar	0	7	22	24	19.5	24	33.5	40.5	35	25	23.5	18	15.5	5.5	1	0	0
Apr	0	9	14	43	23	15	27	25.5	24	55.5	23	24.5	15.5	8.5	13	1	0
May	0	3	14	33	31.5	23.5	24.5	19.5	22.5	29.5	26.5	16.5	12	9.5	8	2	2
Jun	5	5	18	42	20	33	20	25.5	23	19	25	18.5	34.5	9	8	8	1
Jul	2	3	34	48	25.5	23	26.5	30.5	31	25.5	33.5	24	12.5	9	10	3	0
Aug	2	8	23	50	21	34	30	23.5	74.5	55.5	22.5	18	20	16.5	13	1	0
Sep	3	7	27	30	18	25.5	27	27	31	21	24	19	16.5	19	11	3	0
Oct	1	5	23	28	12.5	23	27.5	30	18	17	21	15.5	12.5	8.5	1	2	0
Nov	2	0	5	32	11	20	23.5	72.5	54.5	61.5	21.5	19	19	3.5	1	0	0
Dec	0	3	13	18	7	24	16	19	17	17.5	14.5	7	2.5	0.5	0	0	0
Sunday	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM
Jan	0	4	13	34	29	21	26	27.5	32.5	31	25.5	13.5	12	0.5	0	0	0
Feb	0	2	17	33	18.5	28	38.5	32	26.5	33	24	29	8	3.5	1	0	0
Mar	3	5	25	31	54	45	29	23.5	28	21.5	17	20	14	5	4	0	0
Apr	1	4	12	53	19	22.5	32.5	28	33	23	25.5	16	13	8	3	1	0
May	1	4	32	35	20	26	24	26.5	32	24	24	21	17	10	16	4	0
Jun	2	4	17	33	28	22.5	25.5	25.5	27.5	31	27.5	24.5	18.5	21	20	8	0
Jul	1	3	25	29	37	25.5	25.5	28	33.5	24.5	31	18	15	8.5	7	2	2
Aug	1	8	30	35	18	24.5	26.5	29.5	25	25.5	18.5	17.5	19.5	6.5	6	3	1
Sep	2	4	18	49	29.5	22.5	30.5	23.5	28.5	18.5	22.5	14	15	14.5	9	2	0
Oct	4	3	11	22	26.5	23.5	16.5	24	16.5	23	21	20	8.5	6	6	0	0
Nov	0	2	7	20	14.5	20	29	27.5	22	19.5	22	18	15.5	4.5	0	0	0
Dec	0	0	8	6	8.5	10	36.5	22	24	31	17	9	2.5	0	0	0	0

* Counts between 9:00 am and 6:59 pm are halved to avoid double-counting inbound and outbound trips.

3.3 Estimating Ridership

Projecting ridership for a service that does not exist, where comparable routes are not nearby, where more disaggregated visitor data are unavailable, and where there may be latent demand due to parking constraints requires a bit of art and iteration. Based on 2022 visitation patterns, the capacity of one shuttle vehicle running every 30 minutes would accommodate Preserve visitors most days of the year.

However, 30 minutes is not generally considered a high level of service and people may seek alternative recreational opportunities. In a previous Preserve visitor survey, 75% of respondents reported being willing to wait up to 10 minutes for a shuttle; the majority of these (66%) were only willing to wait up to 20 minutes. Transit opinion surveys are known for having positive views of transit, but they do not often translate into similar usage patterns because there are so many variables that make transit service useful to riders. In a park setting, biases among survey respondents, as well as the frequency with which people visit the park can skew results. As a result, surveys can be important in understanding park support but are not often used as predictors of ridership. A service frequency of 30 minutes, which results in an expected wait time of 15 minutes for each trip, is unlikely to provide a strongly positive experience for many visitors.

To analyze how introducing a shuttle service between the Verde Road and Purisima Creek Road parking areas could impact visitation to the Preserve and shuttle demand, the following are key factors to consider:

- **Service Characteristics**
 - Level of service: Can people travel where they want, when they want?
 - Preserve access: What travel mode options are available to get to the Preserve? What trails are accessible to people based on the mode they have available to them?
 - Ease of use: How easy is it for someone to take a trip? This includes the journey to the bus and from the bus to the final destination.
 - Directness: How much time passes between parking and shuttle drop-off at the trailhead and between the trailhead and the parking lot?
 - Fares and payment options: Is there a fare to ride? How do people pay if there is a fare?
- **Population Factors**
 - Population: How close are the shuttle stops to major population centers?
 - Catchment area: How big is the draw to the destination?
 - Demand to Purisima Creek trailhead: Among the population in the catchment area, how many people would be interested in visiting this location? How often do people visit?

Table 5 describes how visitation might be expected to change based on the service characteristics and population factors listed above.

Table 5. Shuttle Design Considerations that Impact Ridership

		Positive Effect on Ridership	Negative Effect on Ridership
Service Characteristics	Level of service	More service is more appealing as less trip planning is necessary to complete the trip.	Infrequent service requires people to plan their trip and when to turn around on a trail to ensure shorter wait times.
	Ease of use	The easier it is to get on the shuttle and find the bus after visiting the Preserve, the more confident people will feel to try it and use it again.	The more people are required to plan their trip in advance, the less appealing the visit may become. Variation in schedules and levels of service can be confusing for people who do not visit often.
	Directness	A route with limited stops would better be able to travel at speeds comparable to a car. A stop near the trailhead and one at the parking area gets people where they are going the fastest.	A route with many stops would slow service down and require longer time on the bus.
	Fares and payment options	Free rides would encourage ridership.	Shuttle fares may incentivize people to use other trailheads. Complicated or limited payment options—such as book in advance only or exact change only—can reduce ease of use and disincentivize riders.
Population Factors	Population	More people who could access the shuttle would increase the number of people who might use the shuttle to visit the Preserve.	The more rural areas directly adjacent to the Preserve have fewer people and lower population densities compared to more urban areas.
	Catchment area	People visiting parks with regional or national draw due to factors at the destination such as views, type of terrain, trail characteristics, or amenities that fit with the experience visitors are looking for are more likely to plan the visit ahead of time and know to expect off-site parking with a dedicated shuttle to access the destination.	Visitors to parks that draw primarily from the local population may be more likely to consider multiple trailheads and parking locations and less likely to plan for the visit. One negative experience could negatively impact potential return visitation.
	Demand	Simple and straightforward information to help people plan and execute visits would increase the likelihood of repeat visits. A shuttle that serves destinations that appeal to more people would have higher demand.	The more specialized a service is, the less demand there would be for the service. The trails, terrain, and amenities at Purisima Creek will appeal to certain groups of people in the population and catchment area and not others. Shuttle service that requires people to access the park by first arriving at a parking lot may preclude those who do not drive.

3.4 Proposed Service

Based on the existing visitation patterns, hours of daylight throughout the year, and the service characteristics that influence park visitation and potential shuttle ridership, eight service options were considered that ranged from minimal service requiring one bus operating at 30-minute headways year-round, with limited days of service in the winter, up through 15-minute headways year-round. Cost estimates are detailed in Section 3.6, Estimated Costs.

Service Scenario 1 – Emphasis on Meeting Visitor Demand

- **Spring, Summer, and Fall Months (March–October).** 30-minute service, 7 days a week between 8:00 AM and 8:00 PM, with an overlay of 30-minute service to create 15-minute service on Saturdays and Sundays between 9:00 AM and 4:00 PM.
- **Winter Months (November–February).** 30-minute service Saturday – Sunday between the hours of 8:00 AM to 5:00 PM.

Scenario 1 represents the lowest level of service needed to be responsive to weekend visitor patterns. However, a higher level of service would improve the visitor experience by reducing waiting time and was recommended for consideration by the Planning and Natural Resources Committee:

Service Scenario 2 – Emphasis on Visitor Experience

- **Spring and Fall Months (March–April, September–October).** 15-minute service, 7 days a week between 8:00 AM and 5:00 PM, and 30-minute service between 7:00 AM and 8:00 AM, and between 5:00 PM and 8:00 PM.
- **Summer Months (May–August).** 15-minute service, 7 days a week between 8:00 AM and 5:00 PM, and 30-minute service between 6:30 AM and 8:00 AM, and between 5:00 PM and 8:30 PM.
- **Winter Months (November–February).** 30-minute service Saturday – Sunday between 8:00 AM and 5:00 PM.

The higher level of service envisioned in Scenario 2 carries substantially higher cost as detailed in Section 3.6, Estimated Costs. However, as emphasized by the Planning and Natural Resources Committee, a program goal should be to provide as much service as funding allows to make the shuttle experience positive and encourage visitation. Service Scenario 2 provides that higher level of service and is expected to meet all visitor needs throughout the year, even at peak times.

Major factors in selecting appropriate level of shuttle service includes the following considerations:

Frequency of Service. The frequency of service is the most important component of shuttle ridership for visitors. It impacts ease of use, stress, and uncertainty. The more frequent a service, the less a Preserve visitor needs to pre-plan their trip or understand how to use the shuttle. Service every 30 minutes is generally considered a low level of service and would require visitors to time their trips to minimize wait time in the parking area and again at the trail waiting to return to their cars. Operating every 15 minutes would be advantageous for visitors, but based on existing visitation it would reduce the performance metrics of riders per trip or hour and significantly increase costs. Because the goal of building a parking lot on Verde Road and implementing shuttle service is to reduce congestion and parking constraints, the performance metric should be viewed as less important than that of improving access to the trailhead. Funding limitations and costs to provide a high level of service would be the main reason why service should run at a base level of 30 minutes.

Days of Operation. A higher level of service between March and October and weekend-only service between November and February puts service on the road when traffic is most congested and demand is highest while being mindful of costs.

Span of Service. The Preserve is open from sunrise to sunset, the times of which change drastically depending on the season. The year can be divided into three seasons based on daylight hours. Calculations for hours and costs included the following parameters:

- **Summer Months (May–August).** 14 hours of daylight
- **Spring/Fall Months (March, April, September, and October).** 12 hours of daylight
- **Winter Months (November–February).** 9 hours of daylight

Three service changes per year are common and can be done with minimum disruption to the overall schedule or confusion to the public because schedules can be published in a way that clearly shows when the earliest and latest trips run.

Fares. Consistent with District policy and the recommendation of the Planning and Natural Resources Committee, fares are not recommended for this shuttle service. If an agency such as SamTrans operates the service, the general fare policy of that agency would govern, though fares could be paid directly by the District or another funding source to make rides free to users.

3.5 Implementation Considerations and Recommendations

This section explores further details and recommendations for service delivery options including staffing, vehicles, vehicle maintenance, parking policies and enforcement, funding and partnerships, and marketing and outreach.

3.5.1 Service Delivery Options

There are three primary service operators with various options to connect people between the Verde Road and Purisima Creek Road parking areas.

Private Operator. Contracting with a private operator could provide a dedicated service, and it could handle all staffing, maintenance, and administrative requirements. Private contracting can scale as service demand or operating conditions change. This option would be the quickest to implement effectively. Most private operators expect a contract with a term of 3 years, and most contracts are written to allow an extension of up to 2 additional years.

Directly Operate In-House. With the lease or purchase of shuttle vehicles, District staff could operate the shuttle service. When considering immediate operating costs such as vehicles, fuel, and driver time, this may have a lower cost than a contracted operator. However, capturing all costs including ongoing maintenance and vehicle obligations, plus District staff time required to manage operations and oversight (see Section 3.5.2) – all of which would be wrapped into the overall rate of a contracted operator – the overall savings from direct District operation are expected to be negligible. Direct operation would create ongoing administrative obligations; introduce the risk of cost overruns that otherwise would be borne by a contractor; and require the District to build institutional expertise as a transportation service provider, which may distract from the District's core mission and could be delivered more efficiently by a specialized operator.

Public Agency (SamTrans) as the Operator. The public transit agency in San Mateo County–San Mateo County Transit District (SamTrans)–directly operates and contracts out bus service. A transit-to-trails concept may be viable, but because one does not exist today, it would take time to create

and implement. Costs per revenue hour may be slightly higher than a private operator, but other efficiencies may be realized that offset those costs. There are three options for a partnership with SamTrans:

- **Fixed Route Service.** While local transit provider SamTrans can provide economies of scale with its current bus operations, the agency is not likely to provide the type of focused, point-to-point service envisioned in Concept 1. New fixed routes have typically been identified in short- and long-range planning efforts that include extensive outreach; the identified routes are then phased in as funding becomes available or as warranted by demand. All existing fixed routes are connected in some way to the local or regional transit network, which would not be the case for Concept 1 without other substantial network changes that are not part of the agency's current needs or goals. In addition, a new fixed route serving only the Preserve also could trigger equity concerns under Title VI. Furthermore, routes that do not meet performance goals may have funds reallocated where need is greater, making the reliability of a long-term service unpredictable.
- **Ride Plus On-Demand Service.** The existing SamTrans on-demand service zone could be expanded to include the Preserve. This model could be best suited for weekday and off-season trips when demand is low. Because cell service is not reliable in the Preserve, visitors would need to book their return trip in advance, which is not ideal. SamTrans could extend on-demand service to the Verde Road parking area with no additional cost to the District, but riders would need to transfer to another shuttle to get to the trailhead.
- **Dedicated Shuttle.** A longer-term option suggested by SamTrans staff would be to access the shuttle contract to develop a dedicated shuttle. This new type of service would require a memorandum of understanding and a change to the current shuttle program eligibility. More research and collaboration with SamTrans would be needed to understand whether this is a viable option. Overall, there are efficiencies that could be realized with this model, but the potential cost savings are unknown without more detail. Under current policy, this shuttle would not be eligible for San Mateo County Transportation Authority or City/County Association of Governments of San Mateo County grants and would likely need to be fully funded unless other grants become available.

3.5.1.1 Recommendation

A private operator is likely the most efficient way to provide this shuttle service, and it would offer flexibility as the service changes to meet demand or funding availability. The benefit of contracting this type of service is that the Contractor would handle vehicle storage, staffing, driver training and schedules, fleet management and maintenance, and because their core competency is providing this type of service, they would have policies and procedures in place for unforeseen circumstances that arise. They would also be the most likely to be able to find economies of scale by having other contracts that allow them to spread costs across multiple projects.

Over the next year, conversations with SamTrans should continue to understand the conditions to make a dedicated shuttle viable in its program. The District should also continue to engage partners involved in the Midcoastside Transportation Demand Management (TDM) Plan that is sponsored by San Mateo County (in partnership with Half Moon Bay) to ensure planning efforts that involve TDM measures or transit changes keep travel demand to recreational facilities in the conversation.

3.5.2 Staffing

There is a base level of staffing needed regardless of the size of a shuttle program. For a small service such as Concept 1, the following staffing positions typically would be provided by a private operator, or would need to be fulfilled by District staff if operated in-house:

- A general manager or project manager who may handle the contracts.
- One administrative staff for invoicing and contract support.
- A pool of two to five drivers (typically two on duty at any given time).
- A pool of two to four dispatchers (typically one on duty at any given time).

Economies of scale are realized by companies that can share staff among multiple small contracts. A contractor of a very small service often does not use full-time employees for non-driver positions. This means staff typically manage multiple contracts at the same time to keep costs lower. The staffing levels above do not account for a role that could track ridership, recommend service adjustments, or track and report on operator performance, which are services District staff may be able to provide on a limited basis.

Drivers. The cost of hiring and training operators would be included in contractor cost proposals. Private companies that already have procedures in place, which ensures that the full financial burden of hiring and training operators would not fall on the District. The base level of service identified assumes one bus is out on the road Monday through Thursday. Drivers need bathroom and lunch breaks. To avoid service disruptions, slack can be built into the schedule for bathroom breaks but not for lunch breaks. While individual contracts vary based on labor negotiations, transit agencies and contracted operators typically have minimum pay blocks of 4 hours, and drivers working longer than 5 hours are often required to take a 15- to 30-minute meal break.

The distance from the yard (where vehicles are stored) to the shuttle route impacts how long drivers are behind the wheel and how many drivers are needed each day. Drivers would be paid overtime for more than 8 hours of work. With service recommended for 10 to 14 hours per day, two operators would be required to cover the span of service, with another two operators required when 15-minute service is operated. With seven-day-a-week service, there are often two additional staff—part time or full-time—so that drivers work 3, 4, or 5 days a week. When companies bid on this work, it is useful to be open to their suggestions on how to maximize their drivers' staff time. In some cases, they may offer more 4-hour work blocks so that meal breaks are not required. This requires more drivers on staff but may be more efficient for the operator.

In California, a commercial motor vehicle license is required for any driver carrying more than 10 passengers, which includes the driver, if the vehicle is used for transporting people for compensation, profit, or used by any nonprofit organization or group. Any driver carrying more than 15 people including the driver needs a commercial driver's license for any reason. A private company would ensure all drivers are adequately trained and licensed.

When contracting, it is important to check driver pay rates and escalation. Companies whose drivers are not in labor unions are often able to pay lower wages that reduce the overall cost of the contract but may come at the cost of higher driver turnover.

Dispatchers. Similarly, one dispatcher would be on duty at a time, but seven-day-a-week service often corresponds with two dispatchers scheduled per day. This role may require up to four people working part-time shifts, which could be distributed as two people working four days per week and two working three days per week.

Maintenance Staff. Maintenance staff needs should be quite low for this contract, and it is therefore recommended to have the private company also manage maintenance needs. When a contractor is not in charge of maintenance, it can cause a delay in a vehicle getting back on the road if it has been pulled out of service.

3.5.2.1 Recommendation

A private contractor can suggest key staff roles and estimate staff hours. They would also be best equipped to handle the intricacies of driver staffing. District staff would need to manage the contract and monitor performance. Customer service calls should go to the contractor first, but there should be a mechanism in place to ensure District staff are aware of the issues and how they are to be resolved.

3.5.3 Vehicles

Table 6 provides three examples of vehicles that could be used for this service. A number of considerations should be made when choosing a shuttle vehicle; these are outlined below.

Turnaround Requirements. The most efficient implementation of Concept 1 requires shuttles to turn around in the Purissima Creek Road parking area. Initial field measurements indicate the lot can accommodate at least a 24-foot vehicle—any of the examples listed in Table 6—using a three-point turn in the trailhead/restroom area. However, additional field measurements would be necessary to confirm maximum allowable dimensions per vehicle turn templates.

Vehicle Quantity. Assuming each vehicle can make a round trip in 30 minutes in Concept 1, one bus would be needed. However, if drivers stay with their vehicles, which is likely the case for a service like this, up to two buses per day would be needed to cover the hours of service during the day. When service is increased to 15-minute frequencies, four buses would be needed if drivers stay with their buses.

The significance of a driver staying with their bus is that in more urban areas, or where a system has many other routes nearby, a driver may be relieved for breaks or shifts and another driver begins service on the same vehicle. Staff relief at the Verde Road parking area would require another staff person driving there to pick up the driver on break or done with their shift, which is not efficient scheduling, and so vehicle road time is likely to coincide with driver shifts. In some cases, an additional vehicle may be deployed to operate a limited number of trips to give the operator a meal break meaning that for some set number of hours, during 30-minute service two buses could be operating, and during 15-minute service three buses could be operating.

For Concept 2 – Expanded Service Area, additional vehicle needs can be calculated based on distance, headways, and service span. Language can be added to a request for proposals and negotiated during contracting to be clear about what service expansion looks like and would cost. Specific examples of additional routes could be used as optional add-ons.

Spare Vehicles. In both service concepts, at least one spare vehicle should be available to accommodate maintenance needs or fill in during unexpected situations. This is another case where a private operator with multiple contracts may be able to achieve economies of scale by not having a spare vehicle that does not need to be purchased or leased as part of this specific contract.

Bicycles. Vehicles should have bicycle racks. Most vehicles would be able to handle between two and three bicycles per trip. Bicycle racks that can fit the wider tires and heavier weight of electric vehicles should be assumed in accordance with the District's Other Power-Driven Mobility Devices policy.

Wheelchairs. During contracting, it should be scoped for how many wheelchair or mobility device positions should be made available. Most vehicles should be able to carry two wheelchairs per trip as indicated in Table 6.

Bus Yard or Vehicle Storage. For contracted operators, the distance between the route and the nearest available bus yard is a major consideration when bidding on the work. Transit service contracts are commonly written to only pay for what is known as revenue service and not the time spent traveling between the yard and the route. As such, the distance a yard is from service directly impacts the bottom line for the company bidding on the work. This can result in low interest from potential operators or the inclusion of higher overhead costs into the ultimate contract.

Table 6. Key Characteristics of Typical Transit Shuttle Vehicles

Vehicle	Typical Capacity	Typical Length
Ford Transit E-350 	Up to 15 passengers, or up to 4 wheelchair passengers.	18–22 feet
Ford E-450 	Up to 25 passengers.	22–24 feet
3500 El Dorado National Minibus 	Up to 16 passengers, plus 2 wheelchair passengers.	24 feet

Zero-Emission Considerations. As California moves to zero-emission vehicles, electric vehicles are replacing diesel and hybrid-diesel fleets. The number of vehicles would increase to account for charging times. There are fewer smaller electric transit vehicles on the market, but the options are growing. The distance vehicles can travel between charges varies based on weather, age of the battery, and operating conditions. The ranges between charges advertised by vendors are often more than what operators report. Assuming an operator can make 14 round trips on a 7-hour shift, the bus will have traveled 126 miles, which does not include the distance to and from the bus yard; this exceeds the recommended distance between charges, which is usually closer to 100 miles in average conditions. More research should be conducted to analyze how much charging time between trips could recharge the battery enough to maintain 7-hour shifts.

If partial charging between trips is possible, but the time needed causes the next trip on each vehicle to be longer than every 30 minutes, an additional bus would be required. Partial charging between trips may also allow for a better than 30-minute cycle time. More analysis is needed here.

The California Air Resources Board requires vehicles with a gross weight rating of 10,000 or more (which includes most transit shuttles) to shut off vehicles whenever the expected idling time will exceed five minutes. If the Preserve prefers a more stringent idling policy, that also can be written into the contract.

Vehicle Branding. This can range from minimal signage on the side or front of a vehicle to full vehicle wraps. Figure 5 shows examples of vehicle branding for several recreation-focused shuttle services. Specific branding needs for the Preserve could be included in an agreement with a private operator.



Figure 5. Sample Vehicle Branding Schemes (Clockwise from top left: King County Metro Trailhead Direct; Columbia Area Transit Columbia Gorge Express [2 photos]; Marin Transit Muir Woods Shuttle)

Real-Time or Static Vehicle Tracking. Vehicle location tracking apps can let riders use their mobile phones to see how close a vehicle is in real time. To implement this, hardware called Automatic Vehicle Location that gives accurate global positioning system (GPS)-based location information would be installed on each vehicle. This hardware is common and adaptable to all vehicles that would be considered for this type of service. Landscapes with canyons can make the accuracy of GPS data less reliable in some areas, and it would be useful to perform tests to see if they work at the trailhead.

Publishing real-time vehicle location data for riders also would require staff time to download and publish General Transit Feed Specification (GTFS) data. This data is open-source and commonly used by transit agencies and third-party mobile apps. Alternatively, “static” GTFS data allows transit schedule information to be published but does not provide real-time tracking. There is still value to the schedule-only information, as it provides information about when the service is operating by day of the week and time of day.

Private operators may already have procedures in place to work with this data or have vehicles that are equipped with Automatic Vehicle Location devices. Expectations about how to handle ridership and vehicle-tracking data would be made clear in the contract.

3.5.3.1 Recommendation

In the initial implementation, the request for proposals for a private operator could be agnostic of fuel type and let the vendors offer what they have locally and can operate effectively and efficiently. There are excess vehicles on the peninsula due to technology companies downsizing their employee bussing programs since the pandemic. Plans for conversion to zero- or low-emission vehicles could be researched and vetted as a future program goal that would align with the District’s 2018 Climate Action Plan and 2024 Fleet Electrification Transition Plan. Private operators may need to comply with zero-emission fleet requirements as soon as 2027 per regulations by the California Air Resources Board. Any such requirement would be specified in the District’s contract solicitation language.

For bus storage, the request for proposals should be flexible regarding available properties, as it may make or break a company bidding on the work.

3.5.4 Vehicle Maintenance

Maintenance can be separately contracted or attached to the service contract. Separating the two is not usually in the favor of the operator who cannot control how soon a vehicle is repaired and available for service again. For small contracts, which includes the level service envisioned here, operators often contract out the maintenance, but they would still be responsible for having vehicles available for service. This is often more economical for the operator than having maintenance staff on payroll and needing to have a yard with maintenance bays, which would limit options for storage yards.

3.5.4.1 Recommendation

Keep the vehicle maintenance contract with the service contract. This also allows a company to swap in a vehicle as a replacement to keep service running, if needed. For small contracts, a private provider can contract out maintenance or have staff in-house.

3.5.5 Parking Policies and Enforcement

It is recommended that the Purisima Creek Road parking area is closed to non-shuttle vehicles while the shuttle is in operation, which is critical to shuttle operations. The direct bi-directional route can only operate if it turns around at the Purisima Road parking area. If cars parked in the lot prevent a bus from turning around, the shuttle would have to continue to Higgins Canyon Road along a 14-mile loop to return to the Verde Road parking area. This would negatively impact the schedule, and delays would be compounded over the day. Additionally, Higgins Canyon Road is at risk for washouts during rainy seasons, which could shut the service down completely if a bus cannot turn around.

Because a shuttle is expensive to operate, early implementation calls for weekend-only service in the off-peak season. If the parking lot is open Monday through Thursday for 6 months of the year, enforcement and signage to help people understand the hours would be crucial.

When designing the turnaround lot at Purisima Creek, parking stalls for rangers or other officials would still be needed. This may be possible past the vehicle gate.

The least capital-intensive option for closing the parking area during shuttle operation hours is using clear signage and enforcement. Prevention of parking infractions is preferred over punitive outcomes that reduce the likelihood of repeat visitation. Helping people do the right thing may involve in-person monitoring for the first few months of opening and particularly when service levels are going to change such as from peak season to the off-season. Physical barriers could also be considered, although these would need to be passable by shuttle vehicles and District staff.

Physical barriers to prevent access at night should be considered for weekends, in particular. An agreement giving the private operator access to open the gate on the first trip and lock the gates on the last trip of the evening should be expected.

Policies and procedures would need to be developed to let the transit operator know who to contact if they cannot pass on the road or turn around at the Purisima Creek Road parking area.

3.5.5.1 Recommendation

Staff should develop clear messaging around when the Purisima Creek Road parking area is available and when to park at the Verde Road parking area. Policies and procedures should be developed for what to do in case a vehicle cannot drive the route as scheduled.

3.5.6 Funding and Partnerships

Partnerships with entities such as San Mateo County, SamTrans, the City of Half Moon Bay, City/County Association of Governments of San Mateo County, and local businesses can help the District to leverage its existing funds such as the General Fund and Measure AA. These partnerships can also be used to secure local, regional, state, or nationally competitive grants.

The Route to Parks grant program is a potential grant funding opportunity, providing funding to local organizations in overcoming transportation challenges to recreational and environmental experiences.

In-kind funding by partners may also include the provision of services or capital. Examples of in-kind partnerships could include:

- Working with local private or governmental partners to negotiate storage at existing bus yards.
- Collaborating with other governmental partners on vehicle purchases.
- Locking in fuel prices to ensure favorable rates.
- Partnering with SamTrans to explore potential operating contract opportunities.
- Coordinating with the City of Half Moon Bay during their current planning efforts to take advantage of any possible synergies.
- Partnering with the County of San Mateo and the City/County Association of Governments of San Mateo County to identify future grant opportunities.

- Participating in local community events and other public outreach opportunities to raise awareness of the shuttle and the Preserve.

3.5.6.1 Recommendation

Staff should continue to develop relationships with local and regional agencies, potential local business partners, and agencies outside of the region that operate similar park shuttles.

3.5.7 Marketing and Outreach

Effective marketing for a new shuttle service requires using multiple channels to reach diverse audiences, especially for a new service where education is critical to user acceptance. The initial marketing campaign could begin up to one year prior to shuttle operations, with a heavy investment during that pre-launch year and the first full year of operation. Once those two years are complete, the marketing budget could be reduced gradually as the service becomes more familiar to visitors.

The elements of a typical marketing campaign include vehicle branding (discussed above), digital and social media advertising, print advertising, local mailers, community events, branded merchandise, and signage. Potential costs are outlined in Section 3.6, Estimated Costs.

3.6 Estimated Costs

Operating costs to run the shuttle are separated from the capital costs the District would incur related to the shuttle service. Some of the capital costs can be wrapped into other construction packages, such as signs, shelters, or paving. Labor costs incurred by the District to support the shuttle program are not included.

3.6.1 District Capital Costs

Capital costs the District can expect are shown in Table 7 and are broken out by the number of each item and when the District could expect to spend the money. Gaps between each year would not impact the overall project, in case it extends past 3 years. Cost range assumptions are based on bids from cost estimates and bid results for projects in the Bay Area.

Capital improvements include the following:

- **Design, technical studies, and permitting** for all site improvements described below.
- **Bus stop improvements** such as a paved landing pad at the bus stop, bench, shelter, and attached signage to indicate where people should wait for the bus.
- **Additional signage** at the Purissima Creek Road parking area (included in estimated costs below) and Verde Road parking area (costs accounted for separately as part of Verde Road parking area project).
- **Automatic gate** at the Purissima Creek Road parking area to control access for non-shuttle vehicles.

Table 7. Capital Costs

Cost Element	Base Cost Range by Year of Expenditure*	Year of Expenditure	Total Cost Range by Year of Expenditure*
Design (Year 1)	\$23,000 - \$34,500	Year 1	\$46,000 - \$69,000
Technical Studies (Year 1)	\$23,000 - \$34,500		
Design (Year 2)	\$23,700 - \$35,500	Year 2	\$77,700 - \$130,200
Technical Studies (Year 2)	\$23,700 - \$35,500		
Permitting (Year 2)	\$29,600 - \$59,200		
Materials & Construction (Year 3):		Year 3	\$159,200 - \$216,600
Bus Stop ADA* Landing Pad	\$6,100 - \$18,300		
Bus Stop Shelter, Bench & Attached Signs	\$54,900 - \$73,200		
Additional Signage	\$600 - \$3,100		
Automatic Gate	\$97,600 - \$122,000		
Total			\$282,200 - \$415,800

* All activities in Years 2-3 escalated by 3% per year to account for inflation. ADA = Americans with Disabilities Act.

3.6.2 Shuttle Operating Costs

The cost of a shuttle pilot can vary significantly depending on the level of service provided. The range of estimated costs for the two service scenarios presented in Section 3.4, Proposed Service are shown in Table 8 and Table 9 and summarized below:

- **Service Scenario 1 – Meeting Visitor Demand.** Estimated annual operating cost of \$572,550 to \$763,400
- **Service Scenario 2 – Emphasizing Visitor Experience.** Estimated annual operating cost of \$866,700 to \$1,155,600 (51% increase over Scenario 1)

As discussed above and emphasized by the Planning and Natural Resources Committee, a program goal should be to provide as much service as funding allows to make the shuttle experience positive and encourage visitation. Service Scenario 2 provides that higher level of service and is expected to meet all visitor needs throughout the year, even at the peak times identified in Section 3.2, Minimum Service Levels.

If the District opts for the lower costs of Service Scenario 1, it could work with the shuttle operator to program additional service at selected peak times when the highest visitation rates are expected; this cost could be built into the contract terms and would fall between the estimated costs of the two scenarios above. However, this generally is not recommended as it effectively would create more fluctuations in service throughout the year, which can confuse users and create an inconsistent experience. Generally it would be better to program the service envisioned in Service Scenario 2, which is already tailored to accommodate all visitor patterns while providing a high-quality user experience that minimizes waiting time.

Initial baseline operating costs included the assumption that the shuttle would operate closely to the hours the Preserve is open. However, hourly visitor demand data indicates that most visitors are there between the hours of 7:00 AM and 7:00 PM, and even earlier during winter months when it is dark earlier, and cost assumptions have been updated to better reflect visitor travel patterns.

Table 8. Projected Annual Operating Costs for Service Scenario 1 – Visitor Demand

Season	Hours of Service Per Day	Vehicle	Days of Operation per Week	Number of Days per Year	\$150/Hour	\$200/Hour
Winter	9	Bus #1	Sat - Sun	43	\$58,050	\$77,400
Spring/Fall	12	Bus #1	All days	122	\$219,600	\$292,800
	7	Bus #2	Sat - Sun	35	\$36,750	\$49,000
Summer	12	Bus #1	All days	123	\$221,400	\$295,200
	7	Bus #2	Sat - Sun	35	\$36,750	\$49,000
Total					\$572,550	\$763,400

Table 9. Projected Annual Operating Costs for Service Scenario 2 – Visitor Experience

Season	Hours of Service Per Day	Vehicle	Days of Operation per Week	Number of Days per Year	\$150/Hour	\$200/Hour
Winter	9	Bus #1	Sat - Sun	43	\$58,050	\$77,400
Spring/Fall	12	Bus #1	All days	122	\$219,600	\$292,800
	9	Bus #2			\$164,700	\$219,600
Summer	14	Bus #1	All days	123	\$258,300	\$344,400
	9	Bus #2			\$166,050	\$221,400
Total					\$866,700	\$1,155,600

The primary factors that affect the estimated shuttle operating costs are discussed below.

Labor Costs. The main operating expense in transit delivery is the cost of labor. The project team used a range of \$150 to \$200 per hour which is a realistic estimate of current operating costs. Negotiating a rate closer to or even slightly under \$150 per hour is possible, but this higher range recognizes that the Verde Road parking area may open in 2027, and operator wages have grown nationwide since the COVID-19 pandemic. Operators are also generally paid higher wages in the Bay Area compared to other cities in the United States due to competition among tech sector transportation shuttle jobs. Hourly costs include contractor fees, profit, labor including benefits attributable to payroll, overhead, utilities, and other administrative expenses.

Startup Costs. Start-up costs can range from \$15,000 to over \$75,000. These expenditures would occur in the years leading up to the first year of shuttle operations. The District is encouraged to work with private contractors to understand the time implications of contract requirements, such as the time required for certain vehicle procurements. Implementing a new shuttle program requires significant work by the contractor before service begins. Start-up tasks include confirming policies and procedures with the District, hiring drivers, training drivers, procuring vehicles for service and branding them, implementing software or other technology used in vehicles, confirming vehicle storage locations, and securing contracts for vehicle maintenance, washing, and fueling.

Technology-related startup costs are another fixed cost that can vary significantly depending on needs. Costs to boost cell signal near the Purisima Creek Trailhead so drivers can communicate with

dispatchers can be included in the cost of vehicles since hardware is involved or as its own line item. Software needed to run a service of this size is minimal, but if the service grows to require advance reservations, or to track riders electronically through automatic passenger counters, this would be added to the operating cost of the service. The pilot can start with a basic hardware solution for driver-to-dispatcher communication to keep costs low and assume ridership is tracked manually by the driver with clickers or devices already preinstalled on the bus. These costs are included in the estimate below.

Vehicle Costs. Three vehicles are assumed for the proposed levels of service. Two vehicles would be needed for regular service, and one spare vehicle should be available. For an order-of-magnitude cost estimate, a range of \$50,000 to \$500,000 per vehicle was used, representing small used vehicles to larger standard vehicles that would likely be used for this type of service.

Contractors often lease vehicles for a seven-year term, and costs are passed through for the years of the contract. They or the District may also purchase new or used vehicles outright. The variation in cost per vehicle can be large, and it is recommended the District work with the contractor to find a solution that works within a given budget and set of operating criteria, as contractors often can recommend vehicle lease or purchase options to suit the specific service needs. There may be additional savings a contractor is able to provide based on fleet availability from other contracts.

At this time, zero-emission vehicles are less reliable and less tested for the sizes needed for this service. In the future, vehicle charging infrastructure for the shuttles may be considered at the Verde Road parking area. Costs are not included here for future vehicle charging needs because zero-emission vehicles are not currently a viable solution for the Preserve and there are too many variables that may be out of date in the next few years.

Marketing Costs. Marketing costs can vary widely depending on how much District staff want to take on in-house and how much of the messaging is created internally. The elements of a typical marketing campaign are listed below along with rough estimated costs:

- **Campaign Management and Content Development.** \$2,000 - \$8,000 per month, typically paid to a public relations consultant (could be performed in-house)
- **Digital and Social Media Advertising.** \$10,000 - \$40,000 per year
- **Local Print Advertising.** \$5,000 - \$30,000 per year
- **Local Mailers.** \$2,000 - \$10,000 per year
- **Community Events.** \$3,000 - \$20,000 per year
- **Branded Merchandise.** \$2,000 - \$10,000 per year
- **Signage.** Included in capital costs for installation near the Purisima Creek Road and Verde Road parking areas.

The cost estimate assumed the marketing campaign would begin one year prior to shuttle operations, with a heavy investment during that pre-launch year and the first full year of operation. The estimate assumes 75% of the initial annual marketing budget is allocated in the second year of operation, tapering down to 50% of the initial budget in the third year.

3.6.3 Combined Six-Year Shuttle Pilot Costs

As shown in Table 10 and Table 11, considering all capital and operating costs, a three-year pilot program including infrastructure improvements and other start-up expenses could range from \$2.0 million to \$4.5 million over six years. The capital costs shown in Table 7 are assumed to take place in years 1 through 3, and the operating costs shown in Table 8 and Table 9 would begin in year 4 with a 3% escalation each year to account for inflation, though that often can be negotiated in the contract. Potential vehicle costs are based on typical lease/financing rates and shown as capital costs in years 4 through 6; however, if vehicles are leased via the shuttle contractor rather than purchased, those costs would be reflected as higher operating costs paid to the contractor, rather than as capital costs paid by the District.

Table 10. Estimated Range of Cost Estimates, Service Scenario 1 (Meeting Visitor Demand), Excluding District Staff Hours

Phase	Year	Capital & Vehicle Cost	Operations & Marketing Cost	Total Cost
		Range	Range	Range
Design	1	\$46,000 - \$69,000	-	\$46,000 - \$69,000
Permitting	2	\$77,000 - \$130,200	-	\$77,000 - \$130,200
Site Improvements & Shuttle Start Up	3	\$159,200 - \$216,600	Operations: \$15,000 - \$75,000 Marketing: \$46,000 - \$206,000	\$220,200 - \$497,600
Shuttle Pilot Operation	4	\$21,400 - \$214,300	Operations: \$572,550 - \$763,400 Marketing: \$47,400 - \$212,000	\$641,350 - \$1,189,900
	5	\$21,400 - \$214,300	Operations: \$589,700 - \$786,300 Marketing: \$36,600 - \$163,900	\$647,700 - \$1,164,500
	6	\$21,400 - \$214,300	Operations: \$607,400 - \$809,900 Marketing: \$18,800 - \$84,400	\$647,600 - \$1,108,600
6-Year Total				\$2,279,850 - \$4,159,800

Table 11. Estimated Range of Cost Estimates, Service Scenario 2 (Emphasizing Visitor Experience), Excluding District Staff Hours

Phase	Year	Capital & Vehicle Cost	Operations & Marketing Cost	Total Cost
		Range	Range	Range
Design	1	\$60,000 - \$69,000	-	\$46,000 - \$69,000
Permitting	2	\$77,000 - \$130,200	-	\$77,000 - \$130,200
Site Improvements & Shuttle Start Up	3	\$159,200 - \$216,600	Operations: \$15,000 - \$75,000 Marketing: \$46,000 - \$206,000	\$220,200 - \$497,600
Shuttle Pilot Operation	4	\$21,400 - \$214,300	Operations: \$866,700 - \$1,155,600 Marketing: \$47,400 - \$212,200	\$888,100 - \$1,369,900
	5	\$21,400 - \$214,300	Operations: \$892,700 - \$1,190,300 Marketing: \$36,600 - \$163,900	\$914,100 - \$1,404,600
	6	\$21,400 - \$214,300	Operations: \$919,500 - \$1,226,000 Marketing: \$18,800 - \$84,400	\$940,900 - \$1,440,300
6-Year Total				\$3,086,300 - \$4,911,600

3.6.4 District Staff Considerations

Additional operating expenses include District staff time for the following:

- Updating websites and social media content with new instructions.
- Providing ongoing messaging.
- Providing enforcement in-house.
- Connecting with enforcement agencies as needed.
- Monitoring the shuttle program and working with the contractor for any needed changes.

Early stages of planning will likely require group meetings, and messaging should be tested with visitors through social media engagement, in-person events, or other methods, led by the District's public affairs specialist. Multiple staff should be involved to ensure that messaging reaches diverse audiences, but the task would not require a new full-time position.

In-field work to ensure compliance with parking policies, and to help people with changes to parking procedures would likely be necessary for a minimum of 3 months. These could be roaming full-time positions, that can be worked in to other in-field duties, or as dedicated staff. For the first year of service, the District should plan on having staff at the Verde Road parking area and near the Purisima Creek Road parking area during holiday weekends where visitation is highest and visitors may not be familiar with changes.

The District's management analyst could be the primary program manager. This person would be responsible for monitoring on-time performance, customer satisfaction, maintaining a relationship with the contractor, serving as the point of contact for visitor and neighbor concerns, and working out issues with the appropriate departments (e.g. Visitor Services, Legal, General Manager's Office, etc.) as they arise. It is advised that the contract is set up in such a way that only metrics that are easy to collect and analyze are tracked, and that these metrics are also actionable. For example, if trips are running late at a particular time of day on a for more than a month, the management analyst should work with the contractor to track the issue, and if the results are the same after a specified amount of time, such as a quarter, then an outcome may be to realize that trips take longer and should be published to reflect that, or that boarding and unloading can be improved to keep trips leaving on time. Problem solving with the contractor should be expected to be a larger part of the day for the first 3 to 6 months of the contract, and for the first month of any service change, where schedules change.

Before service is implemented, the District would need to work with the contractor to develop and agree to policies that would keep service running when issues arise. This includes policies around drivers calling out sick, a vehicle going out of service for something such as a flat tire, operating during inclement weather, or if the road gets washed out. Policies about who contacts whom and the line of command will be important to the success of the program.

As the program gets running, the management analyst might expect to spend anywhere from five to 20 hours per week on the contract, with fluctuations throughout the month. More hours may be added as staff time allows.

3.6.5 Performance Measures

Performance measures are necessary to ensure the service maintains quality standards and remains financially sustainable. They also should reflect the overall goals of the shuttle service – recognizing the core tradeoff between service efficiency (moving riders at the lowest cost possible) and service quality (minimizing waiting time for a better user experience).

Table 12 lists potential performance measures for shuttle service, including their purpose and potential targets. Given the goals of the District to provide a shuttle service that alleviates current access issues and provides a positive visitor experience, the District should look for positive results in quality-focused metrics such as ridership, on-time performance, and visitor feedback. Efficiency-focused metrics such as cost per rider will necessarily lag the quality-focused metrics given the goals of the program and should be used mainly to monitor fiscal sustainability.

Evaluating these measures over the three-year pilot program can provide actionable information for the District to use in decision-making going forward. For example, if the District chooses to provide a high level of service in the pilot (such as that envisioned in Service Scenario 2) but then finds that ridership is consistently lower than expected, this could be justification to reduce future service to a level closer to Service Scenario 1.

Table 12. Potential Shuttle Performance Measures

Measure	Purpose	Potential Target
Total Cost	Ensure financial sustainability	No cost overruns
On-Time Performance	Ensure operator maintains service reliability (typically a contract provision)	>90% on-time performance; schedule changes if not feasible
Ridership	Monitor overall usage, peak visitor flows, and growth trends (all by month, day of week, and hour)	Daily and peak-hour rider counts not exceeding shuttle capacity
Cost per Rider	Assess overall efficiency of service	To be determined; balance with goals for quality of service
Shuttle Feedback	Assess Preserve visitors' experience with shuttle system, overall access, and likelihood to return; and preserve neighbor experience with parking and traffic conditions.	Sustained average ratings of "satisfied" or better

3.7 Next Steps

The following next steps should be considered in developing shuttle service at the Preserve:

- With so many factors impacting capital and operating costs, work with relevant internal parties to get feedback on the costs and initial service levels.
- Reach out to vendors to ask what they would advise for this type of service, what services and equipment they would provide as part of their vendor contract, and what their experience is with similar contracts.
- Develop a scope of services, performance expectations, and a monitoring program that is in line with the size of the proposed program. Monitoring operator performance should focus on reliability and safety more than ridership, although ridership should be tracked to make sure the program is operating at a scale that is appropriate for its ridership.
- Research fleet electrification for future implementation.
- Develop and foster partnerships with potential partners for future phases.
- Research future funding and partnership opportunities.

4. Parking Management Concepts and Recommendations

This section reviews the overall benefits, costs, and challenges of several parking management concepts in achieving the study's goals to reduce parking demand, manage parking resources, improve multimodal access and visitor circulation, and enhance visitor safety and overall experience at the Preserve. The three parking management concepts discussed here are reservation parking, real-time parking information, and carpool and vanpool parking.

4.1 Key Findings

4.1.1 Site Feasibility

Implementation of these strategies generally requires formalized parking (via marked stalls, signs, and/or curbs) making the Purisima Creek and Redwood Roadside parking areas generally unsuitable for implementation without substantial physical improvements. Additionally, these strategies are most effective when implemented in larger parking areas that can yield greater economies of scale for the investments and more substantial TDM benefits. As such, the expanded North Ridge and new Verde Road parking areas are the most feasible candidates for these strategies.

4.1.2 Expected Demand

The District's recent investments in new parking capacity at both the North Ridge and Verde Road parking areas are expected to accommodate parking demand in the near to medium term. Over the medium to long term, visitation to both sites is likely to increase through a combination of induced demand from the new capacity and the natural growth of the regional population. This is likely to occur first at North Ridge, given its known demand levels and smaller capacity compared to Verde Road.

4.1.3 Enforcement

Enforcement is key to the successful implementation of the parking strategies discussed below. Without the compliance generated from robust enforcement, the strategies will not be able to effectively manage transportation demand to the Preserve. As such, enforcement represents one of the most significant costs to implementation of parking management concepts. It also has the potential to be a significant point of friction for both the District and user; robust and continuous education—particularly accompanying the rollout of the strategies—is key to reducing this friction and lessening the need for punitive enforcement.

4.1.4 Concept Evaluation and Recommendations

Given the cost to implement any of these parking strategies — not just their initial startup costs, but also the ongoing costs of staffing and technology systems — they are not recommended for implementation until parking shortages are observed in the expanded North Ridge and new Verde Road parking areas. This additional parking capacity in which the District is already investing should be the primary strategy to address current shortages. However, once these sites consistently begin to approach capacity at peak times, the strategies evaluated below can be useful tools to further manage demand. A good indicator to begin planning for this is when demand regularly starts exceeding 80% of capacity during peak periods.

Table 13 summarizes the benefits, costs, and challenges of the three parking management concepts evaluated. The sections that follow contain additional details and considerations for each strategy, including potential operations scenarios for the Preserve and case studies from peer facilities.

Table 13. Summary of Parking Management Concepts

Concept	Summary of Benefits	Summary of Costs and Challenges	Summary of Recommendations
Reservation Parking	HIGH. Flexible strategy to directly manage the flow of vehicles to the Preserve, accomplishing the study's goal while also improving the user experience by creating certainty for their visit.	HIGH. Imposes administrative and financial requirements on users, and also requires substantial investment in technology infrastructure, enforcement services, and educational campaigns for successful implementation.	Once the expanded North Ridge and new Verde Road parking areas begin to consistently approach capacity at peak times, which is expected in the medium to long term, reservations are likely the most effective tool to further manage demand. Based on overall value provided by the available system options, the recommended system is an online booking portal with enforcement provided by periodic staff checks of license plates. This reduces the need for physical improvements on-site and should be paired with consistent enforcement and education.
Real-Time Parking Information	MODERATE. Limited benefits to managing transportation demand, mostly affecting "go/no-go" decisions by visitors from closer communities, but also improves the overall user experience by providing more certainty and tools for trip planning.	LOW TO MODERATE. Online-only system similar to Rancho San Antonio Preserve carries relatively low cost for both capital improvements and ongoing operations, and does not impose administrative or financial requirements on users.	While benefits to managing transportation demand are limited, an online-only real-time information system still can provide useful information at a relatively low cost to both users and the District. Given the success of a similar system at the Rancho San Antonio Preserve, this strategy may be worth pursuing in coordination with ongoing improvements at the expanded North Ridge and new Verde Road parking areas.
Carpool and Vanpool Parking	MODERATE. Flexible to accommodate current and future needs but may have limited practicality given the high number of visitors already traveling in groups.	HIGH. Frequent staff presence and high enforcement are needed to make this strategy effective, which negates the benefits of relatively low-cost capital improvements.	Once the expanded North Ridge and new Verde Road parking areas begin to consistently approach capacity at peak times, which is expected in the medium to long term, carpool and vanpool parking may provide moderate benefits, particularly if paired with a reservation system offering guaranteed parking to enhance the incentive to carpool or vanpool. However, the high costs required to verify and enforce carpool policies are likely to exceed the potential benefits.

4.2 Reservation Parking

Reservation parking is a popular parking management strategy to provide an improved visitor experience while also allowing facilities to manage the flow of vehicles into their property. As shown in sample photos in Figure 6, reservations are typically made through an online website, app, or over the phone, and can be time-based to ensure that visitors have a parking spot upon arrival.

A reservation parking system can yield high benefits and is likely the most promising parking strategy to accomplish District goals, but it also carries high costs and challenges.

- **Summary of Benefits. HIGH.** Flexible strategy to directly manage the flow of vehicles to the Preserve, accomplishing the study's goal while also improving the user experience by creating certainty for their visit.
- **Summary of Costs and Challenges. HIGH.** Imposes administrative and financial requirements on users, and also requires substantial investment in technology infrastructure, enforcement services, and educational campaigns for successful implementation.
- **Summary of Recommendations.** Once the expanded North Ridge and new Verde Road parking areas begin to consistently approach capacity at peak times, which is expected in the medium to long term, reservations are likely the most effective tool to further manage demand. Based on overall value provided by the available system options, the recommended system is an online booking portal with enforcement provided by periodic staff checks of license plates. This reduces the need for physical improvements on-site and should be paired with consistent enforcement and education.

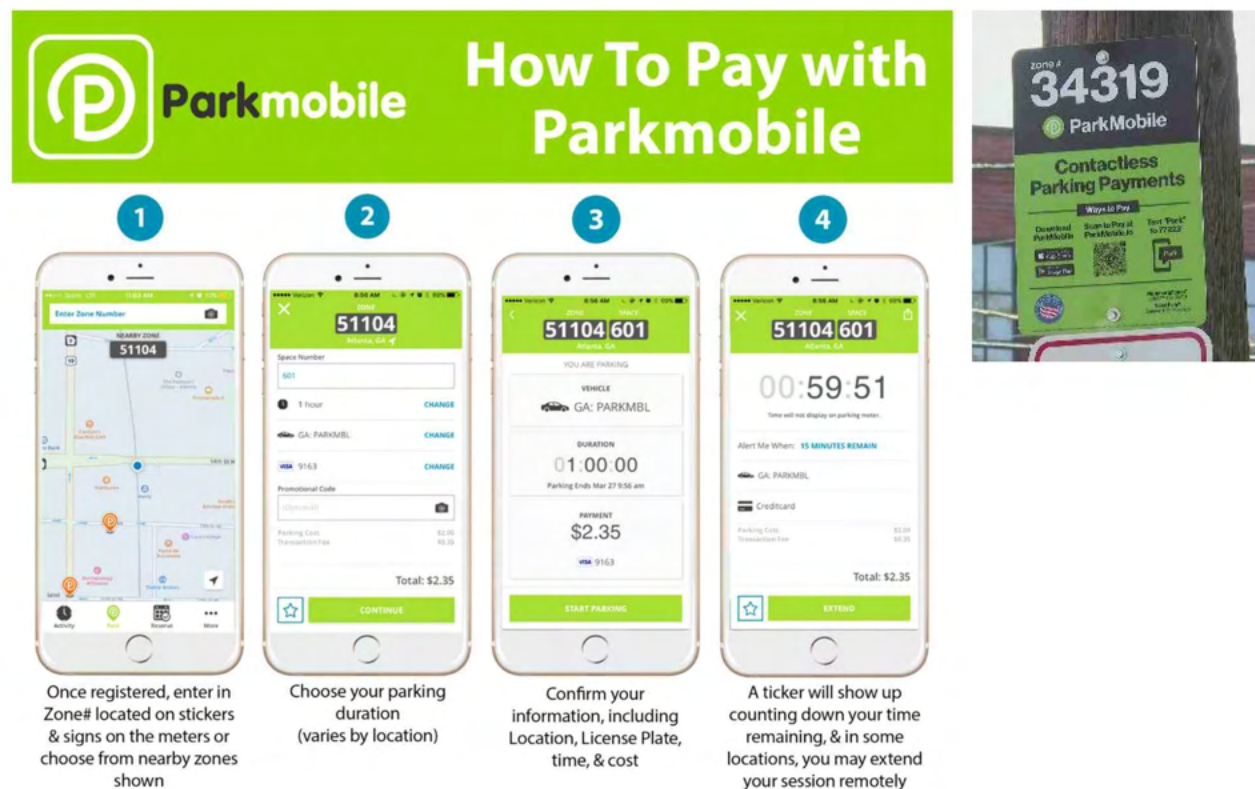


Figure 6. Sample App-Based Reservation System (*ParkMobile*)

4.2.1 Effectiveness in Managing Transportation Demand

Core Benefits. Compared to the other parking strategies evaluated in this report, a reservation parking system is the most effective tool to directly manage the flow of vehicles to the Preserve and accomplish the study goal of reducing parking and traffic impacts. A reservation system also provides flexibility for implementation across a variety of scenarios as conditions evolve, allowing for ongoing optimization of program rules and space allocation based on collected data and visitor feedback.

User Fees. As seen in the case studies below, reservation systems work best when they include a nominal user fee to reduce the occurrence of “no-shows” that waste valuable parking capacity during peak periods. Nearly all parking systems reviewed by the project team charge some fees for reservations, even as low as \$2-\$3 (see case studies below). However, user fees also can depress visitation rates and may require a change in District policy, which the Planning and Natural Resources Committee did not recommend pursuing at this time.

In some cases, the administrative requirements for users to reserve parking – going online, often in advance, and securing the reservation via a user account or other contact information – can provide a sufficient incentive to prevent most “no-show” occurrences. The project team found one example of this, at Heavenly Lake Tahoe Ski Resort, which requires no-fee reservations for carpool and disabled parking (see case studies in Section 4.4, Carpool and Vanpool Parking). Following this model, the District could choose to begin implementation of a reservation parking system without user fees, monitor its success in preventing “no-show” occurrences, and consider fees in the future only if needed.

Ancillary Benefits. A reservation system can enhance the visitor experience during peak times by providing certainty that parking will be available upon arrival. Reservations also would serve as an indicator of expected visitor demand to help District staff anticipate and plan for peak days.

Potential Strategy Combination. Parking reservations may be combined with other strategies, such as carpool and vanpool parking (discussed separately in this report) to increase potential effectiveness in managing transportation demand by creating additional incentives.

Potential Sites. As discussed earlier in this report, formalized parking is required for effective TDM strategy implementation, while implementation in larger lots yields the most benefit. Based on these criteria, the Purisima Creek and Redwood Roadside parking areas are generally unsuitable for reservation parking in their current states. Additionally, the District’s ongoing investment in new parking capacity at the North Ridge and Verde Road parking areas should be the primary strategy to address current parking shortages. Once those sites begin to consistently approach capacity at peak times, reservations are likely the most effective tool to further manage demand. A good indicator to begin planning for this is when demand regularly starts exceeding 80% of capacity during peak periods.

4.2.2 Implementation Considerations and Challenges

The “three E’s” of mobility planning—enforcement, engineering, and education—provide a useful framework for evaluating the considerations and challenges of implementing a reservation parking program at the Preserve.

4.2.2.1 Enforcement

A baseline level of enforcement—specifically, the ability to check reservations and follow through with citations and towing for violators—is required for successful implementation. Regular enforcement is

particularly important for a reservation system that reserves parking stalls for specific time blocks throughout the day, as these stalls must be available when new visitors arrive. This type of reservation system would maximize capacity, but it presents many challenges for enforcement. As noted in the case studies below, many high-demand recreation areas instead have a policy that reservations do not guarantee parking, and stalls are allocated on a first-come, first-served basis. While easier to enforce, this method may strain capacity on particularly popular days and lead to visitor frustration.

Enforcing a reservation parking system requires some combination of capital and technology costs and staffing costs. In general, there is a tradeoff between these types of enforcement systems:

- Technology-based enforcement with moderate staffing costs, such as a fully online reservation system that requires staff to check license plates once every 2 to 4 hours, generally carries the lowest cost and is the recommended enforcement method for the North Ridge and Verde Road parking areas.
- Technology-intensive enforcement with lower staffing costs, such as requiring visitors to scan proof of reservations to access a secured parking area via gate arm, would require physical modification to the parking areas. This system is less flexible in terms of adjusting the number of parking stalls available for reservation.
- Staff-intensive enforcement with lower capital and technology costs, such as a full-time parking attendant at the facility entrance, is typically the most expensive method of enforcement. This method would only be recommended in areas such as the Purisima Creek parking area where poor wireless connectivity would limit the effectiveness of technology systems. However, as discussed above, a reservation system is not recommended at Purisima Creek given its current lack of formalized parking and the primary recommendation for closure and operating shuttle service during peak times.

4.2.2.2 Engineering

- Many reservation parking systems rely on wireless connectivity for enforcement and for booking walk-up reservations at lots without parking attendants. Connectivity is available at both the North Ridge and Verde Road parking areas. Potential equity concerns around people who do not have smartphones could be solved by a digital kiosk, which would require wireless connectivity.
- In the absence of wireless cellular connectivity to allow on-site reservations via phone or text message, power would also be needed to implement an on-site, same-day reservation system that does not rely on a parking attendant, such as a digital kiosk. Assuming visitors would be able to make same-day reservations on their phones, this system would largely be used by people without smartphones or individuals who are less tech savvy. Power is expected to be included in the expanded North Ridge and new Verde Road parking areas.

4.2.2.3 Education

- Parking and entry reservation systems have become a best practice at popular recreational areas across the nation in recent years, accelerated by a combination of technology advancements, increasing visitation rates, and the widespread use of digital reservation systems during the COVID pandemic. Many people have become accustomed to these systems and are familiar with the process.
- Selecting a system that offers on-site, same-day reservations via kiosk or reservations via phone or text message may help users who do not have app-enabled smartphones or who are uncomfortable with these latest systems.

- As with any new change to access policies, a marketing campaign is recommended to inform visitors of the new requirements and process. This should include print and online advertisements targeted to communities located both east and west of the Preserve.
- Signage is recommended on-site and along roadway approaches to help educate visitors on the requirements and provide instructions for making reservations upon arrival (if available).
- For regular visitors who may be less familiar with new technology, having pre-trip planning information on site can help prepare people on how to use the system for their future trips.

4.2.3 Potential Operations at Purísima

Table 14 summarizes how a parking reservation system could work at the Preserve, including potential sites, operating scenarios, and an overview of the user experience.

Table 14. Potential Operations for Reservation Parking

Potential Sites	Potential Operating Scenario	Potential User Experience
Recommended in Medium to Long Term as Demand Begins to Exceed New Capacity: ▪ Expanded North Ridge parking area ▪ New Verde Road parking area	▪ Reservations available year-round, required for reservation spaces during holidays and weekends from June to early September. ▪ 60% of the lot designated for reserved spaces. ▪ 20% of reserved spaces available for day-of and in-person reservations. ▪ Staff scan license plates every 2–4 hours to ensure that only visitors with reservations park in designated spaces.	▪ Reservations made through online platform, over the phone, or in-person starting 1 month ahead of desired date. ▪ Visitors input vehicle information, including license plate number, when making a reservation. ▪ \$3 fee per vehicle; potential for reduced rates for carpools/vanpools of 3+ people (see carpool and vanpool parking description below). ▪ Visitors can arrive within a 2-hour window of their reservation time. ▪ Upon arrival, visitors follow signage to park in spaces designated for reserved parking.
Not Recommended Due to Low Benefits and High Cost: ▪ Purísima Creek Road parking area ▪ Redwood Roadside parking area		

4.2.4 Costs and Capital Requirements

Key to any parking reservation system is the software that allows visitors to reserve parking spaces. While much of the functionality is built into the software package, some staff time is needed to manage back-end web and software needs. On-site requirements include signage to raise awareness of the reservation requirements. A successful reservation system requires staff enforcement, which would take the form of staff periodically scanning license plates to ensure that only visitors who reserved a parking space are parked in the designated areas.

Table 15 lists the estimated costs to implement a parking reservation system.

Major vendors for reservation parking systems include:

- **ParkMobile:** <https://parkmobile.io/parking-solutions/transient-parking-reservations/>
- **VEVS:** <https://www.vevs.com/parking-reservation-software/>
- **ParkHub:** <https://parkhub.com/>
- **HONK:** <https://www.honkmobile.com/>

Table 15. Reservation Parking System Estimated Costs

System Component	Estimated Cost	Considerations
Implementation (Software, Signage, Gate arm)	\$15,000 per year for web platform/software application. \$15,000 for signage.	Software system is needed to allow for reservations to be made ahead of time.
Staff	One to two full-time employees.	Staff time needed for enforcement and to manage back-end web and software needs.

The project team conducted initial research for vendors ParkMobile and VEVs to identify specific system designs and other implementation details. However, technology and market conditions continue to evolve rapidly in the parking management industry and, as discussed above, this type of demand-management system is not expected to be needed at the Preserve for several years (following not just construction of the new Verde Road and expanded North Ridge parking areas, but also their consistently reaching 80% of capacity at peak times). Therefore while the information below provides a starting point to understand typical vendor systems, it likely will be outdated once the District actually begins its procurement process, and at that time the District should obtain fresh information from all active vendors.

ParkMobile. Founded in the U.S. and now part of European conglomerate EasyPark Group, ParkMobile is a major vendor of parking reservation and payment systems worldwide. Its implementations in the U.S. include many college campuses and other institutional settings, and its relatively wide adoption means that many drivers have already used ParkMobile systems and are familiar with the process and user interface.

ParkMobile's [“transient parking” reservation systems](#) are its core offerings that would meet the reservation-parking needs at the Preserve. With a typical example shown in Figure 6, the systems allow visitors to make reservations in advance and upon arrival via website, mobile app, text messaging, and kiosk. If the District chooses to implement a reservation fee, ParkMobile integrates with major payment systems as a registered merchant, with payment processing fees around 2%-4% commensurate with industry standard.

On the back end, a dashboard-style interface would allow the District to manage parking inventory, including the ability to designate special parking types, such as carpool and ADA, for specific reservations. The reservation system integrates with ParkMobile's [Insights platform](#), which provides data analysis capabilities to allow the District to monitor day-to-day parking usage as well as longer-term visitor trends.

VEVS. Similar to ParkMobile, VEVs is a Europe-based company that provides technology systems for parking and other mobility programs. The VEVs [parking reservation system](#) offers web- and app-based reservations, with a typical visitor interface shown in Figure 7. However, the typical VEVs implementation requires users to scan a QR code upon entry, which may be displayed via mobile app (requiring staffing and/or gate infrastructure) or may be printed and left on a visitor's car dashboard (requiring printing capabilities in advance or on site). Once the District is ready to begin procuring a reservation system, communication with VEVs sales associates would be required to determine the availability of other methods (such as license plate scanning) to monitor reservations.

The VEVs user dashboard, shown in Figure 8, would allow the District to manage and monitor its parking capacity, including the designation of special parking types, and is integrated with a payment system if the District chooses to implement a fee. Similar to ParkMobile's Insights platform, the VEVs dashboard also provides visitor data in various formats to assist the District in understanding and predicting long-term trends.

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[LOCATIONS](#)
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When and Where
 Choose a space
 Select Extras
 Checkout
 Finish

Car Park details

Location: **Luton Airport**

Duration: **2 days**

From: **11/1/2024, 6:00 am**
Change

To: **11/2/2024, 7:00 am**

Covered

The car park is located just 500 meters away from the airport. The bus service runs every 30 mins. Tickets cost \$4.50 one way and are available from the driver.

Free Shuttle

Drive directly to the departures lounge

Keep car keys

Electric car charging

Valet parking

\$ 22.00 per day

Parking only

\$ 19.00 per day

Book now

Outside

This is a Meet and Greet Service where you will be met at your departure terminal. Your car will be parked at the secure facility. With this service staff member will meet you at your departure terminal and take your car back to

Valet parking

\$ 18.00 per day

Parking only

Figure 7. Typical Reservation Parking System User Interface (VEVS)

The dashboard provides a comprehensive overview of the parking system's performance. Key metrics include:

- New Reservations:** 2 reservations, totaling \$554.60.
- Arrivals/Departures:** 2 arrivals, 0 departures.
- Parking Spaces:** 95 total spaces, with 2 booked and 93 available.

Latest Reservations:

- One Day:** ID: 12154000210, Total price: \$ 75.00, From: 11/1/2024, 6:00 am, To: 11/1/2024, 6:00 am, Duration: 1 day, Location: Luton Airport. Status: Confirmed.
- Two Day:** ID: 12154000210, Total price: \$ 150.00, From: 11/1/2024, 6:00 am, To: 11/2/2024, 6:00 am, Duration: 2 days, Location: Luton Airport. Status: Confirmed.

Arrivals and Departures Today:

Service	Date/Time	User	Vehicle	Location	ID
Meet & Greet Service	11/1/2024 11:20 am	Vera Stenham	VW Passat ABC1234	Luton Airport	12154000210
Indoor Parking	11/1/2024 1:21 pm	Amel Saeed	Mercedes S400	Garage 1	12154000210

Reservations by month: A line chart showing the trend of reservations from June 2023 to November 2023. The chart includes data for Confirmed (green), Pending (orange), and Cancelled (blue) reservations.

Parking spaces: A bar chart showing the availability of parking spaces across different locations. The legend indicates 'Booked' (blue) and 'Available' (grey) spaces.

Figure 8. Typical Reservation Parking System Management Dashboard (VEVS)

November 2024 | 474-8958-002

35

4.2.5 Case Studies

This section provides an overview of existing parking reservation programs that can provide useful guidance as the District develops its own potential program.

4.2.5.1 Hanauma Bay, Hawaii

- **Reservation Time Frame:** Reservations required year-round.
- **Fee:** \$3 parking fee per vehicle for nonresidents, \$1 for Hawaii residents.
- **Reservation Process:** Online reservations can be made 2 days in advance starting at 7 a.m.
- **Parking Availability:** Reservation does not guarantee parking; stalls are still first-come, first-served.

4.2.5.2 Yosemite National Park, California

- **Reservation Time Frame:** Entrance reservations required on varying frequencies throughout the busy season of April 13 through October 27 between 5 a.m. and 4 p.m. Reservations required from 5 a.m. to 4 p.m. every day July 1 through August 16. Otherwise required only on weekends and holidays.
- **Fee:** \$2 reservation fee (does not include \$35 per car park entrance fee).
- **Reservation Process:** Online reservations can be made 1 week in advance starting at 8 a.m. each day.
- **Parking Availability:** Reservation does not guarantee parking, but those without reservations must arrive outside of the 5 a.m. to 4 p.m. time frame (peak hours).

4.2.5.3 Big Basin State Park, California

- **Reservation Time Frame:** Reservations not required, but encouraged due to limited first-come, first-served parking availability.
- **Fee:** \$6 plus \$2 reservation fee for regular-sized autos, \$10 per vehicle without a reservation.
- **Reservation Process:** Online and over the phone reservations are available 2 months in advance with a limited number of spots also available 3 days in advance. Reservations need to be made by 6 a.m. on the day of the visit.
- **Parking Availability:** Reservation does guarantee parking, and the number of available spots are shown on an online calendar during the reservation process.

4.3 Real-Time Parking Information

Real-time parking information systems use sensors to track the number of available parking spaces in a parking area. This information can then be relayed to the public using dynamic message signs (DMS) or online tools as shown in Figure 7 and Figure 8, helping visitors more easily find available parking spaces. From a demand-management perspective, real-time information systems are most effective at distributing demand across multiple parking areas that serve the same destination, such as a shopping mall or stadium.

Given the remote nature of the Preserve—with a relatively low level of infrastructure and connectivity, and visitor travel times averaging 30-60 minutes or more—an online-only system like that at Rancho San Antonio Preserve is likely to provide the highest value and is the primary focus of this evaluation.

- **Summary of Benefits:** **MODERATE.** Limited benefits to managing transportation demand, mostly affecting “go/no-go” decisions by visitors from closer communities, but also improves the overall user experience by providing more certainty and tools for trip planning.
- **Summary of Costs and Challenges:** **LOW TO MODERATE.** Online-only system similar to Rancho San Antonio Preserve carries relatively low cost for both capital improvements and ongoing operations, and does not impose administrative or financial requirements on users.
- **Summary of Recommendations:** While benefits to managing transportation demand are limited, an online-only real-time information system still can provide useful information at a relatively low cost to both users and the District. Given the success of a similar system at the Rancho San Antonio Preserve, this strategy may be worth pursuing in coordination with ongoing improvements at the expanded North Ridge and new Verde Road parking areas.

4.3.1 Effectiveness in Managing Transportation Demand

Core Benefits. The expected effectiveness of a real-time information system in managing demand is lower than the other parking strategies evaluated in this report, particularly given the specific geography of the Preserve—with parking areas that are miles apart, each providing access to different areas and trails. These parking areas at the Preserve are significantly less “interchangeable” than the typical satellite parking areas that would surround a shopping mall or stadium. Combined with the long distances that many visitors travel to reach the Preserve, many are unlikely to want to change destinations to a different parking area and trailhead. As such, installing DMS on roadways approaching the Preserve are not recommended. However, the online system still may provide benefits for some users’ “go/no-go” decisions, especially for people coming from closer communities.

Potential Strategy Combination. Real-time parking information also can be layered with other parking and TDM strategies, which is beneficial given the ongoing parking capacity improvement efforts at the North Ridge and new Verde Road parking areas. For example, a real-time parking information system could provide data on the number of carpool/vanpool stalls (or other specially designated stalls such as disabled or ranger uses) available at any given time. However, this typically would require a more expensive system with individual sensors at each stall, or clearly separated entry/exit points for each type of parking with sensors at each point (further details in engineering section below).



Figure 9. Sample Real-Time Parking Information Signage and Equipment (*Rancho San Antonio*)

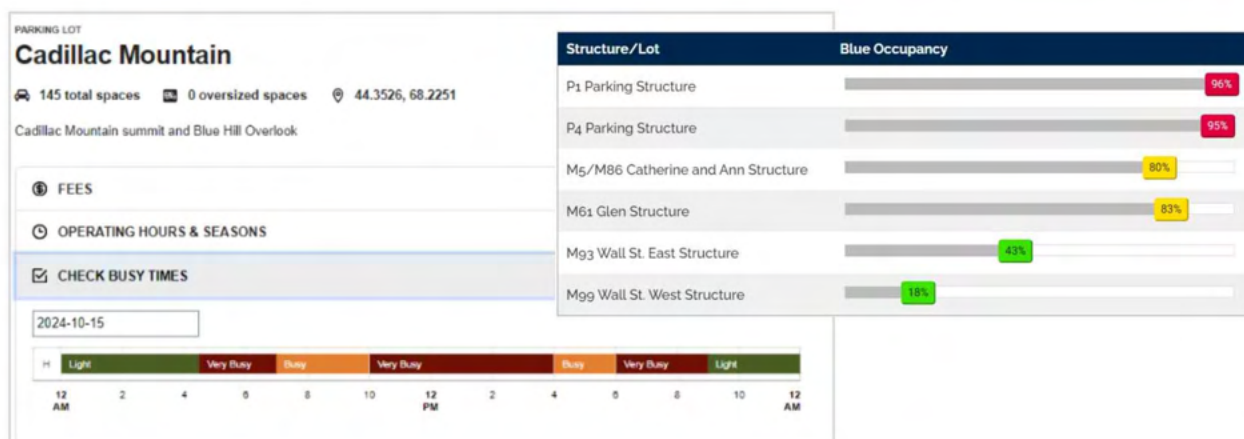


Figure 10. Sample Real-Time Parking Information Online Interfaces (*Acadia National Park; University of Michigan*)

4.3.2 Implementation Considerations and Challenges

While enforcement and education considerations are minimal for this parking management concept, several engineering challenges would need to be addressed prior to implementation at the Preserve.

4.3.2.1 Enforcement

- Minimal enforcement would be needed for a real-time information system. Key considerations may include traffic calming to slow vehicles as they pass sensors and signage to ensure that drivers use the correct lot entrance and exit points to ensure accurate counts.

4.3.2.2 Engineering

- Typical system architecture for a real-time parking system includes parking sensors—radar or magnetic loops—at either the parking area entry/exit points or in individual stalls (the latter being a much costlier option). These sensors are relatively easy to install and can withstand adverse weather conditions. They require little maintenance aside from replacement

approximately every 3 to 5 years. Repeaters, which are installed within 1,000 feet of the sensors, receive data from the sensors and communicate to the DMS and the cloud.

- The systems typically use wireless technology to communicate data. Without a wireless data signal, options would include underground wiring (carrying high capital cost) or the use of staff to manually update the DMS. DMS can be rented for busy seasons instead of purchasing, lowering initial costs and providing additional flexibility.
- A power source would be needed to run the DMS. Without power, staff would be needed to manually change signs as needed, which would be labor intensive and would reduce the signs' accuracy. Power is expected to be included in the expanded North Ridge and new Verde Road parking areas.

4.3.2.3 Education

- Little education is needed compared to other strategies. The real-time system is informational in nature and does not require advance reservations or other user processes.

4.3.3 Potential Operations at Purisima

Table 16 summarizes key characteristics of typical real-time parking information systems and how they could operate if implemented at the Preserve.

Table 16. Potential Operations for Real-Time Parking Information

Potential Sites	Potential Operating Scenario	User Experience
■ Real-time parking counts available on District webpage and counting sensors to be installed at ■ Expanded North Ridge parking area ■ New Verde Road parking area	■ Sensors installed at parking area entry/exit or at each parking stall. ■ If tied to a carpool and vanpool strategy (see next section), sensors could capture restricted vs. unrestricted supply separately. ■ Over time, trend information can be posted on the District's website to aid in visitor decision-making.	■ Visitors approaching the preserve get real-time parking supply information at key decision points to facilitate making alternate plans, if necessary. ■ Online information helps visitors plan to visit the park at less busy times.

4.3.4 Costs and Capital Requirements

This system has lower implementation and maintenance costs compared to other parking strategies. Estimated costs for a real-time parking system using entry/exit sensors are presented in Table 17. Implementing a system with individual parking stall sensors is estimated to cost over 3.5 times more, but it has not been seen to provide more accurate counts and is therefore not considered here.

Vendors for real-time parking availability systems include:

- **Parking Logix:** <https://parkinglogix.com/>
- **Scheidt & Bachmann:** <https://www.scheidt-bachmann.de/en/>
- **TCS International:** <https://www.tcsintl.com/>

Table 17. Real-Time Parking System Estimated Costs

System Component	Estimated Cost	Considerations
Installation	\$20,000 to \$30,000 per parking area.	Cost does not include underground wiring for wireless connectivity.
Implementation (sensors, repeaters, dynamic sign)	\$20,000 to \$30,000 per parking area.	N/A
Maintenance	Up to \$2,000 per year per parking area.	Some systems do not require maintenance costs aside from occasional battery replacement.
Staff	0.25 new staff person time.	Staff time needed to manage and administer the system.

4.3.5 Case Studies

Several case studies from national parks and preserves can provide guidance if the District chooses to implement a real-time parking information system at the Preserve.

4.3.5.1 Rocky Mountain National Park, Colorado

- **Infrastructure:** DMS and Highway Advisory Radio.
- **Locations:** At highway junctions facing incoming traffic flow.
- **Effects:** Park staff have noticed a positive change in traffic flow since the implementation of DMS technology and other ITS solutions.

4.3.5.2 Acadia National Park, Maine

- **Infrastructure:** Static signs, online portal with accompanying app, and in-person information at the visitor center.
- **Locations:** Static signs at two of the most popular parking lots.
- **Effects:** Real-time parking information signs reduced excess parking demand, and website-based parking information is well used and was found useful by visitors.

4.3.5.3 Rancho San Antonio Open Space Preserve, California

- **Infrastructure:** Sensors, repeaters, and dynamic signs; trenching to run power to the sign from a fuse box; traffic calming features (bollards and speed bumps).
- **Locations:** Sign located at the preserve entrance and sensors installed at strategic access locations for the parking areas.
- **Effects:** Website-based information is well used and was found useful by visitors. District staff recommend local vendor to reduce maintenance costs.

4.4 Carpool and Vanpool Parking

Designating parking stalls for carpools and vanpools—or high-occupancy vehicles of any type—is a best practice in parking management. This can be accomplished with signage and striping or paired with an online reservation system for additional functionality (Figure 9). Like high-occupancy lanes on freeways, this strategy encourages people to make trips in larger groups and can reduce the total number of cars traveling to the Preserve.

With relatively low benefits, carpool and vanpool parking is unlikely to provide significant value to the District, especially given its high levels of costs and challenges.

- **Summary of Benefits. MODERATE.** Carpool and vanpool parking is flexible to accommodate current and future needs, but it may have limited practicality given the high number of visitors already traveling in groups.
- **Summary of Costs and Challenges. HIGH.** Frequent staff presence and consistent enforcement are needed to make this strategy effective, which negates the benefits of relatively low-cost capital improvements.
- **Summary of Recommendations.** Once the expanded North Ridge and new Verde Road parking areas begin to consistently approach capacity at peak times, which is expected in the medium to long term, carpool and vanpool parking may provide moderate benefits, particularly if paired with a reservation system offering guaranteed parking to enhance the incentive to carpool or vanpool. However, the high costs required to verify and enforce carpool policies are likely to exceed the potential benefits.

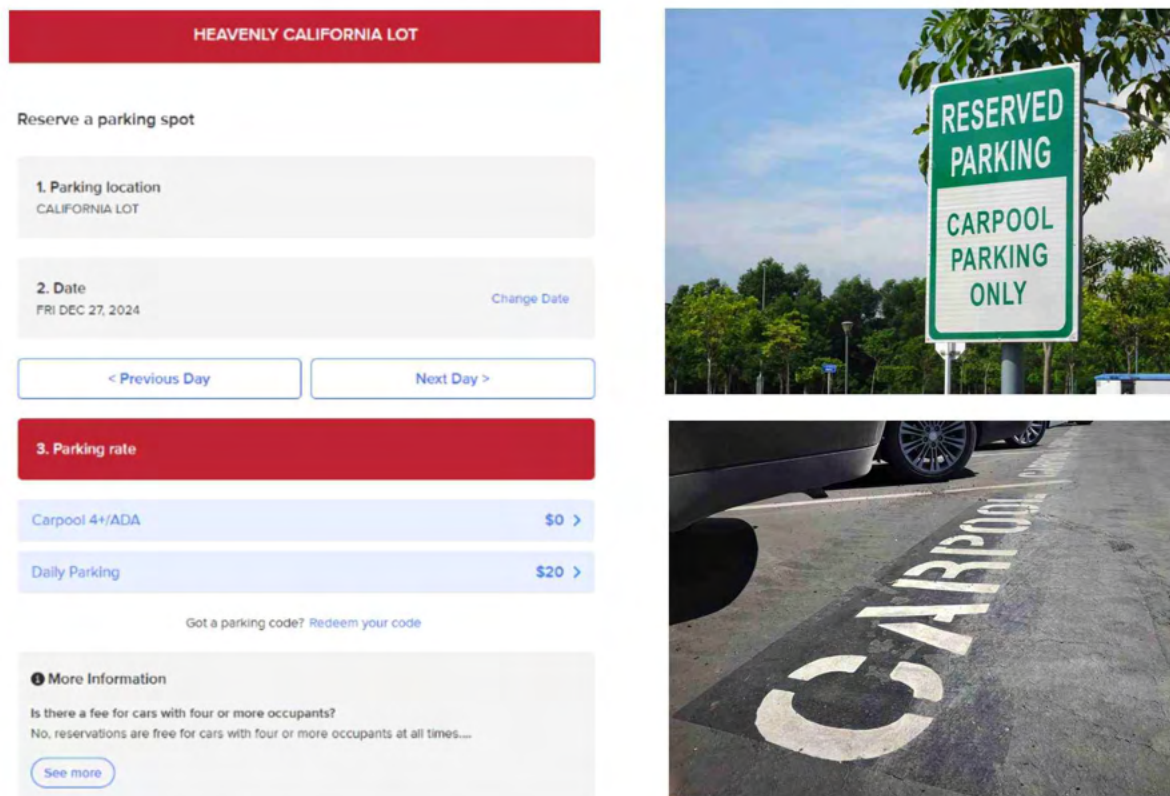


Figure 11. Sample Carpool Parking System and Signage (*Park Heavenly; CommutePA; California State University*)

4.4.1 Effectiveness in Managing Transportation Demand

Core Benefits. The primary benefit of carpool and vanpool parking occurs in parking areas that regularly reach capacity, such as the Purisima Creek and North Ridge parking areas. Setting aside space for the highest-occupancy vehicles increases the likelihood that these users will find parking when they arrive, thus creating an incentive for people to pool trips. The program also provides flexibility to adjust the allocation of space to carpools and vanpools on certain days or over time as conditions evolve, based collected data and visitor feedback.

Carpool and Vanpool Definition. Given the large number of visitors who already travel in groups to recreational activities such as hiking, to be effective this strategy likely would require defining carpools and vanpools as containing a minimum of three, or potentially even four, passengers per vehicle. While data on vehicle passenger counts is very limited, District staff have indicated that, like most hiking areas, solo trips to the Preserve are rare, and party sizes of two and three are very common. Previous field observations noted that approximately 20% to 35% of weekend visitors to the Preserve arrived in vehicles with three or more people.

Potential Strategy Combination. The incentive to travel in carpools and vanpools can be enhanced significantly through a reservation system that guarantees parking for these vehicles when booking in advance. (A reservation system is discussed separately in this report and could be paired with a carpool/vanpool parking program.) As shown in Figure 9 and discussed below, Heavenly Lake Tahoe Ski Resort allows free parking for carpools through its reservation system; however, effective enforcement of carpool rules requires staffed entry gates which is very costly.

4.4.2 Implementation Considerations and Challenges

The three E's of mobility planning—enforcement, engineering, and education—provide a useful framework for evaluating the considerations and challenges of implementing a carpool and vanpool parking program at the Preserve.

4.4.2.1 Enforcement

- Carpool and vanpool parking has more intensive enforcement needs than other parking strategies because the verification of high-occupancy status must occur before users leave their vehicles. Unless relying on an “honor system”—which is not recommended due to frequent compliance issues in high-demand locations—this likely would require full-time staffing during peak visitation hours.

4.4.2.2 Engineering

- The most basic implementation requires a relatively low level of infrastructure, which can be as simple as signage, paint, and striping. Ideally all stalls can remain flexible to be redesignated as needed to best serve demand.
- A more complete implementation could include improvements to parking area driveways such as gates and a staffed kiosk to support enforcement and verification upon entry.

4.4.2.3 Education

- Signage is recommended on-site and along roadway approaches to inform visitors about carpool and vanpool parking and guide them to the designated stalls.

4.4.3 Potential Operations at Purisima

Given the considerations above, Table 18 summarizes how a carpool and vanpool parking system could work at the Preserve, including potential sites, operating scenarios, and an overview of the user experience.

Table 18. Potential Operations for Carpool and Vanpool Parking

Potential Sites	Potential Operating Scenario	Potential User Experience
Feasible and may Provide Moderate Benefits: - Expanded North Ridge parking area - New Verde Road parking area Not Recommended due to Low Benefits and High Cost: - Purisima Creek Road parking area - Redwood Roadside parking area	- Signage, pavement striping, and curb paint at driveway entrance, at all turn/diverge points in the parking area, and at each stall. - Initial allocation of 35% of stalls, to be adjusted based on data and feedback. - Additional signage on adjacent roadway approaches if possible, to allow drivers to prepare. - Entry gates and staffed kiosk at driveway entrance to regulate and enforce high-occupancy policies. - Could pair with online reservation system (discussed separately) to add advance booking capabilities.	- While driving to the Preserve, signs indicate the availability of carpool/vanpool parking while approaching the parking area. - Upon entry, visitors check in with kiosk attendant to verify number of passengers and receive pass for carpool and vanpool parking. - Visitors follow signs and pavement striping to appropriate parking area.

4.4.4 Costs and Capital Requirements

Carpool and vanpool parking requires a minimum of capital requirements compared to the other concepts: signage is essentially the only physical addition that would be needed to implement the concept, and signage would require minimal maintenance and only occasional replacement. Rather, staff time accounts for the largest share of this concept's costs. Staff would be required to verify occupancy for carpools and vanpools and would be needed as long as these parking regulations are in effect.

Table 19 lists the estimated costs to implement a carpool signage vanpool parking system.

Table 19. Carpool signage Vanpool Parking System Estimated Costs

System Component	Estimated Cost	Considerations
Signage	\$100 - \$1,000 per sign, and \$5,000 - \$10,000 depending on size, style and foundation.	One-time cost, changed as needed if damaged.
Staff	One to two staff per parking area (more required during longer summer hours).	Staff needed to verify vehicle occupancy during days/times when carpool/vanpool parking is in effects.

4.4.5 Case Study

The following case study can provide guidance if the District chooses to develop a carpool signage vanpool parking system at the Preserve.

4.4.5.1 Heavenly Lake Tahoe Ski Resort, California

- **Reservation Time Frame:** Reservations required on weekends and holiday/peak periods at popular lots. Lots are free after 12:00 p.m. and no reservations are required.
- **Fee:** Carpool reservations are free for cars with four or more occupants, verified by parking attendants upon entry. Flat fee of \$20 per car otherwise.
- **Reservation Process:** Online reservations available at the start of the season, for the entire season.

5. Glossary

Table 20. Glossary

Term	Description
Activity Hub	Area with a high level of commercial activity.
Capital Improvements	Physical improvements made to a site, such as benches or signage.
Catchment Area	The area from which a population draws to get to a destination or use a service
Dispatcher	Individual coordinating and managing the logistics of a transit system including routing, service scheduling, and driver scheduling.
First-Last Mile Connector	The beginning/ending connection a rider makes to a transportation service.
Headway	The time between consecutive transit vehicles serving the same stop.
Highway Advisory Radio	Communication tool utilized by government organizations to broadcast traffic and travel information to motorists.
Intelligent Transportation Systems (ITS)	Electronics, communications, or information processing used to improve the efficiency of a transportation system.
Latent Demand	Service demand desired but unrealized due to constraints (i.e., lack of service).
Level of Service	Performance of a transit service from a traveler's perspective, typically measured by a variety of factors including convenience, capacity, reliability, and more.
On-Demand Service	A type of transit service where people book trips by phone, online, or mobile app, and are picked up at an agreed-upon location. Trips may be shared with other passengers but the vehicle does not travel along a set route.
Operating Costs	Ongoing expenses needed to administer and maintain transit service, such as wages, rent, insurance, and fuel. Operating costs can be fixed, meaning they do not change regardless of activity or performance, such as the cost of rent, or variable, which can include changes to cost in fuel.
Peak Demand	Demand for service at its highest point, typically described by time of day.
Transportation Junction	Area where multiple transportation services, routes, or roadways intersect.
Variable Messaging Board or Dynamic Message Sign (DMS)	Electronic message sign often used on roadways to inform the public about road traffic congestion, incidents, or other helpful information.

Planning & Natural Resource Committee Feedback

September 10, 2024 Planning & Natural Resources Committee Meeting

The below table summarizes Committee comments and questions that staff have responded to and addressed for further development of the pilot shuttle program and potential parking transportation demand management (TDM) programs.

09/10/24 Planning & Natural Resources Committee Comments	
PNR Committee Comments	Response ₁
<i>General</i>	
How will these improvements impact the Preserve's carrying capacity and impact on flora and fauna.	The potential environmental impacts associated with the proposed TDM strategies and associated improvements will be evaluated through the Purisima Comprehensive Use & Management Plan's CEQA process. Additionally, the Visitor Use Management and Carrying Capacity (Project 31913) is anticipated to initiate in FY26-27 whereby the District will develop a framework for visitor use management to assess visitor capacity and identify management strategies that protect resources and enhance the visitor experience for possible future implementation at one or more Midpen preserves.
<i>Shuttle</i>	
Do we have hourly data that will be useful to make better visitor demand estimations?	Raw visitor counter data was used to identify average and maximum hourly visitation. This data informed the shuttle service scenarios (Sections 3.2.1, 3.2.2, and 3.3.4).
Can shuttle vehicles complete a trip within 15 minutes?	Parametrix test drove the proposed route in March 2024 confirming the trip can be completed within 15 minutes.
Any reason the District couldn't include vehicle idling in a vendor contract?	The District could include idling requirements in the vendor contract. More discussion is included in Zero-Emission Considerations in Section 3.5.3.
Confirm projected annual operating costs in Tables 8 and 9 in the Consultant's report.	Parametrix revised the cost calculations in Tables 8 and 9 in Section 3.6.2.
Hours of shuttle service – Practicality of winter hours.	Hours of operation is for illustrative purposes and would be refined prior to pilot service launch. In Section 3.4, Parametrix reduced winter service hours to 9 hours.
Has there been outreach/engagement with neighbors/operators along the proposed route to ensure there is cooperative agreement?	Project staff conducted prior engagement with the neighbors and community during the Purisima Multimodal Access Study and the Purisima-to-the-Sea Feasibility study (2021-2022). District staff conducted additional neighbor engagement on November 14 and 19, 2024, see Attachment 3 for summary of feedback received from engagement meetings.

Make service as successful as possible with visitor experience in mind, “front-load” service.	Section 3.4 acknowledges the Committee’s preference for providing as much service to maximize a positive shuttle experience and encourage visitation and states that Service Scenario 2 should meet all visitors needs throughout the year.
Provide a roll-out marketing budget to ensure program is successful from initial launch.	Parametrix developed a marketing budget that has been included in Section 3.6.2.
Is there an app for tracking shuttle location?	Section 3.5.7 includes information about real-time or static vehicle tracking.
Marketing/Branding – The shuttle should be designed in a way that represents District’s philosophy.	Section 3.5.7 includes images of different open space shuttle service branding. The Board report discusses how the shuttle can be branded to convey District values. Implementation will engage the District’s Public Affairs department to ensure District values are integrated into the shuttle branding and marketing.
Staffing costs and FTE seem high	The range for annual costs reflects the midpoint of a position’s combined salary and benefits and FTE range.
Add Pescadero as a potential stop for Concept 2 – Expanded concept	Section 2.2 details a list of potential destinations for the expanded shuttle concept, and Pescadero is added to the list. Outreach to community organizations like Puente, Sustainable Pescadero, Pescadero Municipal Advisory Council (PMAC) and others can gauge interest for future ridership.
Shuttle Fares	Section 3.4 discusses the PNR Committee’s recommendation to pursue free shuttle service.
Performance Measures	New section 3.6.5 discusses performance measures.
Integrate with Interpretation	Planning staff can coordinate with Visitor Services staff to develop interpretive opportunities that integrate with the shuttle program.
<i>Parking Management Concepts</i>	
Helpful to include images of what these programs would look like / visual impacts.	Images of parking TDM strategies were added in the report.
Additional thresholds/indicators to implement parking TDM strategies – anything else other than exceeding 80% of parking capacity?	Parametrix confirmed that the 80% threshold is a transportation industry standard. District staff’s participation in the <i>San Mateo County Get There Together TDM Plan</i> proposes an 85% threshold, which aligns well with the District’s proposed metric. District staff also identified additional thresholds that are discussed in the Board report.
Identify other reservation fee amounts and alternatives to parking reservation fee	User Fees in Section 4.2.1 were updated to include a typical range of fees. Parametrix reviewed an additional open space destination that has implemented no fee parking reservations, which is a model that the District

	can consider for initial implementation. The District can monitor its effectiveness and make adjustments as needed.
Real-time parking with other parking types (carpool, parking reservations, ADA, etc)).	“Potential Strategy Combination” in Section 4.3.1 describes how to track parking counts based on other parking types. Based on staff review of the preliminary design of the future Verde parking area, there is a potential to track priority parking capacity (carpool, parking reservations, ADA, etc) separately using real-time parking technologies.
References to report sections associated with Parametrix draft report unless otherwise specified.	

Feedback

Neighbor Engagement Feedback 11/14 and 11/19

Shuttle program opportunities:

- Operations/Logistics
 - Shuttle program seems logical to implement.
 - Include Wifi at Purisima Creek trailhead: Starlink mini with solar panel on a tall pole on top of the restroom.
 - Match shuttle frequency to peak times – e.g. busy weekends only.
 - Provide parking at Purisima Creek trailhead on weekdays, early mornings, evening on weekends.

Shuttle program challenges:

- Operations/Logistics
 - Lack of cell coverage at Purisima Creek Trailhead, what do visitors do if they miss last shuttle of the day?
- Visitor Behavior
 - Active parking enforcement from the start, so that compliance with proposed parking changes supports shuttle program.

Ways to make shuttle program more successful:

- Education/Information
 - Incorporate advertising into all local communication platforms/organizations ex: churches/clubs, City of Half Moon Bay weekly eNews, schools & businesses, non-profits/stores.
 - Once plans to implement shuttle program are finalized, clearly communicate proposed parking changes to the public ahead of time, which could help the public embrace program.
 - Conduct outreach at the trailhead to raise awareness, talk to first time visitors. Hand out fliers. Use social media to promote shuttle service.
- Safety
 - Parking on Verde Road should be prohibited. Roadway is too narrow and will cause problems for residence and farms (two comments received).
- Operations/Logistics
 - Live in Half Moon Bay & run at Purisima 2-3x/week. Weekdays & early Sat/Sun are easy to park at Purisima Creek parking area. Please don't shut that down, doesn't want to take a shuttle.
 - Time the shuttle project so it doesn't start until the new trail to Irish Ridge is open – that creates an alternative path to preserve that doesn't require riding a shuttle.
 - No parking on weekends and holidays at Purisima Creek Road parking area.
 - Shuttle should accommodate bicycle rack for up to 6 bicycles.
 - Cell service needed along Purisima Canyon.
 - Program success depends on predictability and reliability of shuttle program.
- Community Engagement
 - Thank you for doing such a great job soliciting feedback on this plan.

Other TDM Programs:

- Real-time parking information: Provide insights on trends. Helpful to see if people are checking online parking counts.

Preserve Updates (Concept Parking Areas & Trail Alignment):

- New interpretive signs on the trails should communicate oil extraction history and remaining infrastructure.

Other Comments:

- Work with Caltrans to extend the parallel trail along (off) CA-1 from Half Moon Bay to Purisima Creek Road.
- More strictly enforce dog use regulations.
- Not enough bike racks.



Midpeninsula Regional
Open Space District

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT

PLANNING AND NATURAL RESOURCES COMMITTEE

Administrative Office
5050 El Camino Real
Los Altos, CA 94022

Tuesday, September 10, 2024

DRAFT MINUTES

CALL TO ORDER

Director Zoe Kersteen-Tucker called the meeting of the Planning and Natural Resources Committee to order at 2:02 p.m.

ROLL CALL

Members present: Craig Gleason, Karen Holman, Zoe Kersteen-Tucker

Members absent: None

Staff present: General Manager Ana Ruiz, General Counsel Hilary Stevenson, Assistant General Manager Susanna Chan, Assistant General Manager Brian Malone, District Clerk/Assistant to the General Manager Maria Soria, Executive Assistant/Deputy District Clerk Shaylynn Nelson, Planner III Tyler Smith, Senior Planner Gretchen Laustsen, Planning Manager Jane Mark

ADOPTION OF AGENDA

Motion: Director Holman moved, and Director Gleason seconded the motion to adopt the agenda.

ROLL CALL VOTE: 3-0-0

ORAL COMMUNICATIONS

District Clerk Maria Soria reported there were no public speakers for this item.

COMMITTEE BUSINESS

1. Select Committee Chair for 2024 Calendar Year

**Planning and Natural Resources Committee
September 10, 2024**

Director Gleason nominated Director Kersteen-Tucker to serve as the Committee Chair for calendar year 2024.

Director Kersteen-Tucker accepted the nomination.

Public comment opened at 2:04 p.m.

Ms. Soria reported there were no public speakers for this item.

Public comment closed at 2:04 p.m.

Motion: Director Gleason moved, and Director Holman seconded the motion to select Director Kersteen-Tucker as Committee Chair for Calendar Year 2024.

2. Approve the December 12, 2023 Planning and Natural Resources Committee Meeting Minutes

Public comment opened at 2:04 p.m.

Ms. Soria reported there were no public speakers for this item.

Public comment closed at 2:04 p.m.

Director Holman asked to implement a standard practice of presenting committee minutes for approval by either the end of the year or after the last meeting of the committee.

General Manager Ana Ruiz stated she would consult with the District Clerk to identify the best methodology, essentially presenting minutes by the end of the year.

Motion: Director Gleason moved, and Director Holman seconded the motion to approve the December 12, 2023 Planning and Natural Resources Committee meeting minutes.

ROLL CALL VOTE: 3-0-0

3. Shuttle and Parking Management Concepts for Purisima Creek Redwoods Open Space Preserve (R-24-111)

General Manager Ana Ruiz provided opening comments regarding multimodal strategies and solutions to address parking demands at different preserves. She stated that part of the issue at Purisima Creek Redwoods Open Space Preserve (Purisima, Preserve) is the terrain and the difficulty in providing sufficient parking space within the Preserve itself. The District recently purchased a property that enables the District to develop and pursue a larger parking area that will assist in the goals for access to nature. However, the public will continue to be motivated to park at the Purisima Road trailhead due to its quick access to the redwood forest. One solution has been identified to address the limited parking availability at one of the most popular trailhead entrances by shuttling people to the trailhead entrance. Staff will present details of various alternatives for this potential solution, the implementation steps, and the estimated costs. The Committee's feedback will enable staff to refine options before they are presented to the full Board.

**Planning and Natural Resources Committee
September 10, 2024**

Planner III Tyler Smith introduced Senior Planner Gretchen Laustsen and Parametrix consultants Pete Ruscitti, Jennifer Shriber, and Samantha Erickson. He reviewed the project background and explained the study was pursued to better manage visitation, improve the visitor experience, and increase greener modes of travel. The study recommended high and secondary transportation demand management (TDM) strategies to implement at the Preserve.

Mr. Ruscitti provided an overview of the shuttle concepts and explained the proposed level of service, the service delivery model, considerations for staffing and shuttle vehicles and estimated costs. Parametrix looked at two potential shuttle concepts: Concept 1) core service and Concept 2) expanded service area. The goal with Concept 1 is to connect the Purisima Creek trailhead to the Verde Road parking area and deliver core shuttle service with maximum efficiency. Concept 2 represents the potential to expand the shuttle to serve more destinations and meet more needs, but the costs rapidly increase once the project deviates from core services and may result in additional shuttles. Concept 2 is likely only feasible with the cooperation of partners to help with the funding and some of the operation. He suggested Concept 2 could also be considered later if Concept 1 is successful and there is high demand.

Mr. Ruscitti explained the three service delivery model options, which are: 1) private operator, 2) directly operating in-house, and 3) utilizing SamTrans as an operator. He explained a private operator is recommended as the best near-term option due to efficiency, quality, and flexibility but it does carry a high cost. A private operator would also provide the necessary staff to operate the shuttle. Mr. Ruscitti reviewed the startup costs in years 1-3 and the shuttle pilot operation costs, which are expected to occur in years 4-6. He stated the estimated six-year program cost total is between \$2,462,400 - \$3,666,200 with the assumption of private operator costs.

Director Gleason inquired if the departure times are fixed or if the shuttles rotate on their own schedule.

Mr. Ruscitti stated the times would likely be fixed with 15- or 30-minute frequencies, but in times of high demand the shuttles could run more frequently. He explained increasing the shuttle frequency would necessitate more vehicles and drivers. Running a shuttle every 15 minutes works out well for having one to two shuttles with perhaps a third as a spare. The costs increase quickly if more shuttles are added.

Director Holman asked if there has been outreach to neighbors along Purisima.

Mr. Smith stated outreach has not been done as part of this project since it is in the feasibility stage but would be done as the project progresses.

Ms. Laustsen confirmed that outreach has not occurred for this project but there was outreach for the development of the Purisima Creek Multimodal Access Study and the Purisima-to-the-Sea feasibility study. There was quite a bit of engagement with residents along Purisima Creek Road to ask for feedback about all of these components to the projects, including a potential shuttle between Verde Road and the Purisima Road Trailhead.

Ms. Ruiz stated the District has had difficulties with regards to roadside parking along Purisima Creek Road and has received numerous comments from neighbors. The District has also held meetings with neighbors and has been working on closing certain sections of the roadside where

**Planning and Natural Resources Committee
September 10, 2024**

there is not enough space for parking and safe passage. The shuttle program would alleviate the roadside parking issues, which have been constant for a long time.

Director Holman asked if the shuttles could accommodate backpacks and other items which patrons may bring.

Mr. Ruscitti confirmed the shuttle capacity could accommodate patrons' items. He noted the District would need to negotiate the allowance of dogs and bikes on the shuttles if the District chooses an external operator for the shuttle program.

Ms. Laustsen stated there would be ADA allowances for dogs and e-bikes and the shuttles would have capacity for wheelchairs and standard mountain bikes.

Director Holman noted the dollar discrepancy between the visitor demand and visitor experience tables does not appear to represent the service differences. For example, in the table which emphasizes the visitor experience, the row for fall/spring has a service frequency of 30 minutes instead of 15, which seems more consistent with emphasizing instead the visitor demand. She questioned why the cost for fall/spring would be more expensive for the visitor experience route when the service frequency is 30 minutes and the visitor demand route has 15-minute shuttle frequency 3 days a week, which should make it more expensive. She asked what is intended by emphasizing visitor demand versus visitor experience.

Mr. Ruscitti explained visitor demand reflects being able to transport the number of patrons over the course of the day with a shuttle arriving every 30 minutes. Visitor experience is focused on reducing wait time.

Ms. Erickson stated Parametrix was basing the frequency need off the current daily data but if they receive additional information about spikes in visitation throughout the day, it could better inform when additional service would be desired. The service would still remain reliable with 15- or 30-minute shuttle service, but the user wait time may increase if there is an influx of riders at the same time that exceeds the capacity of one shuttle.

Director Holman inquired if the shuttles could be visually customized to represent the District.

Mr. Ruscitti returned to the comment regarding the visitor demand and experience tables and explained the cost is not solely reflective of the service frequency but also how many buses would need to be on the road to meet the service frequency and the number of days per week the shuttles would operate at a given frequency.

Director Holman said the explanation does not resolve her question since fall/spring for each table reflects 7 days of shuttle operation.

Mr. Ruscitti responded that Parametrix will verify the math and consider different ways to present the information, so it is clear during the Board presentation.

Director Holman inquired about the staff costs on page 4 of the report and remarked the costs seemed high.

**Planning and Natural Resources Committee
September 10, 2024**

Mr. Ruscitti replied to Director Holman's question regarding the appearance of the shuttles that the District would be able to brand the vehicles and the cost would be factored into the contract with a private operator. He explained there may be vehicles in a shuttle rotation without the branding if the District increased service and exceeded the number of contracted shuttles.

Mr. Smith responded to Director Holman's question about staff costs that a management analyst, an administrative assistant, and a public affairs specialist would be needed to provide ongoing support once the shuttle program has been implemented. The rates reflected include escalation and the staff time would begin one year prior to the shuttle program operation.

Ms. Ruiz inquired if the total cost written in the report represents 3 years.

Mr. Smith clarified the total cost represents 3 years of program operation and one year of shuttle startup.

Director Holman suggested adding context to the column title that the total costs represents four years of operating costs.

Chair Kersteen-Tucker emphasized the District would benefit from providing an exceptional shuttle experience at the start since riders may not otherwise be willing to give it a second chance. She recommended highlighting that concept in the Board report.

Mr. Smith responded that it is possible that there will be high demand for the shuttle service and one solution is to negotiate modified service with a private contractor early in the process to foster positive visitor experience.

Chair Kersteen-Tucker suggested that the District do everything it can to meet demand so the first flush of people is well served, allowing for potential adjustments to service if demand decreased. She would like this concept further explored in the presentation to the full Board. She expressed interest in learning more about the degree to which staff has checked in with neighbors, particularly along Verde Road, where there are agricultural operations with big vehicles whose mobility could be impacted by the shuttles, especially during harvest time. She suggested talking to the operators to ensure they are comfortable with the plan. She questioned that a one-way shuttle trip would take 15 minutes and advised double-checking the numbers to ensure they reflect what the District can actually perform. She noted Concept 2 offered no stops south of Verde Road and inquired if consideration had been given to people from Pescadero or other southern stops.

Mr. Ruscitti replied options for southern areas were not explored since the feedback received indicated that the interest was for stops in the northern areas. He explained it is possible to look at additional areas but cautioned costs increase quickly.

Chair Kersteen-Tucker explained as the District expands diversity, equity, and inclusion efforts, it should be mindful of the large farm working community in the area. She suggested reaching out to Puente to see if there is interest in Pescadero.

Mr. Ruscitti concurred with Chair Kersteen-Tucker's point of ensuring a good initial visitor experience and noted it requires a big investment from the start. He explained one way to ensure

**Planning and Natural Resources Committee
September 10, 2024**

a successful launch is to allocate a substantial marketing budget to promote the shuttle. The marketing could include an online campaign, signage, or information on the website.

Chair Kersteen-Tucker said she would appreciate seeing a rollout budget, which would demonstrate to the Board the costs of front loading the project to ensure a successful launch which will likely save the District money in the long run. She noted the County's project was unsuccessful because it was poorly marketed, and people were not interested in giving it a second chance.

Mr. Ruscitti noted that a major barrier in transit in general is that people do not have information and the process seems intimidating and a hassle. He stated marketing does have a high cost but advances the user satisfaction.

Chair Kersteen-Tucker inquired if a stop will be added for the Cowell-Purisima trailhead since the parking lot frequently gets backed up on weekends.

Mr. Ruscitti stated it is possible, but adding a third stop begins to spread service thinly and may result in increased travel time or the need for another shuttle and driver. Adding a stop also introduces reliability issues. Cowell-Purisima is likely the easiest, lowest cost extra stop to add but it will increase costs.

Ms. Erickson stated they spoke with SamTrans about potentially expanding their ride plus service and there is potential to stop at Cowell-Purisima. She explained any of the shuttles could accommodate moving southbound but cautioned there may be safety issues with northbound traffic. She noted it is a small lot but there is space as long as cars are not parked there.

Chair Kersteen-Tucker explained the District is investing time and resources into making the trail connection and advised looking into a shuttle option.

Director Gleason inquired if the District has hourly data of the Preserve visitation.

Mr. Smith stated the District does have visitor counter data but it only provides daily data. Staff can explore if obtaining hourly data is an option but there may be limitations with the vendor. One possibility is to get hourly data by observing in-person.

Mr. Ruscitti suggested another option in the absence of the data is to assume that 20% of the daily visitation occurs during peak hours.

Director Gleason inquired if the District parking lot would no longer be available for general parking after the implementation of the shuttle.

Mr. Smith confirmed that parking at the Purisima Creek Road parking area and roadside parking would need to be restricted in order for the shuttle program to be successful since it would help enable the shuttle to maneuver in the parking lot and also incentivize the shuttle program.

Director Gleason requested clarification if restricting parking effectively means zero general parking spots.

**Planning and Natural Resources Committee
September 10, 2024**

Mr. Smith confirmed and added the District would need a strong public education campaign with clear signage for parking restrictions if the shuttle only operated on weekends.

Mr. Ruscitti added that parking enforcement would be important for reducing parking impacts along the road and to ensure the shuttle can turn around in the parking lot. A ranger would need to respond quickly if a car parks in the lot and prevents the shuttle from turning around or else the operation could grind to a halt. Signage would also be important.

Chair Kersteen-Tucker asked if the District is planning on launching an app for the shuttle.

Mr. Ruscitti stated ideally the shuttle would be simple enough to not need an app since it should operate on a routine schedule and an app adds extra complexity. He said there could be an app or webpage to educate people on the shuttle.

Ms. Erickson shared the District can take advantage of third party apps, such as Transit, to communicate late running shuttles and for users to obtain live information.

Director Holman inquired about the practicality of operating based on daylight hours since daylight hours fluctuate.

Ms. Erickson explained the District can be flexible with scheduling shuttle service, but it comes at a cost. The District could add a shuttle service if it believes it will lose visitors because there was not a final shuttle at a certain time, but she advised there is a benefit to having fixed hours during a season so visitors are not confused when the final shuttle leaves on a given day.

Mr. Ruscitti stated the District could expand service hours to 15 or 16 hours during the summer.

Director Holman suggested less hours during the summer to avoid disturbing the habitat.

Ms. Erickson stated she did consider the habitat when recommending the proposed service hours.

Ms. Shriber continued the presentation and stated that the three parking program concepts consist of reservation parking, real-time parking information, and carpool/vanpool parking. She remarked that enforcement and education is key to the successful implementation for all three concepts. She stated these strategies are not being recommended for the near term but rather towards the mid to long term or when parking shortages are being consistently observed in the expanded North Ridge parking lot as well as the new Verde Road parking lot. She explained reservations could be made online, over the phone, or potentially at a kiosk as walk-ups. One option is to require reservations during peak periods. A percentage of the lot could be designated as reservation-only parking but would require manual enforcement by District staff. The reservation would be linked to the license plate to enable enforcement. Some agencies implement a nominal reservation fee to encourage people to appear for their reservation. Ms. Shriber explained that while reservation parking has both high benefits and high costs, it is the most effective parking strategy for managing transportation demand. She reviewed the real-time parking information concept, which would use sensors to track the number of available spots in the North Ridge and Verde Road parking lots. The sensors are typically installed at the entryway and exit to the parking area, but some systems put a sensor at each parking stall, which is approximately 3.5 times as expensive, but has not been found to be substantially more accurate. The information obtained from the sensors could then be relayed to a website or app with real

**Planning and Natural Resources Committee
September 10, 2024**

time parking counts to improve the user experience. Ms. Shriber explained there are moderate benefits and low to moderate costs associated with implementing real-time parking information. Given the success at Rancho San Antonio Open Space Preserve and the relatively low costs, this strategy may be worth pursuing in coordination with other parking area projects. She continued to review the carpool/vanpool parking concept, which would designate parking stalls for carpools and vanpools. The number of stalls could be adjusted based on usage data. This parking concept would require enforcement, and it is recommended to have a staff person in place to verify that the vehicles have a certain number of people before a vehicle is allowed to park in the designated carpool area. Carpool/vanpool parking has moderate benefits, but given the high number of visitors already traveling in groups, it may have limited practicality. The parking concept also has high costs given the frequent staff presence and consistent enforcement, which would be needed. Ms. Shriber explained Parametrix believes real-time parking information is the most promising option.

Director Holman expressed interest in the appearance of the parking lots after implementing the parking concepts and suggested adding visuals for the Board presentation.

Mr. Smith stated they could take pictures of the parking lot at Rancho San Antonio Open Space Preserve to provide visuals for the Board presentation.

Director Holman inquired how feasible it would be to enlist volunteers to help manage the reservation program.

Assistant General Manager Brian Malone referred to the experience of ranger aides at Rancho San Antonio and noted enforcement positions receive many complaints from users, and it is best to leave enforcement to paid staff versus volunteers.

Director Gleason inquired if the reservation fee could be refundable so only no-shows would pay.

Mr. Smith explained the District would have to pay the booking platform fees and then pay the refund fees, so it may not be feasible.

Mr. Ruscitti stated an equity program is an option to provide a subsidy. The District would need to verify whether people appeared to ensure no-show costs were appropriately charged.

Chair Kersteen-Tucker expressed support for the real-time parking information concept, which would be beneficial for visitors coming from the coast or bay side. She inquired if the number of carpool and ADA spaces available could be conveyed in the real-time parking information.

Mr. Smith responded that if the carpool and ADA parking spaces were separated, it would be possible, but it becomes too complicated if different types of parking stalls are in the same area.

Chair Kersteen-Tucker said the information would be helpful, particularly if it had extensibility into the future for reservations.

Mr. Ruscitti explained the carpool area would either need to be separated from general parking to accurately track carpool availability or it would need to have sensors at each parking stall. He noted the issue with separated parking is that it is difficult to extend the carpool-only sections

**Planning and Natural Resources Committee
September 10, 2024**

due to sensor placement. A sensor at each parking stall would provide more granular data but would require more capital improvements and is high impact.

Chair Kersteen-Tucker asked if the sensor could be moved to expand the carpool section.

Mr. Ruscitti responded that the sensor could be moved, but it is not capable of detecting how many people are in the car. If a lot had both carpool and general parking, the sensor also would be unable to determine whether vehicles parked in the carpool or general stalls.

Chair Kersteen-Tucker expanded on her question that if there were a second sensor that monitors vehicles going in and out of a separate area, not necessarily a separate lot, the sensor could be moved in the future if additional carpool stalls were needed.

Mr. Ruscitti responded it is theoretically possible, but it can become complicated, and he does not want to over-promise the granularity of the data that can be provided.

Mr. Smith lastly reviewed the next steps and stated that the team will continue to build out implementation details for the TDM programs and incorporate the Committee's feedback to develop a final report. He asked whether the Committee wants to see additional information in the Board report in relation to the limited span of a shuttle service and constraints (question 1C) or initial greater shuttle capacity to anticipate early demand (1D), if there are any specific success criteria that the Committee would like to include, and any thoughts on considering collecting fees to better manage the parking reservation system.

Public comment opened at 4:00 p.m.

Ms. Soria reported there were no public speakers for this item.

Public comment closed at 4:00 p.m.

Director Gleason expressed optimism for the program and agreed with Director Kersteen-Tucker regarding the importance of focusing on a strong visitor experience from the start. He emphasized his preference is not to underinvest in a way that may degrade the quality of the program. He preferred not to have any fees for the shuttle and advocated to have a reasonable way to have a no net parking fee, acknowledging that this may present some complications. He supported engaging a private operator or a potential relationship with SamTrans, rather than the District developing its own capability. Furthermore, he agreed to defer expensive parking management strategies and recommended including only the capacity meter. He expressed appreciation for Director Holman's suggestions regarding the shuttle's appearance and proposed incorporating interpretive elements to enrich the visitor experience while awaiting or riding the shuttle and suggested involving the docents in that process.

Director Holman commented that she is not enthusiastic about changing the District's policy and charging a fare and suggested having a collection box but does not know how much incentive people would have to donate. She expressed that while the District is looking to provide access for public enjoyment it should also be ecologically sensitive. Furthermore, she commented that she is sensitive of whether the public will be supportive of spending the amount of money on this type of program. While the Muir Woods shuttle and parking reservation system is well known, it is in an urban setting, unlike the District, so a visitor's understanding of the District's shuttle and

**Planning and Natural Resources Committee
September 10, 2024**

parking reservation system may be different. She noted while there could be a deposit for no-shows to parking reservations, many people go to the preserves because they are low to no cost. She questioned whether a \$3 fee would deter no-shows and what the appropriate amount would be, since \$20 might discourage no-shows but may be too high for some people, potentially excluding those who might otherwise want to visit. She asked if this has been studied.

Mr. Ruscitti stated that part of the deterrent to no-shows is the cost, but it is also about the administrative process of making an online reservation, creating an account, and committing time that plays a significant role in ensuring people attend. In their case studies research, parking fees are generally either \$3, \$5, or \$10 at the most, which generally deters no-shows.

Director Holman inquired if staff asked the Committee to evaluate a more limited span of shuttle service because it is undetermined that the demand would justify the lead times and frequency.

Mr. Smith explained staff is requesting feedback because it is unknown whether the Committee's or Board of Directors' preference is for a large program that supports user experience or a smaller program that meets visitor demand.

Director Holman suggested that when this item is presented to the Board it would be helpful to add how many people are expected to go to Purisima. She expressed concern about the potential impact of increasing visitor numbers at Purisima. She questioned whether the public will still want to go with the increased number of people attending, whether they will question the District's decision, and what the impact will be to the Preserve. She suggested that more analysis is needed as well to consider how the public will react.

Director Holman commented in reference to questions 1(C) and (D) that it would be worth looking at a SamTrans partnership. Although working with a larger company could offer efficiencies, including cost efficiencies, smaller companies might provide more flexibility and possibly better service.

Director Holman pointed out that success criteria can be a two-edged sword. She emphasized the need to consider how many people are expected to go Purisima and whether the Preserve can accommodate the increased number. Additionally, she raised the concern about the impact of a shuttle passing by every 15 minutes. She suggested one success criteria could be the satisfaction of the residents on Purisima Creek Road as well as tracking how many people ride the shuttle.

Ms. Ruiz advised the consultants to consider different scenarios while evaluating the number of people entering the Preserve as a result of the shuttle. In one scenario, the limitation would be based on parking availability, which effectively controls both the ingress and egress and therefore influencing the shuttle use. In another scenario, there needs to be consideration for the people who park elsewhere and will be picked up at other shuttle stops to access Purisima. The team will need to take into consideration the different scenarios and scenario constraints to calculate the number of visitors, as opposed to calculating how many total people can sit in the shuttle and come in every 15 minutes.

Mr. Ruscitti agreed that additional data will improve the estimate for number of visitors to the Preserve, but advised it is difficult to foresee shuttle ridership. The team can make a lot of assumptions and come up with a number, but the best data comes from assuming the current number of visitors to the Preserve, plus some due to the availability of the shuttle or because of

**Planning and Natural Resources Committee
September 10, 2024**

natural growth. As the District adds more parking and a shuttle service, the best approach is to look at current data and adjust to what is learned, instead of trying to predict what might happen.

Director Holman noted that 10 hours in the winter seems to be a lot and asked to relook at this timeframe. She also inquired what happens in terms of a contract with the operator when it is too wet and unsafe for people to go into the Preserve.

Mr. Ruscitti stated that their assumption was using the daylight hours and trying to conform with the hours of the actual Preserve.

Director Holman pointed out that it gets dark quickly in the woods, and there is a difference between staying at the Preserve until sunset and catching the last shuttle at sunset. She emphasized the need for clear communication to ensure that no one is left behind.

Chair Kersteen-Tucker suggested staff consider what triggers would indicate it is time for the Board to consider implementing shuttle reservations, parking reservations and fare considerations. She noted that she would not want it to be like Muir Woods when at the last minute they implemented all of the amenities.

Mr. Ruscitti explained that in the transit industry, a common best practice is to consider adding capacity when usage reaches around 80%. The District is currently investing in additional parking to accommodate near-term demand. When the lot consistently becomes 80% - 90% full, it can be a signal to open more capacity or start implementing the systems that limit demand.

Chair Kersteen-Tucker requested that this information be added to the staff report for the Board's consideration. She highlighted Director Holman's concern about the Preserve's carrying capacity and being so effective at facilitating visitation that the Preserve becomes overcrowded and is no longer enjoyable. She emphasized that this is an issue for the Board to consider.

Chair Kersteen-Tucker expressed preference to go all-in to ensure a robust system, rather than starting with a smaller, limited shuttle service that may not be effective. Additionally, she would not favor a partnership with SamTrans due to their numerous constraints and limited budget. In her view, a private partner would offer greater flexibility free from the bureaucratic limitations that SamTrans faces. When it comes to specific success criteria, she suggested looking at repeat riders or people using it every weekend, and if they are finding it enjoyable. Also, if the shuttle effectively moves people to the Preserve in a comfortable way, and whether the service helps reduce the parking challenges. Furthermore, she would like to monitor public opinion not just amongst visitors but the larger community as Director Holman noted on Purisima Creek Road. As part of the marketing strategy, she suggested incorporating surveys or other methods to monitor user satisfaction to understanding how well the service is meeting the needs of its users. She mentioned the District is not to the point of needing to collect fees, but staff can consider what events would trigger the Board to begin considering implementing fees.

Director Holman asked if the intensity of the proposed plan would be supported by the Verde and Skyline parking lots.

Director Kersteen-Tucker advised for the final report to the Board to include a refresher of the proposed parking at Verde and Skyline in terms of additional capacity.

**Planning and Natural Resources Committee
September 10, 2024**

Mr. Malone provided background that lower Purisima previously had more than 100 cars parked along the roadway, which the District restricted not because of impacts to the Preserve, but due to the effects to the roadway. The Preserve could accommodate additional visitors from Verde and Skyline lots as it previously has done.

No formal Committee action required.

ADJOURNMENT

Chair Kersteen-Tucker adjourned the meeting of the Planning and Natural Resources Committee at 4:25 p.m.

Shaylynn Nelson, Deputy District Clerk
Maria Soria, District Clerk

APPENDIX E

Irish Ridge Habitat Restoration Plan



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IRISH RIDGE RESTORATION FEASIBILITY STUDY PURISIMA CREEK REDWOODS OPEN SPACE PRESERVE



San Mateo County, California

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TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 METHODS	4
2.1 EXISTING CONDITIONS ANALYSIS AND HABITAT MODELING	4
2.1.1 Existing Conditions Analysis.....	4
2.1.2 Plant Community Habitat Modeling	6
2.2 EVALUATION OF RARE PLANT INTRODUCTION	8
2.2.1 Rare Plant Targeting.....	8
2.2.2 Rare Plant Habitat Modeling.....	9
2.2.3 Status Surveys for Kings Mountain Manzanita.....	10
3.0 EXISTING CONDITIONS.....	10
3.1 REGIONAL SETTING.....	10
3.2 CLIMATE	11
3.3 SUBSTRATES.....	11
3.3.1 Geology.....	11
3.3.2 Soil Units and Litter.....	13
3.4 EXISTING PLANT COMMUNITIES.....	18
3.4.1 Non-Native Plant Communities.....	18
3.4.2 Native Plant Communities	20
4.0 RESULTS OF HABITAT MODELING.....	23
4.1 PLANT COMMUNITY HABITAT MODELING.....	23
4.2 RARE PLANT HABITAT MODELING.....	28
5.0 PROPOSED CONDITIONS	34
5.1 METHODS FOR NATIVE PLANT RESTORATION SPECIES SELECTION	34
5.1.1 Delineation of Restoration Sites.....	34
5.1.2 Restoration Treatment Type Classifications	34
5.1.3 Plant Palette Species Selection	35
5.2 RESULTS OF NATIVE PLANT RESTORATION SPECIES SELECTION	39
6.0 RESTORATION OBJECTIVES.....	41
7.0 RESTORATION RECOMMENDATIONS.....	42
8.0 RESTORATION METHODS AND SPECIFICATIONS	43
8.1 CONSTRUCTION ACCESS AND PROJECT SETUP	44
8.2 NATIVE PLANT SALVAGE	46
8.3 VEGETATION REMOVAL	46
8.3.1 Blackwood Acacia.....	46
8.3.2 French Broom.....	47
8.3.3 Jubatagrass.....	48
8.3.4 Manna Gum	48
8.3.5 Bishop Pine and Monterey Pine.....	49
8.4. MECHANICAL VEGETATION REMOVAL CLOSEOUT	49
8.5 NATIVE PLANT RESTORATION.....	49
9.0 RARE PLANT INTRODUCTION	51
9.1 GENERAL PLANTING RECOMMENDATIONS	51
9.2 KINGS MOUNTAIN MANZANITA	52
9.2.1 Species Background and Habitat Requirements.....	52
9.2.2 Introduction to the Project Site	53

9.3 WESTERN LEATHERWOOD	54
9.3.1 Species Background and Habitat Requirements.....	54
9.3.2 Introduction to the Project Site	54
9.4 CHORIS'S POPCORNFLOWER AND HICKMAN'S POPCORNFLOWER.....	55
9.4.1 Species Background and Habitat Requirements.....	55
9.4.2 Introduction to the Project Site	56
9.5 GAIRDNER'S YAMPAH	56
9.5.1 Species Background and Habitat Requirements.....	56
9.5.2 Introduction to the Project Site	57
9.6 CALIFORNIA BOTTLEBRUSH GRASS	57
9.6.1 Species Background and Habitat Requirements.....	57
9.6.2 Introduction to the Project Site	58
10.0 EROSION AND SEDIMENT CONTROL PLAN	58
11.0 AVOIDANCE AND MINIMIZATION MEASURES	58
12.0 MAINTENANCE.....	59
12.1 INVASIVE SPECIES.....	59
12.2 NATIVE PLANT RESTORATION AND RARE PLANT INTRODUCTIONS.....	60
13.0 MONITORING	60
13.1 VEGETATION REMOVAL MONITORING	61
13.2 NATIVE PLANT INSTALLATION	61
13.3 INTRODUCED RARE PLANTS	62
13.4 REPORTING	63
14.0 REFERENCES.....	64

FIGURES AND TABLES:

Figure 1. Regional Vicinity Map	2
Figure 2. USGS Topographic Map.....	3
Figure 3. Regional Climate Maps	12
Figure 4. Existing Conditions Maps.....	14
Figure 5. Plant Community Habitat Modeling Maps	26
Figure 6. Rare Plant Habitat Modeling Maps	32
Figure 7. Restoration Treatments.....	35
 Table 1. Characteristics of Soil Units Mapped within the Project Site	 13
Table 2. Soil Sample Analysis for the Project Site.	16
Table 3. Summary of Native Plant Community Habitat Attributes.	24
Table 4. Summary of Invasive Plant Community Habitat Attributes.	25
Table 5. Summary of King's Mountain Manzanita Population Attributes.	29
Table 6. Analysis of Special-Status Plant Habitat Attributes.....	30
Table 7. Restoration Treatment Type Classifications	36
Table 8. Summary of Plant Palette Types	37
Table 9. Species Code Definitions.....	38
Table 10. Restoration Area to be Restored by Habitat Type.	41
Table 11. Restoration Objectives, Outcomes, and Performance Measures..	42
Table 12. Summary of Restoration Treatments for the Project Site.....	44
Table 13. Summary of Restoration Treatments Per Site.	45
Table 14. Summary of Restoration Treatments Specifications.....	45
Table 15. Monitoring and Maintenance Requirements	61

APPENDICES:

Appendix A. Maps of Environmental Parameters

Appendix B. Representative Photographs of the Project Site

Appendix C. Reference Site Relevé Data Forms

Appendix D. CNPS Relevé Protocol Documentation and Instructions

Appendix E. Site Restoration Plan Map

Appendix F. Planting Palette Tables

Appendix G. Climate-Smart Analysis

1.0 INTRODUCTION

This document presents a habitat restoration feasibility study and restoration plan ('Plan') for the Irish Ridge project site ('project site'), located within the Purisima Creek Redwoods Open Space Preserve in central-western San Mateo County, California (**Figure 1**). The Plan was prepared by ecologists from Vollmar Natural Lands Consulting ('VNLC'), with contributions from Native Ecosystems and SWCA Environmental Consultants, and was prepared on behalf of the Midpeninsula Regional Open Space District ('Midpen'). The project site is dominated by exotic and invasive plants that provide low-quality habitat and that are expanding into adjacent areas. Portions of the site that remain as native plant communities feature excessive woody debris that could serve as ladder fuels, thereby increasing the risk of high-intensity wildfire. Midpen intends to remove the invasive plants and to thin some of the woody debris, and is also proposing to construct a trail, named Purisima-to-the-Sea, through the project site. The trail will connect the existing Irish Ridge Trail to the Pacific Ocean coastline. The trail project requires mitigation for impacts to bigleaf maple (*Acer macrophyllum*) and needlegrass (*Stipa* spp.), and this Plan includes planting of these species in the project site. Re-establishing native plants within the cleared areas would not only restore the habitat but will serve to reduce the potential for the re-colonization of the area by invasive plant species. The habitat restoration, which would involve management and monitoring, also presents an opportunity to reintroduce rare and endangered plants to the area (henceforth referred to as introduction since the targeted species may or may not have historically occurred in the area). This Plan includes analysis of the potential to introduce such species to the project site. It is currently anticipated that implementation of this Irish Ridge Habitat Restoration Plan will be utilized as mitigation for one or more Midpen projects within the Purisima Creek Redwoods Open Space Preserve, such as the adjacent Purisima-to-the-Sea Trail project. The proposed target habitats and species composition associated with this Plan may therefore be subject to change once the permitting and environmental review of those separate projects is complete.

The project site is 42.10 acres and consists of two separate units, referred to as Unit 1 and Unit 2 (**Figure 2**). Unit 1 is a 23.70-acre area, including a 16.27-acre area that would be completely cleared of vegetation ('restoration area')—the remainder would be thinned of native woody species. Unit 2 consists of two separate polygons west of Unit 1 that are 0.30 acre and 18.10 acres, of which an additional 16.29 acres would be restored. Thus, the restoration area amounts to a total of 32.56 acres. Unit 1 is dominated by blackwood acacia (*Acacia melanoxylon*), French broom (*Genista monspessulana*), jubatagrass (*Cortaderia jubata*), and more limited numbers of Monterey pine (*Pinus radiata*), while Unit 2 is dominated by manna gum (*Eucalyptus viminalis*), Bishop pine (*Pinus muricata*), and jubatagrass.

The project site is located within the 4,711-acre Purisima Creek Redwoods Open Space Preserve, which is owned and managed by Midpen. It provides public access via a network of recreational trails. The project site straddles the western slopes of the Santa Cruz Mountains approximately 5.5 miles south of the City of Half Moon Bay, California. The site is mapped on the Woodside 7½ minute U.S. Geological Survey (USGS) topographic quadrangle (**Figure 2**), within the Cañada de Verde Arroyo de la Purisima land grant (no Township, Range, or Section designations). The property is located along both sides of Irish Ridge Trail, which is accessible from Highway 1 via Verde Road and Lobitos Creek Road.

In addition to the area colonized by invasive plants, the project site encompasses a mix of habitats that may be broadly defined as coniferous forest, oak woodland, coastal scrub, and grassland. With much of the project area having been historically logged or cleared, most of the onsite habitats feature at least some degree of disturbance. Because the project site is within a large preserve and surrounded by steep mountains, natural habitats extend a considerable distance on all sides, though extensive areas have been converted to agricultural and residential housing along the coastal terrace to the west. Project site habitats are discussed in detail below in **Section 3.4**.

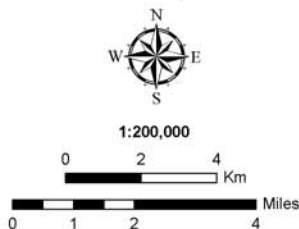


Legend

- Highway
- Project Boundary (42.1 ac.)
- Purisima to the Sea 20-ft Buffer
- Midpen Preserve
- Other Public or Preserved Land
- Water Body
- Urbanized Area
- County Boundary

Data Sources: Midpen, 2018 | CPAD, 2016
 USGS, Various | GAP, 1998 | VNLC, 2018
 GAP Analysis Project, 1998 | TIGER, 2012
 GIS/Cartography by: Jake Schweitzer, Dec. 2019
 Map File: Vicinity_537_A_P_2022-1219.mxd

FIGURE 1
Regional Vicinity Map
 Irish Ridge Restoration Feasibility Study
 Purisima Creek Redwoods Open Space Preserve
 San Mateo County, California



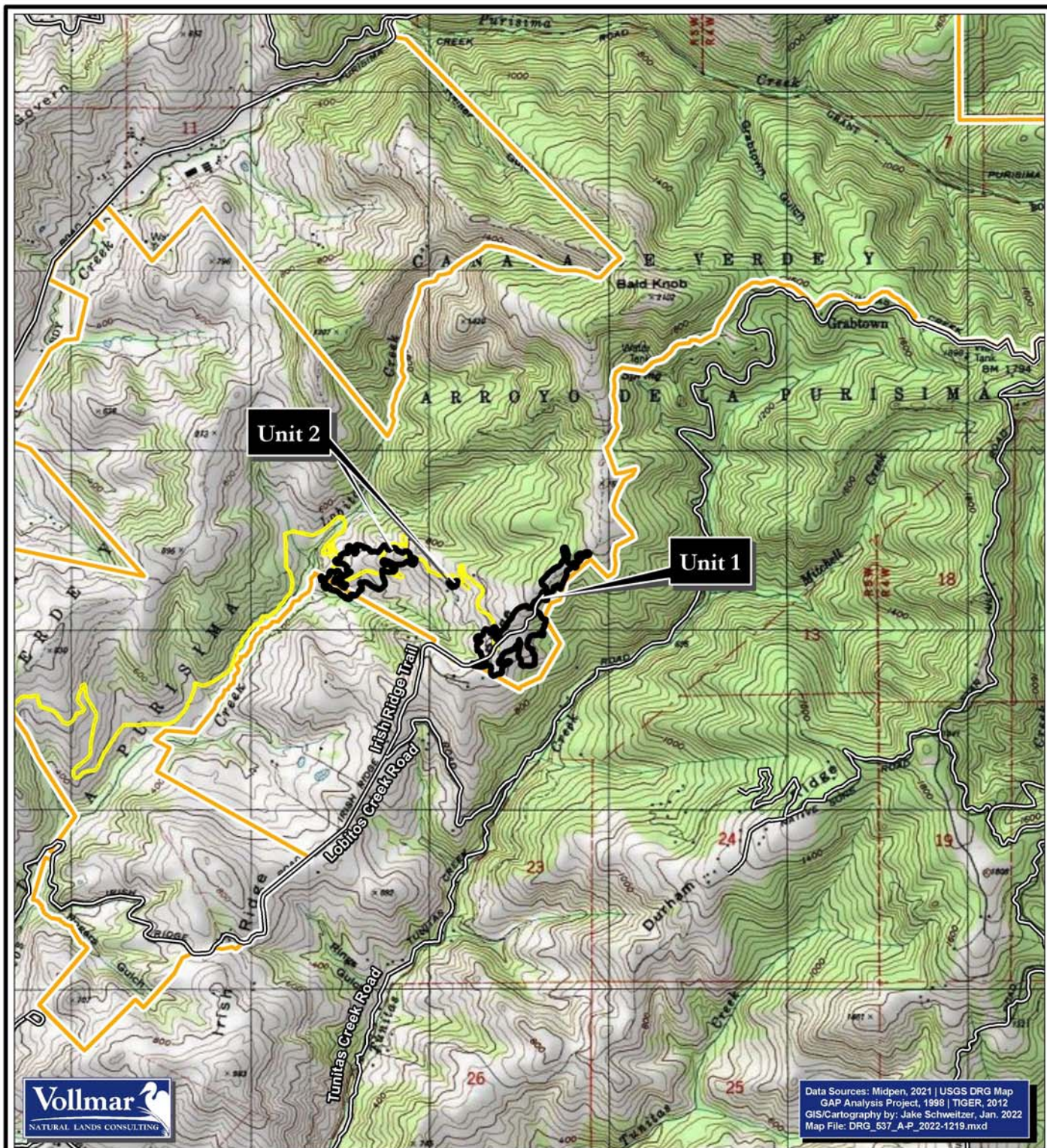
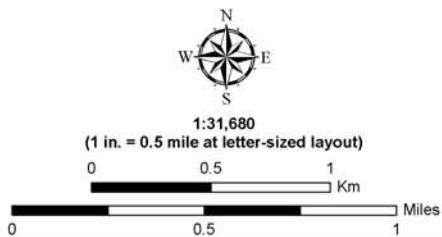


FIGURE 2
USGS Topographic Map
Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California



2.0 METHODS

2.1 Existing Conditions Analysis and Habitat Modeling

A combination of field surveys and remote habitat modeling were completed in order to document and analyze existing conditions and to plan for habitat restoration within the project site. VNLC conducted protocol-level botanical surveys within the area in 2019, though the project site boundaries were later modified to include additional areas of invasive trees as well as areas of excessive fuel loads. VNLC conducted field surveys within the revised project site boundaries in 2022 and 2025 as part of the habitat restoration feasibility study. These more recent surveys focused on confirming the extent of invasive plant species versus native species, investigating soil and litter conditions, and establishing reference sites within locally occurring intact native plant communities. The habitat modeling involved the use of the best available geographic information systems ('GIS') data, including recently completed plant community mapping, high-resolution digital elevation models, mapped soil units, and climate data.

In preparing for the various field surveys, VNLC ecologists reviewed existing documentation for the project, including a report prepared by the previous project consultant as well as spatial data provided by Midpen. Applied Technology and Science prepared an initial restoration feasibility study report and identified the primary invasive tree species within the project site. Midpen provided the project site and plant community boundaries in GIS data format. The plant community boundaries were produced between 2020 and 2022 (using 2020 aerial photography) by Tukman Geospatial ('Tukman') for the National Parks Conservancy; the dataset covers the entirety of San Mateo County. The plant communities include stands of invasive trees as well as native plant community types. In addition, soil unit boundaries as available from the United States Department of Agriculture (USDA 2022) were processed for the project site and surrounding areas. Soil attribute information was compiled for the soil units, including parent material, pH, surface texture, organic content, and other parameters. Finally, one-meter pixel resolution digital elevation models ('DEMs') were processed to produce elevation, slope, aspect, and solar radiation grids, and the plant community and soil unit boundaries were overlain with the grids to produce global positional systems ('GPS') background files. The background files were used to navigate throughout the project site and to investigate the relationships between plant communities and geomorphic attributes. The methods employed for the field surveys are described below for each survey type. Note that although each of the surveys targeted specific and distinct resources, all of the surveys included an effort to support the restoration efforts.

2.1.1 Existing Conditions Analysis

Forest Inventory Survey (Invasive Species Mapping)

The forest inventory survey involved identifying and mapping invasive trees and other invasive weed species beyond the original project site limits. The purpose of this task was to determine the need to expand the current project site boundaries or otherwise manage invasive plants beyond the boundaries. Managing adjacent invasive plant populations will be important to minimize re-colonization by the plants within the restored habitats. The survey also targeted native plant species within areas dominated by invasive species, in order to identify stands that may need to be protected during the vegetation clearing process as well as to gain insight into well-adapted native species that might be included in the restoration planting palette.

VNLC ecologists conducted a one-day survey of habitats within and surrounding the project site boundaries on September 15, 2022 and December 19, 2025. The ecologists walked meandering transects throughout the project site and within a buffer area extending at least 100 feet beyond the project boundaries. Invasive trees or other weeds found to form dense stands contiguous with and beyond the

100-foot buffer area were also noted and mapped if not already mapped by Tukman. Observed invasive plants were mapped as points using professional-grade GPS units capable of sub-meter precision under tree canopies. The population of each observed invasive plant was recorded as one of the following population range categories: 1-5, 6-10, 11-20, 21-50, 51-100, 101-500, 501-1,000, or “thousands.” For invasive tree species, the size class was also recorded as either seedling, sapling, pole, or mature, with seedlings being less than three feet tall, saplings being greater than three feet but less than three inches diameter at breast height (‘DBH’), and mature trees being greater than five inches DBH. Poles are defined as intermediate between saplings and mature trees. In addition, invasive plants rated as “High” by the California Invasive Plant Council (‘Cal-IPC’) (2023) were opportunistically mapped while traversing the project site, in order to identify potential constraints to habitat restoration efforts. Additional plant species not rated as High by Cal-IPC were also identified and mapped if they are species that may likewise be problematic for the habitat restoration efforts.

In addition to invasive weed mapping, the VNLC team investigated plant community boundaries from the Tukman data, to confirm the accuracy of the boundaries. The accuracy of the boundaries is important because it will inform the extent of invasive tree habitats outside of the original project site boundaries, and also because any natural/native plant communities within site boundaries will not require intensive restoration activities.

Soil and Litter Sampling

The soil and litter sampling involved collecting and analyzing soil samples as well as measuring litter depth within the project site. The purpose of this task is to assess habitat conditions with respect to soil conditions and litter depth, which may affect restoration options and/or restoration suitability.

One VNLC Senior Ecologist and two Staff Ecologists conducted a one-day survey to collect soil and litter information July 12, 2022. The ecologists walked meandering transects throughout the project site and adjacent areas, within all primary habitat types present within the site.

A total of twelve soil pits were excavated at the most representative locations within the primary plant communities. Environmental parameters considered in selecting representative sites include level of dominance among the primary plant species that define the mapped plant communities (e.g., coast redwood [*Sequoia sempervirens*] for the mapped *Sequoia sempervirens* Alliance), the range of dominant species age classes, and the composition of associate plant species (e.g., species typically associated with the dominant species). Within most plant communities, including both native plant communities and those dominated by invasive trees and/or other invasive plants, two soil pits were excavated. The pits were excavated to a depth of up to 24 inches, with a minimum depth of six inches and depending upon observed soil conditions. The soil texture at each pit was analyzed by first wetting the soils and then performing a manual test using a standardized soil texture key. The soil samples were stored in gallon-sized plastic bags and then those from each plant community were combined into a single bag.

The depth of litter was measured at each soil pit as well as at representative sites from throughout the primary plant communities, at a total of 62 locations. Litter is hereby defined as dead, un-decomposed plant materials that have fallen to the ground, including modified leaf-like petioles of *Acacia* and similar genera. The litter was measured by inserting a metal ruler into the material until it encountered solid ground. The litter depth in inches was recorded as an attribute of GPS point features so as to document the measurement location. The absence of litter was recorded at a few sites where soil pits were excavated and to determine general trends, but this information was not factored into the litter depth results (see below).

The combined samples were submitted to a professional soil lab (Perry Laboratory of Watsonville, California) for analysis of nutrient and mineral contents. Some litter samples were also submitted to the lab, to determine if any significant chemical information could be gleaned from the samples.

Reference Sites

In order to ensure a thorough understanding of native plant communities occurring within and adjacent to the project site, VNLC conducted relevé plot-based plant community sampling using methods developed by the California Native Plant Society ('CNPS') and California Department of Fish and Wildlife ('CDFW'). Since the ultimate goal of the project is to restore native plant communities, locally occurring intact communities serve as reference sites, and it is assumed that a thorough understanding of the factors that influence the distribution and composition of the communities should guide the restoration planning. Therefore, plots were established and sampled within all of the most dominant native plant community types in the area, with a focus on the types most desirable for restoration. A total of four plots were established and sampled, including one within the *Quercus agrifolia* Alliance, one within the *Baccharis pilularis* Alliance, and two within the *Sequoia sempervirens* Alliance (see **Figures 4-A** and **4-B** in **Section 3** below). Two relevé plots were established and sampled within the *Sequoia sempervirens* Alliance because this is the most widespread community in the area, and because it occurs in a variety of topographic positions, and an effort was made to document variations in the habitat. For all sampling, plot locations were established within representative locations of the targeted plant communities. "Representative" locations were selected based on conditions typically observed within the habitat types, including constituent plants, stand structure, geomorphic conditions (e.g., slope and aspect), and other biotic and abiotic parameters. All plots were established as 20x20 meter squares with a north-south orientation. Data were recorded within a data collection form developed by the CNPS and CDFW for the purpose of habitat assessment and plant community classification. Parameters recorded within the relevé plots include vegetation cover for each stratum (i.e., tree, shrub, and herb layers), all plant taxa and the estimated cover value of each, plant phenology and size/age classes, topography and landscape position, soil texture, hydrology, habitat elements (e.g., rock cover, litter cover, etc.), and disturbances such as invasive weeds or soil disturbance. The completed forms for each habitat type are presented in **Appendix B**. The documentation for the form and associated field methods is provided as **Appendix C**.

During the plot sampling and more broad-level plant community documentation, digital photographs were taken of the communities and of general habitat conditions, with the direction of each photograph recorded as a GPS feature attribute. Selected photos are included in **Appendix B**.

Historic Air Photo Analysis

Analysis of historical air photos is a common method used to determine historical native plant composition and habitat types on native plant restoration projects. For this project, the earliest aerial photography of the project area that could be located was a 1948 air photo. This photo was not able to be used to determine historical native vegetation because it was evident from the photo that all of the pre-existing vegetation was cleared and converted to agricultural grassland prior to 1948.

2.1.2 Plant Community Habitat Modeling

Habitat modeling for the project involved identifying which plant communities are most appropriate for restoring in areas cleared of invasive plants, and also determining where each community would be best restored within the site. Identifying which communities to restore within the site primarily involved noting the naturally occurring remnant native communities and stands of native plants still occurring within and surrounding the project site. Modeling was also conducted for establishing mitigation plantings for the Purisima-to-the-Sea trail (for bigleaf maple). Plant communities mapped by Tukman

were compiled on maps for the area and, in some cases, refined using GPS data in combination with high-resolution aerial photography. Selected communities were analyzed as reference sites by means of relevé plot sampling, as described above. Having confirmed existing and potential plant communities with potential to restore in the project site, those same communities were analyzed throughout San Mateo County, which is the full extent of the plant community mapping produced by Tukman. The targeted communities were extracted as polygons from the county-wide database, then overlaid with other spatial data using GIS software in order to determine the most commonly associated habitat values for the communities. The habitat parameters listed below were extracted for the polygons of each targeted plant community, and the parameters were applied to the project site to identify areas with the same values, thereby identifying suitable areas to restore each plant community. Note that habitat modeling for the restoration of both plant communities and rare plants within the project site was limited to areas dominated by invasive plants—the larger project site that includes vegetation thinning activities was not included. Note also that, although needlegrass grasslands are proposed for restoration (as mitigation for the trail project), modeling could not be completed for this habitat because the Tukman data accounts only for broad level grasslands—finescale mapping of herbaceous communities is not possible using the remote methods employed by Tukman. Methods for the restoration of grasslands involved only analysis of solar radiation (see below) and topography. Grassland restoration for mitigation will involve planting of grass seeds and plugs between the shrubs that are proposed for restored Coastal Scrub, as this is the setting in which the primary targeted species, foothill needlegrass (*Stipa lepidota*), tends to occur in the region.

Habitat Parameters Used for Analyses

- Elevation (from USGS 1-meter pixel resolution digital elevation data)
- Percent Slope (from USGS 1m digital elevation data)
- Aspect (from USGS 1m digital elevation data)
- Solar Radiation (from USGS 10m digital elevation data)
- Soil Units (USDA Soil Survey Geographic Database [SSURGO] data for San Mateo County)
- Precipitation (from PRISM raster data)
- Low Cloud/Fog (from USGS 2016)

Geologic units were also investigated, but the mapped formations for the region were found to be too generalized to be meaningful. Most of the formation and complex units were found to be associated with nearly all of the various plant communities.

All of these parameters were encoded within the plant community dataset, such that the values of each could be determined for each plant community. For values based on continuous, more localized parameters such as percent slope and solar radiation, a mean value was calculated for all occurrences. Values within one standard deviation above or below the mean for each of these parameters were considered to be potentially suitable for a given plant community. This is a conservative range but was chosen because the boundaries of the rare plant occurrences are assumed to have some inaccuracies, both spatially and from a classification code standpoint, and it was therefore assumed that values closer to the mean would more likely reflect a given species' actual habitat preferences or requirements. Because the solar radiation GIS software tool requires extreme computer processing power at a regional scale, 10-meter pixel resolution data were used instead of 1-meter data. The solar radiation parameter uses the topography and direction of the sun's movement across the sky at a given latitude to create a relative solar exposure value across the defined area, as measured in kilowatt hours. It accounts for slope, aspect, and surrounding topography to determine radiation values, which tend to closely correlate with different plant community types. For the more regional continuous parameters, such as elevation, precipitation, and low cloud/fog values, the entire range was noted for each species. It was assumed that

any values within the range are suitable for that species, but a mean value was nevertheless calculated as reference information.

For the remaining, more discrete parameters, an accounting was made as to whether a given plant was associated with a particular value as well as the number of associations with that value. For example, the association of a plant community with particular soil types or aspects (north, south, northeast, etc.), as indicated by a spatial intersection of GIS data, was noted in terms of the total overlapping area. The total acreage of a community's overlap with a given soil unit or aspect was compared to the total acreage of the community and calculated as a percent. Values accounting for a higher percent of a given community's area were weighted higher compared to smaller values. In a few cases, it was found that a given plant community does not exhibit a strong association with a particular value, especially with respect to aspect. In cases where the percent cover for a given plant community was split fairly evenly among aspects, that parameter was not used to determine optimal habitat—it is assumed that aspect is not a limiting parameter for the community.

Values of the habitat parameters extracted for the plant communities were used to assess the potential to restore each plant community within the project site, and to determine optimal locations for each community. Specifically, the parameter values for each community as they occur throughout the region were used to identify the same values within the project site. For example, all areas with a percent slope value within one standard deviation of the mean for that calculated for all *Quercus agrifolia* Alliance polygons in San Mateo County were selected from a DEM processed for the project site. The selected values were exported into a separate dataset called *Quercus agrifolia* Slope. This dataset was then combined with the equivalents for the other parameters, such as soil units occurring within the project site that are most commonly associated with that plant community. In general, only areas that fit all of the criteria were selected as potentially suitable restorable habitat for any given plant community, again with the caveat that for the regional continuous parameters, such as elevation and precipitation, as long as the site is within the species' range, it was considered potentially suitable. Since all plant communities targeted for restoration are mapped within or in the immediate vicinity of the project site, and are well-developed, it was assumed that climate variables are likely not as limiting as local variables such as topography, solar radiation, and soil units.

Environmental parameters extracted from the regionally mapped plant communities are listed for the targeted communities in **Table 3**, in **Section 4.1** below. The same values as extracted for the invasive plant communities, where habitat restoration is proposed, are presented in **Table 4** in the same section. Maps showing where suitable habitat values overlap for each targeted plant community, which show optimal restoration areas for the communities, are presented in **Figures 4-A** and **4-B**.

2.2 Evaluation of Rare Plant Introduction

2.2.1 Rare Plant Targeting

The first step in analyzing rare plants with potential for introduction to the project site was to identify locally occurring rare plants. The primary target for the project is Kings Mountain manzanita (*Arctostaphylos regismontana*), which is known from the region and has been the focus of studies in support of its introduction for this and other projects. However, this project provides an opportunity to assess the potential for additional rare plants to be introduced as part of the restoration effort.

Rare plant occurrence data were compiled from the California Natural Diversity Database ('CNDDDB') and from Midpen, and these were combined on a regional map using GIS software. The CNDDDB data used are the GIS point data from July of 2022, and Midpen data is the most recent dataset as provided to VNLC in March of 2022. The most commonly mapped species occurring in the vicinity of the project site, including species of all California Rare Plant Rank ('CRPR') rank, were selected for analysis. The

vicinity of the project site is defined as the western slopes of the Santa Cruz Mountains and within approximately five air miles of the site. In addition, species were filtered based on broadly defined habitat types in which they occur, such that species associated with habitats not present in the vicinity of the project site were excluded from analysis. Examples of such excluded habitat types include coastal bluff, coastal dunes, chaparral, and serpentine substrates.

2.2.2 Rare Plant Habitat Modeling

For the selected rare plant species, the CNDDDB occurrence data were filtered to include only “specific” occurrences—those listed as “specific bounded area” (including those within an 80-meter radius) in the GIS data “Accuracy” database field. Given that most of the Midpen occurrence data are derived from GPS data, no points among the targeted species were removed from analysis.

The development of the habitat model involved overlaying the Midpen and filtered CNDDDB GIS data with environmental attributes, in order to determine variables with which the plants are associated. Point data from both datasets were buffered using a distance of 10 meters (approximately 33 feet on all sides), as it was assumed that the occurrences occupy more than a discrete point and an area is needed to optimally analyze variables such as slope and aspect. Similar to the plant community habitat modeling, the resulting buffered polygon data were then used to extract or combine environmental data including the following variables:

- Elevation (from USGS 1-meter pixel resolution digital elevation data)
- Percent Slope (from USGS 1m digital elevation data)
- Aspect (from USGS 1m digital elevation data)
- Solar Radiation (from USGS 10m digital elevation data)
- Geologic Formation (from USGS data compiled by the Conservation Lands Network)
- Soil Units (from USDA SSURGO data for San Mateo County)
- Precipitation (from PRISM raster data)
- Low Cloud/Fog (from USGS 2016)
- Habitats/Plant Communities (the Tukman data completed in 2022)

All of these values were encoded for each occurrence within the GIS polygon dataset, with CNDDDB and Midpen data processed separately in order to facilitate comparison between the two datasets. The methods were similar to those used for plant community analysis with respect to continuous and topographic data versus climate data and more discrete data (see **Section 2.1.2** above)—the process involved the use of one standard deviation above or below the mean for continuous and topographic variables, and the most commonly associated values for discrete variables. The same methods were also employed to identify potential introduction locations within the project site, by selecting and producing new datasets based on parameter values that match those of the species occurrences in the region. However, unlike the targeted plant communities, no rare plants have been identified within or in the immediate vicinity of the project site, such that climate variables were accounted for in the analysis, though no rare plants were ruled out as long as the site is within the range of a given species.

It is worth noting that a couple of the rare plants are present as only one occurrence or as just a few occurrences. These are included in the habitat analysis even though, with very limited “n” values, the parameters may not be useful for assessing the potential for introduction or for guiding the introduction. Such species are included if they are perceived to have rather generalized habitat requirements, or in case they are readily available for propagation or otherwise worthy of consideration for any other reasons.

2.2.3 Status Surveys for Kings Mountain Manzanita

Given Midpen's particular interest in introducing Kings Mountain manzanita in the region, the VNLC project team conducted status surveys of this species in the vicinity of the project site. The purpose of the surveys was to record ecological and geomorphic information related to each occurrence, to increase understanding of habitat preferences. On March 28, 2022, VNLC Senior Ecologists Jake Schweitzer and John Vollmar conducted surveys of documented populations of the species in the region, with a focus on those documented by Midpen staff and on Midpen preserves. Eight populations of the species were visited, with sites ranging from the Teague Hill Open Space Preserve ('OSP') on the eastern edge of the Santa Cruz Mountains, to El Corte de Madera OSP on the west side of the mountains. A customized data dictionary was developed in order to facilitate and standardize data collection at each occurrence. The data collection fields populated for each occurrence are listed below.

- Population, Percent Cover, and Diameter of Kings Mountain Manzanita
- Overall Health of Kings Mountain Manzanita Population
- Associated Tree Species
- Associated Shrub Species
- Associated Herb Species
- Aspect
- Percent Slope
- Soil Texture
- General Habitat Type and Notes

In addition to the parameters listed above, photographs were recorded of the populations, with the location and direction of the photos recorded into the GPS unit as attributes. The field data were combined with the remote parameter data that were collected for this species as well as all other targeted rare plants. The data for targeted rare plants are included in **Table 5** and **Table 6** in **Section 4.2** below.

3.0 EXISTING CONDITIONS

3.1 Regional Setting

The project site is situated along the crest and western edge of Irish Ridge, along the sparsely developed western slopes of the Santa Cruz Mountains. The Santa Cruz Mountains are part of the Coast Ranges Province of California and are included in the Jepson Manual's San Francisco Bay Area ('SnFrB') floristic Subregion (Baldwin et al. 2012). The SnFrB Subregion is defined as encompassing a notable diversity of vegetation types, from very wet coast redwood forest to dry oak/pine woodland and chaparral (ibid). Encompassing a range of coastal habitats (see **Section 3.4**), the project site is on the mesic (i.e., moist) side of the spectrum. The project site is only a little over three air miles from the Pacific Ocean, and so is subject to relatively high moisture levels, in the form of both precipitation and fog, as described in **Section 3.2** below. Absent from the project site are more xeric plant communities such as chaparral and interior oak woodlands.

Elevation within the project site ranges from 428 to 1,406 feet (130 to 429 meters) above sea level (USGS 1997), with the highest elevations occurring along the northeastern edge of the site at the crest of Irish Ridge, and decreasing westward toward Lobitos Creek (**Figure 2**). The site is at the approximate elevational midpoint between the crest of the Santa Cruz Mountains and the Pacific Ocean, near the upper reaches of the Purisima Creek watershed (USGS 2013). Topography within the site is hilly, with slopes ranging from nearly flat in localized areas along the ridge crests, to 120 percent along the side slopes. The mean slope of the project site is a fairly steep 29 percent.

3.2 Climate

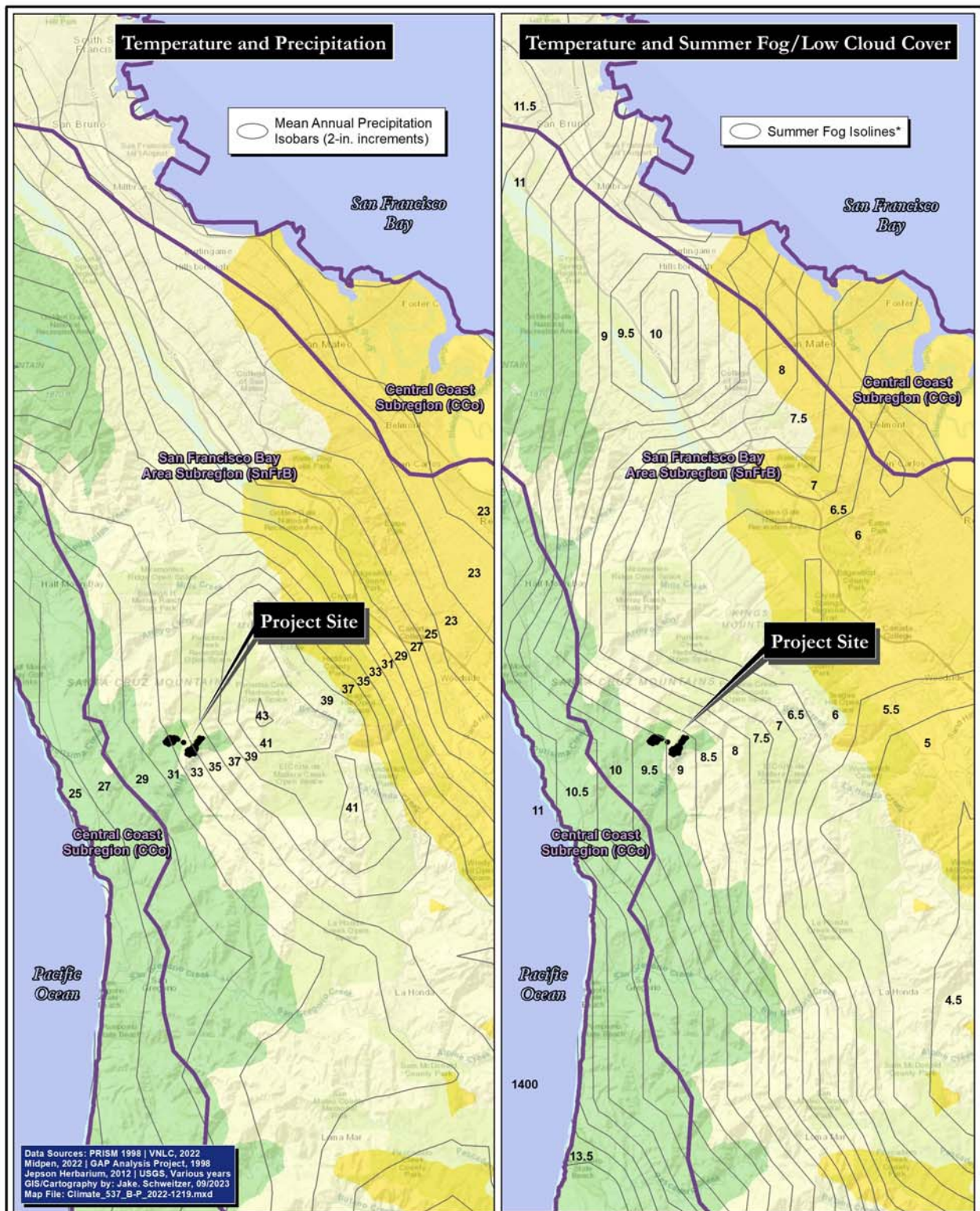
The climate of the project site and surrounding vicinity is characterized by cool, wet winters and warm, mostly rainless summers as well as high inter- and intra-annual variability in precipitation. The project site is within the “Western Mountains, Valleys, and Coast Region” of the Army Corps of Engineers climate zones (ACOE 2010), which may be defined for floristic analyses as “coastal Mediterranean.” On average, the area receives 33.9 inches of precipitation annually (**Figure 3**), with over 97 percent occurring during the “wet season,” from October through May (PRISM 2022). However, because the project site is strongly influenced by coastal maritime weather patterns, considerable moisture is available as fog through the “dry” summer season, with an average of 9 to 9.5 hours of fog/low cloud cover per day during the summer. In turn, the moisture serves to moderate temperatures, maintaining a relatively cool summer temperature with minimal fluctuations. The moderation of temperatures applies to the entire project site, thus reducing differences between northern and southern exposures with respect to solar radiation and evapotranspiration. The site is high enough in elevation to benefit from orographic precipitation, but low enough to also still be within the “fog belt.” The average annual temperature in the area (from 1981 to 2010) is 56.8 degrees, and average temperatures each month range from a low of 49.9 degrees Fahrenheit in January to a high of 64.8 degrees in September. The relatively modest high temperature is in September because summertime fog serves to suppress temperatures, such that June, July, and August experience average temperatures of only 60.3, 62.7, and 63.2 degrees, respectively (ibid).

The foregoing information pertains to existing climatic conditions, but unfortunately the effects of climate change have the potential to substantially alter these conditions. Average annual temperatures rose 1.7 degrees Fahrenheit between 1950 and 2005, and several studies suggest that coastal fog along the California coast has become less frequent in more recent years (Ackerly et al. 2018). There are many parameters that complicate analyses of potential effects of climate change, and there is much to learn about the potential impact of differential temperatures inland versus along the coast and how that will affect coastal weather patterns (ibid). However, there is ample evidence to suggest that temperatures will continue to rise and will likely rise at faster rates over the next few decades and into the future. Likewise, some models predict a reduction in coastal fog as a result of warming ocean currents, along with increased frequency and intensity of both storms and drought periods. This Plan assumes that these phenomena will impact vegetation plant composition and plant species ranges, and that such impacts will in turn likely have adverse impacts upon wildlife and ecosystem functions as a whole. With respect to habitat restoration, the most obvious measure to ameliorate detrimental impacts of climate change is to maximize biodiversity, as this increases resiliency within any ecosystem. This Plan seeks to maximize plant species diversity, while also accounting for project costs and the fact that some plant species are inherently more competitive with invasive exotic plants. The Plan also includes many plant species that are adaptable and tolerant of a wide range of microhabitats, and that are also known to provide important shelter and/or forage for a great diversity of wildlife. Finally, the Plan suggests the option to collect plant source materials from slightly warmer and drier climates located outside of the study area region, in anticipation of more southerly climates moving northward in the coming decades.

3.3 Substrates

3.3.1 Geology

Geologic formations mapped in the project site include Butano sandstone and Purisima formation, undivided (including Tunitas and unnamed sandstone), both of which are relatively recent formations (~2 to 5.3 million years old) and of sedimentary materials (USGS 1998). Rocks from the formations are primarily the result of sediments from submarine fans and igneous (volcanic) rocks associated with oceanic crust. The rocks were amalgamated in transit to a subduction zone where the Pacific Plate was



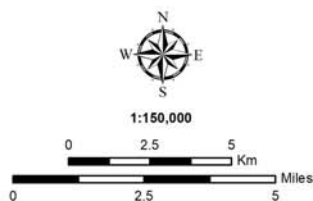
Legend

- Project Boundary
- Jepson Ecoregion Boundary
- Mean Annual Temperature (Fahrenheit)**
- 59°
- 57°
- 55°

* Average daily summer fog/low cloud hours



FIGURE 3
Regional Climate
and Jepson Ecoregions
Irish Ridge Restoration Feasibility Study
Purissima Creek Redwoods Open Space Preserve
San Mateo County, California



forced under the North American Plate upon contact. At the tectonic contact zone, the sediments were ground up and often metamorphosed at great depths, forming fine-grained sandstone, mudstone, and shale. While rocks generally consist of marine sediments, most of the sediments are originally derived from materials deposited in marine fans resulting from turbidity currents (the marine equivalent of landslides, possibly caused by earthquakes) from the tectonic plates edges. Thus, though some rocks may be highly deformed from being thrust deep into the subduction zone, occasionally forming metamorphic rocks, a majority are sedimentary and consist primarily of continental minerals and elements. Such materials tend to provide relatively abundant nutrients that are necessary for plant growth, especially as compared to serpentinite and other materials from deeper within the earth.

3.3.2 Soil Units and Litter

Mapped Soil Units

Five soil units are mapped within the project site. Over half of the site (73.3%) is mapped as Lobitos loam units, including two subunits that are based on slope values (see **Figures 4-A** and **4-B** below). The remaining five units include Hugo and Josephine sandy loams (15.2%), Gazos and Lobitos soils (3.7%), Pomponio loam (6.3%), and Hugo and Josephine loams (1.5%). **Table 1** below presents characteristics of the soil units that are significant for botanical resources. As the table indicates, the soil units are generally similar in texture, pH value, and organic matter content. All units are loams or modified loams, at least moderately acidic, and relatively fertile, and thus ideal for supporting vigorous plant growth. Given the general similarities in soil units, it is likely that differences in the plant communities are more related to topography, specifically slope, aspect, and concavity. **Figure 4-A** and **Figure 4-B** depict mapped plant communities along with soil units.

Table 1. Characteristics of Soil Units Mapped within the Project Site.

Soil Unit Name and Percent of Project Site	Parent Material	Surface Texture*	pH*	Organic Matter*	Percent Clay*	Depth to Restrictive Layer (inches)
Gazos and Lobitos soils (3.7%)	Shale	Silt loam	6.7	3.0%	22.0%	20
Hugo and Josephine loams (1.5%)	Sandstone	Sandy loam	6.1	2.5%	23.5%	45
Hugo and Josephine sandy loams (15.2%)	Sandstone	Sandy loam	6.1	2.5%	15.0%	45
Lobitos loam units (73.3%)	Shale	Silt loam	6.1	2.0%	21.0%	34
Pomponio loam (6.3%)	Shale	Loam	6.3	2.0%	23.5%	30

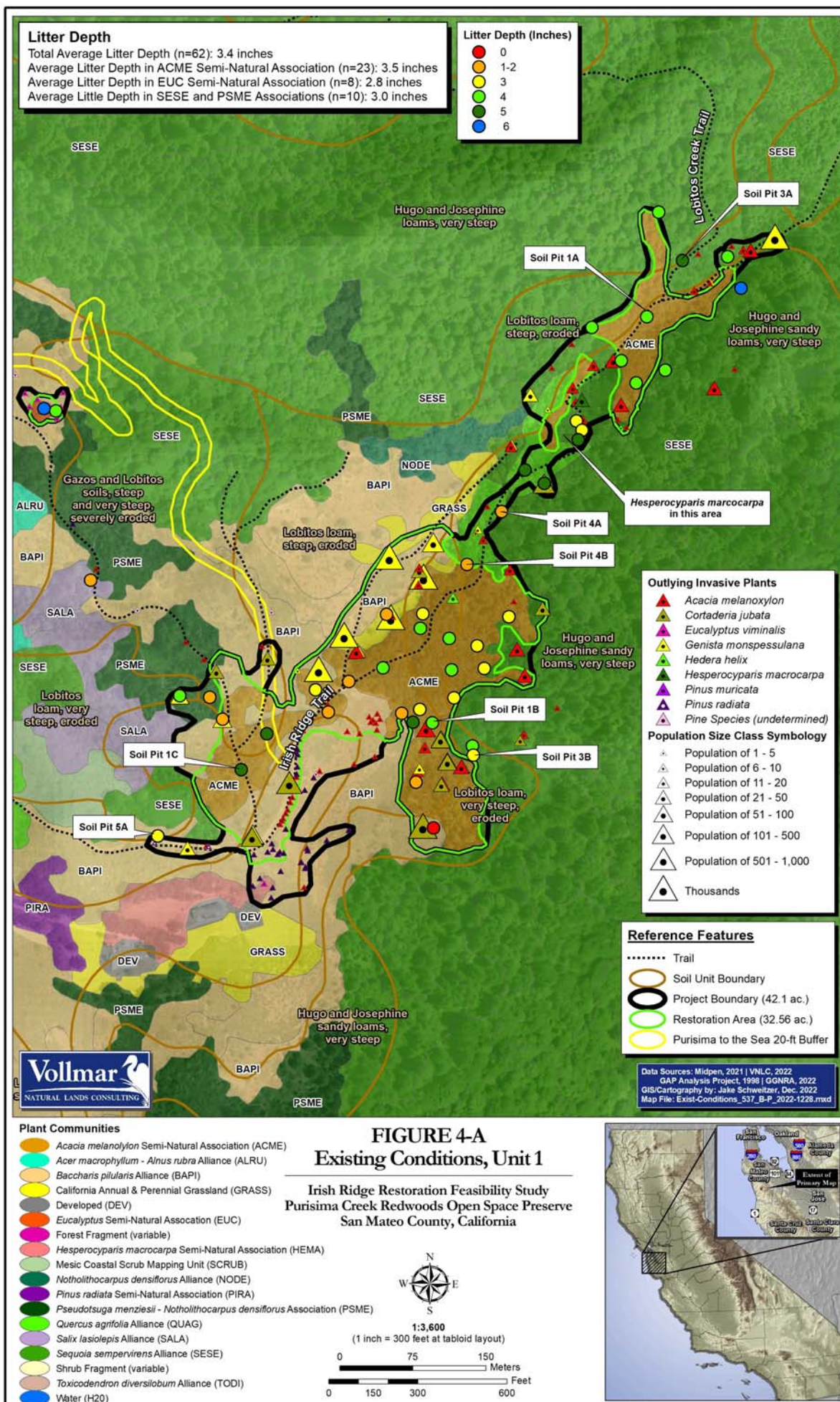
Source: U.S. Department of Agriculture Natural Resources Conservation Service, SoilWeb website, 2023. Soil unit names exclude slope descriptors.

*Dominant condition. Values for surface texture, pH and organic matter correspond to the top 24 inches. Soil units include the sub-units listed below.

Note: Depth to water table is the same for all units, which is >80 inches

Soil and Litter Samples

In order to collect more project site-specific data, VNLC ecologists collected soil and litter samples from within the most widespread plant communities and submitted them for analysis at a professional soil lab, as described in **Section 2.1.1** above. **Table 2** below presents the results of the analysis of the collected soil samples, which also included some data from the collection and analysis of litter. Soil pit locations and little depth measuring sites are shown on **Figure 4-A** and **Figure 4-B**. Compared with values provided by the (USDA) for soil units mapped in the project site, such as for pH and texture (none of the other parameters are available), the test values are similar. In general, soil types within the project site are moderately acidic forms of loam, though loam modifiers range from silty to sandy. The mean pH recorded by the soil lab is 5.4, with a low of 4.4 and a high of 6.5. The mean pH ascribed to all soil units mapped within the project site by the USDA (top 24 inches) is 6.1, with a range of 5.9 to 6.7. Litter is common throughout most of the plant communities, including those dominated by both native and invasive tree species. The average depth for all samples was 3.4 inches, with a range of 1 to 6 inches where litter is present. The average litter depth was deepest for the areas dominated by blackwood acacia and was generally not measurable within stands of jubatagrass. Most of the blackwood acacia



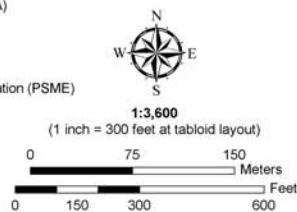
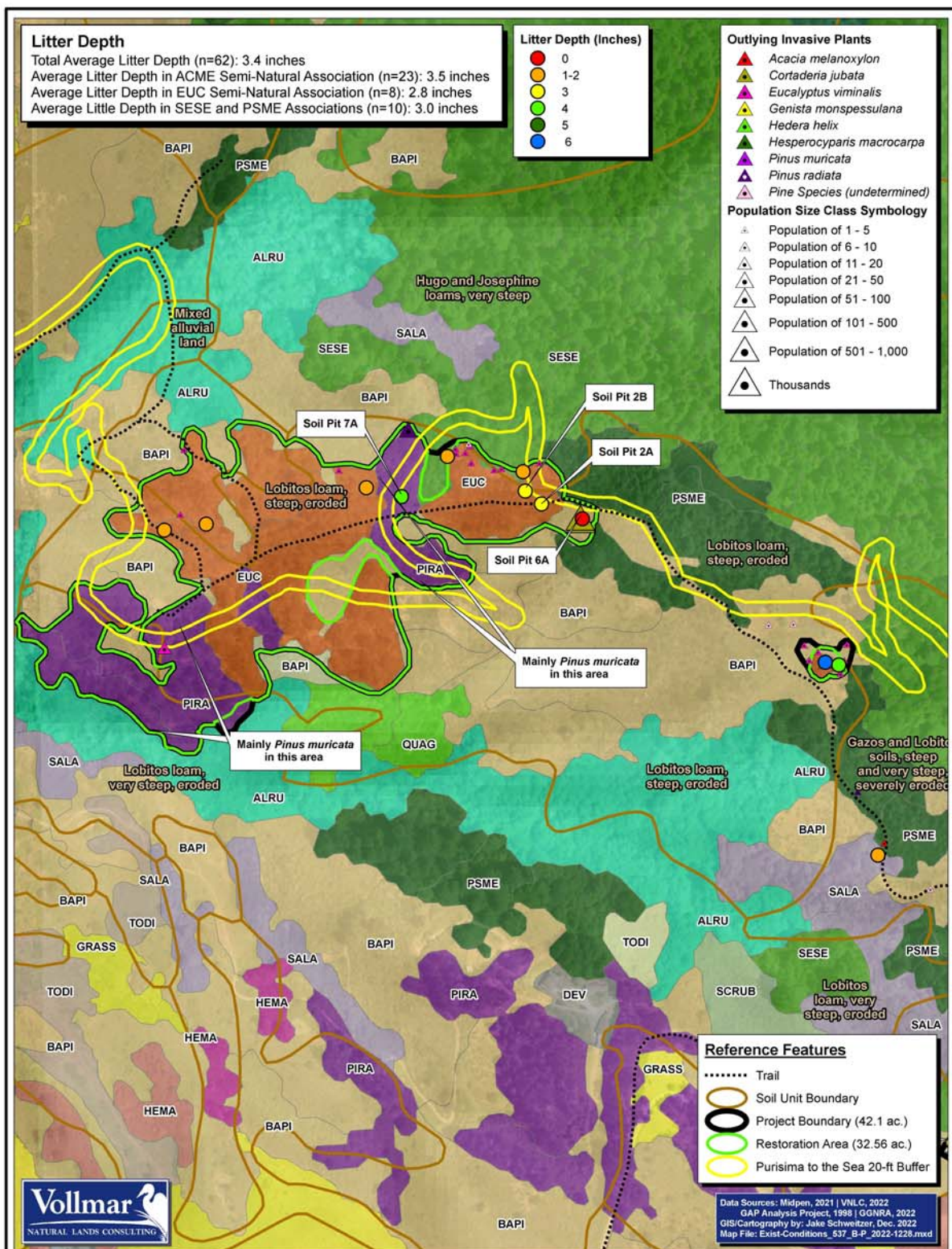


Table 2. Soil Sample Analysis for the Project Site.

Note: Processed in August 2022 by Perry Laboratory, Watsonville, CA.

Sample ID (Habitat Type ¹ , soil/litter)	pH Saturated Paste	Electrical Conductivity dS/m	Nitrate Nitrogen (N)	Ammonium Nitrogen (N)	Phosphorus (P)	Potassium (K)	Calcium (Ca)	Magnesium (Mg)	SP Saturation Percentage	Calcium plus Magnesium	Sodium (Na)	Chloride (Cl)	Boron (B)	SAR Sodium Adsorption Ratio	ESP Exchangeable Sodium Percentage	Soil Texture ²	Mapped USDA Soil Series
		Saturated paste extract	RESULTS REPORTED IN PARTS PER MILLION OF DRY SOIL							milliequivalents per liter in extract			ppm				
General Guidelines- Ornamental Plants	6.5- 7.2	1.0- 3.0	25- 75	25- 75	50- 100	150- 300	2,000- 4,000	150- 500	No guideline	> 6.0	< 3.0	< 3.0	< 1.0	< 8.0	< 9.0		
1A (ACME soil)	4.6	0.4	22	7	5	126	773	110	46	2.8	0.3	0.2	0.1	0.3	0.4	MESA	Hugo and Josephine sandy loams
1B, 1C (ACME soil)	6.5	1.2	32	4	12	181	8,125	289	68	10.0	1.1	0.9	0.1	0.5	0.6	MFSL dark (1B), MFCL (1C)	Lobitos loam (1B, 1C)
1A, 1B, 1C (ACME litter)	4.6	2.2	227	384	55	494	1,902	504	62	11.0	1.1	0.8	0.4	0.5	0.6	MESA (1A), MFSL dark (1B), MFCL (1C)	Hugo and Josephine sandy loams(1A), Lobitos loam (1B,1C)
2A, 2B (EUVI soil)	5.4	0.7	18	6	7	169	1,122	225	48	2.2	0.7	0.6	0.1	0.7	0.8	FISA (2A, 2B)	Lobitos loam (2A, 2B)
2A, 2B (EUVI litter)	5.6	1.4	94	29	38	292	2,292	389	58	13.7	0.9	0.7	0.3	0.4	0.5	FISA (2A, 2B)	Lobitos loam (2A, 2B)
3A, 3B (SESE soil)	6.0	0.9	28	8	4	252	2,007	457	51	4.0	1.3	1.9	0.1	0.9	1.0	MELO (3A), MFSL moderately dark (3B)	Lobitos loam (3A, 3B)
4A, 4B (QUAG soil)	4.4	0.5	17	34	6	156	3,91	118	85	1.9	0.5	0.6	0.1	0.5	0.6	MCSL with gravel (4A), MESA (4B)	Hugo and Josephine sandy loams (4A, 4B)
5A (CS soil 0-3")	5.9	0.9	44	5	16	157	3,715	780	49	6.9	1.7	0.6	0.1	0.9	1.0	MCSL dark	Lobitos loam
5A (CS soil 3-10")	5.5	0.3	8	5	22	97	1,644	509	236	1.5	0.8	0.2	0.1	0.9	1.0	MCSL red	Lobitos Loam
6A (COJU soil)	5.5	0.2	3	3	4	253	807	164	155	1.7	0.6	1.5	0.1	0.6	0.7	MFSA	Lobitos loam
7A (PIMU soil)	5.3	0.5	12	12	7	245	1,430	322	40	2.7	1.2	1.1	0.2	1.0	1.1	-	Lobitos loam

Notes: See **Figures 4-A and 4-B** for locations of associated soil pits. Some Sample ID points include both litter and soil because litter was also collected at some soil points.

I. Associated soil pit generalized habitat type acronyms:
ACME = *Acacia melanoxylon*
CS = Coastal Scrub - *Baccharis pilularis*, *Morella californica*, *Rubus ursinus*
COJU = *Cortaderia jubata*
EUVI = *Eucalyptus viminalis*
PIMU = *Pinus muricata*

2. Soil Texture based on, Brewer, R. and M.T. McCann 1982. Laboratory and Field Manual of Ecology. Saunders College Publishing, New York.
FISA = Fine sandy clay
MCSL = Moderately coarse, sandy loam
MELO = Medium loam
MESA = Medium to very fine, sandy loam
MFCL = Moderately fine clay loam
MFSA = Moderately fine sandy clay loam
MFSL = Moderately fine silty clay loam

litter consisted of phyllodes of that species, though twigs and other material, including from native trees, were present. The two points where the thickest layer of litter was measured (6 inches) were in coast redwood and manna gum habitats. Material from blackwood acacia and manna gum is considered allelopathic, often resulting in reduced understory plant cover.

Most of the parameter values depicted on **Table 2** are within ranges considered to be optimal or at least moderately suitable for growing ornamental plants, the typical standard used by soil labs. Parameters for which multiple samples have values outside of the optimal ranges include pH, electrical conductivity, phosphorus, and nitrogen (both nitrate and ammonium). These are discussed below. It was noted that native plant communities were supported by some of the soils with outlying parameter values, thus confirming that native plants can thrive and reproduce within such soils. It was also noted that at least a few native plant species were growing within relatively thick litter of invasive trees, though the cover was typically sparse and most of the species are known to reproduce vegetatively, such as by rhizomes, and are vines, thus enabling them to reproduce without seed being in contact with soil, and also to grow horizontally along the surface of the litter.

As part of the soil and litter analysis, Perry Laboratory provided a detailed assessment of the parameter values from the collected samples, with an emphasis on the outlier values that could have an impact on the propagation of plants as part of a habitat restoration effort. The assessments are provided below and reference the values provided in **Table 2**. However, regarding soil amendments, the California Department of Forestry and Fire Protect ('CalFire') recommends allowing plants and trees to experience soil conditions as they are and adapt or fail (Midpen pers. com.). Therefore, soil amendments are not included as a recommendation in this Plan, though tablets of fertilizer can be used when planting trees to give the seedling an advantage in the first year.

One recommendation for addressing litter is to remove it where restoration planting is to take place (at least at discrete planting locations for individual plants) and, if possible, conduct the planting after a period of time (e.g., at least nine months) when the litter chemicals may be diluted by weathering. The litter may be considered for use as mulch around planted materials, to reduce requirements for off-hauling as well as to reduce competition from other plants, though this option would need to be considered with respect to other project components.

Sampling Points 1A, 1B, and 1C (*Acacia melanoxydon* litter); 2B and 2A (*Eucalyptus viminalis* litter)

The pH values of these litter samples (**Figure 4-A**) are acidic in reaction and consistent with material made up of leaves, twigs, bark, and phyllodes. The electrical conductivity readings for the samples show that the levels of soluble salts are in an acceptable range for restoration planting.

The soil fertility analysis shows higher than desirable nitrogen and acceptable levels of calcium and magnesium. The potassium and phosphorus values are slightly high. The boron values are safely low. The sodium and chloride levels are lower than what is harmful to plants.

Sampling Points 4A and 4B (*Quercus agrifolia* soil); 1A (*Acacia melanoxydon* soil)

The pH values of these soils (**Figure 4-A**) are acidic in reaction and at the edge of what is acceptable for California natives. The low electrical conductivity measurements show that the level of soluble salts is safely low.

The soil fertility analysis shows slightly low nitrogen, phosphorus, potassium, calcium, and magnesium. The boron values are safely low. The sodium and chloride values are in a safe range.

Sampling Points 1B and 1C (*Acacia melanoxyton* soil)

The pH value of this soil (**Figure 4-A**) is moderately acidic in reaction and slightly higher than desirable for California native plants. The electrical conductivity readings are in normal range.

The soil fertility analysis shows slightly low nitrogen, magnesium, and potassium. The phosphorus level is in an acceptable range, but the calcium is higher than desirable.

The boron, sodium and chloride levels are below what is toxic to plants.

Sampling Points 6A (*Cortaderia jubata* soil); 2A and 2B (*Eucalyptus viminalis* soil); 3A and 3B (*Sequoia sempervirens* soil); 5A and 5B (Coastal Scrub soil from upper and lower strata); 7A (*Pinus muricata* soil)

The pH values of these soils are acidic in reaction and in an acceptable range for California natives.

The low electrical conductivity readings show low values of soluble salt.

The soil fertility analysis shows slightly low nitrogen values. The phosphorus, potassium, calcium, and magnesium values are acceptable. The boron, sodium, and chloride values are below what is toxic to most plants. These soil pit sampling points are shown on **Figure 4-A** and **Figure 4-B**.

3.4 Existing Plant Communities

3.4.1 Non-Native Plant Communities

Blackwood Acacia

Unit 1 of the project site is dominated by blackwood acacia, with 16.9 of the 23.7 acres consisting of that species as primary canopy cover or having small incipient stands. Within the Tukman dataset, the community is classified as the *Acacia melanoxyton* Semi-Natural Association, indicating that it is widespread enough in the region that it warrants a class name, but there is no equivalent in the Manual of California Vegetation ('MCV') or National Vegetation Classification ('NVC') systems. **Figures 4-A** and **4-B** show the extent of this habitat type, along with mapped occurrences of the blackwood acacia beyond the delineated habitat. The trees were evidently planted in the area after logging of redwoods in the early 20th Century reduced the cover of available wood. The species has become well established and continues to encroach upon adjacent natural habitats, in part as a result of suitable habitat along old logging roads and other disturbance areas. This species is rated by the Cal-IPC as "Limited" because it is not especially widespread in California. It is most common in urban areas, where it was once planted and has colonized roads and freeways as well as urban parks. Aside from blackwood acacia, trees species found within this habitat include all of the most common species that occur within the project site, including coast redwood (*Sequoia sempervirens*), coast live oak (*Quercus agrifolia*), tanoak (*Notholithocarpus densiflorus*), and Douglas fir (*Pseudotsuga menziesii*). Unlike blackwood acacia, all of these other tree species are native to California. The shrub and vine stratum was similarly representative of the site as a whole, in terms of the suite of species. Within relatively open, sunny habitats (uncommon where the acacia trees dominate), these included coyote brush (*Baccharis pilularis*) and the highly invasive French broom (*Genista monspessulana*), which are dominants within areas mapped as the *Baccharis pilularis* Alliance on **Figure 4-A**. Species occurring in more shaded habitats included California blackberry (*Rubus ursinus*), California hazelnut (*Corylus cornuta*), and huckleberry (*Vaccinium ovatum*). Poison oak (*Toxicodendron diversilobum*) was prevalent in a variety of understories, both open and more shaded. The herb stratum within the habitat featured non-native chickweed (*Stellaria media*), poison hemlock (*Conium maculatum*), and jubatagrass, along with native creeping snowberry (*Symphoricarpos mollis*), rough hedgenettle (*Stachys rigida*), and multiple bedstraw

species (*Galium* spp.). Conspicuous aspects of this habitat that were observed include an abundance of dead, dry branches along the lower trunks as well as a deep layer of leaves (including primarily phyllodes of the acacia) and branches on the ground, which would have the potential to increase the risk and intensity of fire in the area. Based on 20 measurements of little depth carried out in this habitat during field surveys (see **Section 3.3.2**) in the project site, the average litter depth is approximately 3.5 inches. The underlying soils excavated at soil pits were found to be medium to moderately fine loam or sandy clay loam (**Table 2**).

Manna Gum

A majority of the 18.4-acre Unit 2 is dominated by manna gum, within both of the separate project site polygons there (**Figure 4-B**). The community is mapped by Tukman as the *Eucalyptus* Semi-Natural Association, which more often is dominated by Tasmanian bluegum (*Eucalyptus globulus*) in other locations. As with blackwood acacia, manna gum is presumed to have been planted to provide wood in a region with diminished tree supplies after logging. Like Tasmanian bluegum, which was also documented on the project site in very low numbers, this species was brought to California from southeastern Australia and Tasmania, but it was not planted as widely as Tasmanian bluegum and does not spread as readily. Manna gum has no rank in the Cal-IPC inventory of invasive plants in California but is nevertheless problematic. As with many *Eucalyptus* species, it sheds copious amounts of papery bark and allelopathic leaves, resulting in a serious fire hazard as well as highly depauperate understories—few plants can thrive in such an environment. However, the understories of manna gum are generally more developed than under Tasmanian bluegum, because of a slightly more open canopy and somewhat reduced understory debris. The average litter depth at five measured locations was two inches. A modest cover of trees, shrubs, and herbs were noted within the onsite habitat. Tree species noted include coast redwood, Douglas fir, and tanoak. The lower strata were found to consist primarily of highly adaptable, generalist species, many of which are vines and/or species that are capable of vegetative reproduction. Examples include California blackberry, poison oak, pink honeysuckle (*Lonicera hispidula*), creeping snowberry (*Symphoricarpos mollis*), hedgenettle (*Stachys* spp.), Pacific aster (*Symphotrichum chilense*), and yerba buena (*Clinopodium douglasii*). The most common invasive plant species in the understory is jubatagrass. Soils in the area are mapped primarily as Lobitos loam and, to a lesser extent, Hugo and Josephine loam. Excavated soil was found to have a texture of fine sandy clay.

Bishop Pine and Monterey Pine

Although Tukman mapped extensive portions of Unit 2 as the *Pinus radiata* Semi-Natural Association (**Figure 4-B**), most of the pines in the area were found to be Bishop pine. Both Bishop pine and Monterey pine are native to California, including the northern California coast, but neither is considered to be native to the vicinity of the project site. They are both considered potentially invasive, but not rated by the Cal-IPC. Bishop pine is considered to be native from Monterey County and southward to the southern California coast, as well as from Marin County and northward, but there is a sizable gap in its natural range in the vicinity of the project site, from Santa Cruz County north to the Golden Gate. It is presumed to have been planted within this coastal region along with portions of the eastern Bay Area hills. Historical aerial photography of the project site from 1948, as available on GoogleEarth, indicates that there were very few trees in the central and western portions of the site, where there are now extensive stands of blackwood acacia, manna gum, and both pine species. While Bishop pines form large and fairly mature stands, Monterey pine occurs as small and incipient stands, and the latter appears to be spreading more rapidly—most of the recruiting pine trees in the area were found to be Monterey pine, including among the larger stands of Bishop pines. The only other tree observed in these stands is manna gum. Understory shrubs and herbs observed in the area include California coffeeberry (*Frangula californica*), California blackberry, poison oak, California manroot (*Marah fabacea*), Pacific

blacksnakeroot (*Sanicula crassicaulis*), Pacific aster, and California bee plant (*Scrophularia californica*). The litter layer was rather deep, at approximately four inches, and the underlying soils are mapped as Lobitos loam.

French Broom

French broom is a highly invasive weed that commonly occurs within the otherwise natural Coastal Scrub and Annual Grassland plant communities of the project site. Unlike the invasive trees, this species is not mapped as a distinct habitat type in the area, presumably because it is not readily distinguished from other shrubland habitat types using remote analysis techniques. However, this shrub is co-dominant or even dominant over extensive portions of the project site and appears to be spreading rapidly within more open grassland habitats (**Figure 4-A**). Within the project site, extensive areas that in 2022 consisted of large stands of French broom were largely free of the species in 2019, when VNLC conducted botanical surveys at the project site. The species is rated as “High” by Cal-IPC, as it is widespread throughout more mesic zones of California, and especially along the outer Coast Ranges from Monterey County northward. It colonizes and replaces natural grasslands and shrublands as well as woodlands and even riparian zones, resulting in degraded habitat and an increase in woody fuel loads (Cal-IPC 2022). Associated plant species occurring with French broom in the project site are all generalist species that are tolerant—or in some cases, indicative—of disturbance, such as coyote brush, California blackberry, slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), common velvet grass (*Holcus lanatus*), scarlet pimpernel (*Lysimachia arvensis*), and false brome (*Brachypodium distachyon*). A soil pit was not excavated within the French broom habitat because the areas were outside of the original project site boundaries, but soils in the area are mapped as Lobitos loam and Pomponio loam. Litter was found to be minimal or non-existent.

Jubatagrass

Jubatagrass is among the most widespread invasive plants in the project site but forms large and contiguous stands in only two locations (**Figures 4-A and 4-B**). As with French broom, these areas were not mapped in the county-wide dataset produced by Tukman, again likely due to the lack of a clear signature. The two stands are along fairly steep, south-facing slopes with erodible soils, and consist of hundreds of individuals each. Jubatagrass is rated as High by the Cal-IPC, as it is abundant and widespread along most of the coast of California. It is especially common on eroded, steep slopes, often with at least moderately sandy soils (Cal-IPC 2022). It forms large and contiguous stands, and its robust clumps of sharp-edged leaves make them impenetrable to humans and wildlife alike. Aside from jubatagrass, species observed in the onsite habitat include a few scattered blackwood acacia, Douglas fir, and Pacific madrone (*Arbutus menziesii*) in the tree stratum. The shrub/vine stratum featured coyote brush, California coffeeberry, blue blossom (*Ceanothus thyrsiflorus*), and sticky monkeyflower (*Diplacus aurantiacus*), and the herb layer featured creeping snowberry, scarlet pimpernel, and brackenfern (*Pteridium aquilinum*). Litter was found to be quite minimal, and soils were found to be sandy clay loam, which is consistent with the mapping as Lobitos loam. Soil erosion was evident in both of the two large stands of jubatagrass.

3.4.2 Native Plant Communities

Aside from the large stands of invasive plants that are targeted for removal and replanting, the project site encompasses remnant natural plant communities that are largely comprised of native species. As noted previously, these areas are included in the project site because there are plans to conduct thinning of ladder fuels as well as clearing of litter and other woody debris. These plant communities were mapped by Tukman as associations, alliances, and other classes that generally conform to the NVC and MCV systems. However, as noted above, the classes described in this Plan correspond to the CNPS

system for analyzing habitats for rare occurrences, and include Coastal Scrub, North Coast Coniferous Forest, Cismontane Woodland, and Grassland (a mix of types).

Coastal Scrub

Covering 9.3 acres, Coastal Scrub accounts for 22 percent of the 42.1-acre project site and is the largest natural habitat type. It occurs along the broader portion of Irish Ridge within Unit 1 as well as within the smaller polygon at the eastern edge of Unit 2 (**Figures 4-A** and **4-B**). It is also among the most widespread habitats in the surrounding vicinity, especially westward toward the coast, where high winds and salt spray reduce the tree cover. Coyote brush is most commonly the dominant shrub in this habitat throughout the region, though there are multiple other shrub species that are locally common in the project site and beyond. In general, the drier ridge tops and south-facing slopes support the *Baccharis pilularis* Alliance, while more north-facing slopes form a more diverse assemblage that may be classified as the Mesic Coastal Scrub Mapping Unit but that are nevertheless mapped as the coyote brush alliance. This is the habitat that was sampled as a relevé plot (**Appendix B**, Plot 4). Other areas mapped as the *Salix lasiolepis* Alliance in the vicinity of the project site likewise form more of a mesic Coastal Scrub community. Within the more xeric habitat form, French broom is among the most common shrub species, particularly along the western and southern portions of Unit 1—along the western portion of the southern project site polygon, this invasive species is a dominant. Based on 1948 aerial photography, this area appears to have been cleared for pasture, resulting in disturbed conditions. Most other commonly observed shrub and vine species within this form of Coastal Scrub are native to California, such as poison oak, California blackberry, sticky monkeyflower, and seaside woolly sunflower (*Eriophyllum staechadifolium*). Within the more mesic form of the plant community, the dominants include red elderberry (*Sambucus racemosa*), oceanspray (*Holodiscus discolor*), California wax myrtle (*Morella californica*) and, in areas where arroyo willow (*Salix lasiolepis*) are mapped, there are creek dogwood (*Cornus sericea*) along with the willow. As is typical for many shrubland habitats, the herb layer is relatively sparse within Coastal Scrub in the project site. Observed herbs include the invasive common velvet grass, scarlet pimpernel, and English plantain (*Plantago lanceolata*), along with native yerba buena, ladies' tobacco (*Pseudognaphalium californicum*), and skunkweed (*Navarretia squarrosa*). These are joined in more mesic areas by the native stinging nettle (*Urtica dioica*) and cow parsnip (*Heracleum maximum*) as well as the invasive bull thistle (*Cirsium vulgare*) and poison hemlock. The introduced species were more common among French broom and within more open habitats in general, while the native species were more common in areas of nearly closed shrub canopy.

North Coast Coniferous Forest

Following the Coastal Scrub habitat, the most widespread habitat within the project site is North Coast Coniferous Forest, covering 4.0 acres (9.5% of the project site). This broadly defined habitat includes nearly pure stands of coast redwood trees as well as areas that include Douglas fir and Monterey cypress (*Hesperocyparis macrocarpa*). The habitat is mapped on **Figures 4-A** and **4-B** as the *Sequoia sempervirens* Alliance and the *Pseudotsuga menziesii* – *Notholithocarpus densiflorus* Association. Monterey cypress is native to California, but is not native to the project site, and is considered invasive by the local CNPS chapter. Where it occurs in its native region (Monterey County) and is a dominant tree, the habitat would more appropriately be classified as Closed-Cone Coniferous Forest. However, the stand is too small to map independently and, in the context of its occurrence within the project site, within a relatively natural form of coast redwood/Douglas fir forest, it is functionally part of North Coast Coniferous Forest. North Coast Coniferous Forest in the area occurs on north-northeast and south-southeast-facing slopes as well as along the top of Irish Ridge at the highest elevations. The slopes on which it occurs are those that are sheltered from salt-bearing westerly winds that preclude this community. The community's occurrence along the ridge top appears to be a function of elevation and/or distance from the coast—presumably the stands are likewise not subject to the salt-bearing winds.

The *Sequoia sempervirens* Alliance incarnation of North Coast Coniferous Forest is designated in the MCV as a sensitive habitat. The MCV membership rule for Redwood Forest stipulates that coast redwood “accounts for >50% relative cover in the tree canopy, or >30% relative cover with other conifers...or with a lower tier of hardwood trees such as *Notholithocarpus densiflorus*” (CNPS MCV online 2022). Areas mapped accordingly within the project site appeared to conform to this membership rule, as indicated in the sampled reference plots (**Appendix B**, Plots 2 and 3). As defined, Redwood Forest is ranked as G3 and S3.2 and is therefore considered rare and threatened (see **Section 2.0** above). The conifer trees noted above are the dominant trees throughout most of these forest habitats. Associated trees include tanoak, blackwood acacia, and a few scattered coast live oaks and Pacific madrones. The shrub and vine stratum is generally sparse, but there are occasional individuals and small stands of California blackberry, huckleberry, California hazelnut, and thimbleberry (*Rubus parviflorus*). The herbaceous understory primarily consisted of creeping snowberry, milkmaids (*Cardamine californica*), western sword fern (*Polystichum munitum*), coastal woodfern (*Dryopteris arguta*), Pacific starflower (*Lysimachia latifolia*), and sweet-scented bedstraw (*Galium triflorum*). Non-vascular plants were also fairly abundant, primarily in the form of moss. Aside from the presence of some blackwood acacias, the habitat in general, and the redwood-dominated areas in particular, appeared to be in good condition. It includes a significant majority of native species and a range of age and size classes (though as noted, the area was logged in the 20th Century, so there are few full-sized coast redwoods). There is also a healthy layer of litter, with an average depth of just over four inches among the five samples recorded where coast redwoods and/or Douglas firs are most dominant. The underlying soils are mapped as Hugo and Josephine loams (including with the “sandy” modifier) as well as Gazos and Lobitos soils, which are classified as silt loam (USDA 2022). The two soil samples excavated among Redwood Forest revealed medium loam and moderately fine sandy clay loam. No rocks of any size were observed within the reference relevé plot.

Cismontane Woodland

Covering 1.3 acres (3% of the project site) in the eastern portion of the project site (Unit 1) (see **Figure 4-A**) Cismontane Woodland is dominated by oak trees and other hardwoods and includes scattered emergent conifers. This is essentially the definition of the habitat as classified by the CNPS (2022), though the habitat also features components more typical of Broadleaved Upland Forest, in that localized areas have a nearly closed-canopy. The onsite habitat is intermediate between the two defined classes, but more closely conforms to the former. It is transitional between the more open habitats (i.e., Coastal Scrub and Valley and Foothill Grassland) and the deep shade of the conifer-dominated forest. The dominant tree is coast live oak, such that most of the habitat is mapped by Tukman as the *Quercus agrifolia* Alliance. Associated trees include tanoak, Pacific madrone, the ubiquitous blackwood acacia (primarily as saplings and smaller trees), and occasional Douglas fir and coast redwood. Notably absent is California bay (*Umbellularia californica*), a common associate of coast live oak, especially in areas inland of the project region. The shrub and vine layer consists of California blackberry, poison oak, thimbleberry, California hazelnut, and toyon (*Heteromeles arbutifolia*). French broom is present along the drier habitat margins. Herbs were moderately sparse, with the most common being creeping snowberry, hedgenettle (*Stachys* spp.), coastal woodfern, yerba buena, Pacific pea (*Lathyrus vestitus*), and helleborine (*Epipactis helleborine*). With the exception of blackwood acacia, French broom, and helleborine, all of these dominant species are native, and the habitat is in generally good condition. Many of the oaks in particular are exceptionally large and stately, and there were no conspicuous signs of sudden oak death syndrome (‘SOD’). This may be due in part to the absence of California bay, the most common vector of the pathogen to coast live oak that causes SOD—though tanoaks are present, and some appeared to be infected. Litter in this plant community was shallow to moderate, between two and four inches. The underlying soils within the project site are primarily mapped as Hugo and Josephine sandy loam, and soil pits indicate both moderately coarse sandy loam and silt loam.

Grassland

Grasslands within the project site are present as relatively small openings within the Coastal Scrub plant community, amounting to only 0.7 acre and 1.7 percent of the project site (**Figure 4-A**). As with the woodland described above, grassland habitats within the project site do not conform perfectly to CNPS habitat types. The habitat is classified in the Tukman database as California Annual & Perennial Grassland Mapping Unit because it consists of a mix of annual and perennial herbaceous plants. As such, it is also intermediate between Coastal Prairie and Valley and Foothill Grassland. Historically, most grasslands in the vicinity primarily supported Coastal Prairie, especially along the coastal terrace to the west, where soils are deeper. However, grasslands within and adjacent to the project site are mostly openings in Coastal Scrub that have resulted from disturbances, mostly in the form of livestock grazing and associated anthropogenic conversion of shrublands to pasture. In addition, the relatively shallow, sandstone-derived soils are perhaps less likely to support (or to maintain under disturbed conditions) typical Coastal Prairie habitat. In any case, the plant composition consists primarily of grasses and forbs, but with a mix of perennial and annual grasses as well as forbs associated with both Valley and Foothill Grassland and Coastal Prairie. Species more typically associated with Coastal Prairie include native and introduced perennial graminoids such as California oat grass (*Danthonia californica*), slender hair grass (*D. elongata*), common velvet grass, and western rush (*Juncus occidentalis*). Associated ferns and forbs included brackenfern, blue-eyed grass (*Sisyrinchium bellum*), sun cup (*Taraxia ovata*), and the introduced pale flax (*Linum bienne*). Examples of species more associated with Valley and Foothill Grassland include slender wild oat, soft chess (*Bromus hordeaceus*), Mediterranean linseed (*Bellardia trixago*), and filaree species (*Erodium* spp.). There has not been any grazing or natural mechanism to maintain the grasslands for many years, such that most of the habitat is experiencing encroachment from Coastal Scrub species such as coyote brush, as well a variety of invasive plants of all strata, from blackwood acacia, to French broom, to jubatagrass, to poison hemlock. In the continued absence of shrub reduction, this site would likely revert fully to disturbed Coastal Scrub, as indicated by the substantial encroachment of coyote brush and French broom just in the timeframe from 2019 to 2022. Given that no specific management is proposed for the area, the restoration team is including a variety of shrubs in the proposed planting palette.

4.0 RESULTS OF HABITAT MODELING

4.1 Plant Community Habitat Modeling

A total of 11 plant communities were identified for restoration in the project site, based on the habitat modeling. All of the communities occur within or immediately adjacent to the project site, either as mapped by Tukman or as unmapped stands of the primary plant species associated with the community and observed in the area by VNLC. An exception is the *Acer macrophyllum* Mapping Unit, which is not mapped as stands in the area, but the namesake species was observed as scattered individuals in the area, and only 12 trees would be planted in the restoration area, as part mitigation associated with the Purisima-to-the-Sea trail project. The 11 modeled communities are listed below in **Table 3**, along with environmental parameters associated with each, as identified by comparing various GIS datasets with the county-wide vegetation data produced by Tukman. The stands of invasive plant species are analyzed in **Table 4**, to shed light on their habitat preferences and thus where they may need to be managed. The modeled native habitats are mapped on **Figures 5-A** and **5-B**. Among the communities, five are mapped within or adjacent to the project site, including the following: the *Baccharis pilularis* Alliance, the Mesic Coastal Scrub Mapping Unit, the *Notholithocarpus densiflorus* Alliance, the *Quercus agrifolia* Alliance, and the *Sequoia sempervirens* Alliance. Note again that the site has been largely defined by the *absence* of native communities, so the presence of such communities nearby is key to understanding

Table 3. Summary of Native Plant Community Habitat Attributes.

Plant Community Name ¹	1 Standard Deviation Below, Above Mean Solar Radiation ²	Normalized Solar Radiation (% of mean)	Associated Soil Units in the Project Site (top units are bolded)	Min, Max, Mean Precipitation (inches)	Min, Max, Mean Fog/Low Cloud Cover ⁴	Min, Max, Mean Elevation	Mean Slope	1 Standard Deviation Below, Above Mean Slope ²	Existing Acreage, Potential Acreage, within Project Site	Aspect by % Occurrence (top three are bolded)	Remarks
<i>Acer macrophyllum</i> Mapping Unit (planting of only 12 trees)	429459, 554711	87.4%*	Hugo and Josephine units (54.7% of all of community within county), Lobitos loam units (1.9% of all of community within county)	27.0, 36.1, 31.7	4.5, 10.5, 8.2	125.1 ft., 2,351 ft., 302.1 ft.	0%, 113%, 26%	44%, 8%	0, 0.05	E (9.7%), N (23.3%), NE (31.6%), NW (12.2%), S (4.7%), SE (8.2%), SW (2.0%), W (8.3%)	Stands of the namesake species present in the area primarily in association with <i>Alnus rubra</i> , but present as scattered individuals.
<i>Ceanothus thyrsiflorus</i> Alliance	481568, 595079	100.2%	Gazos and Lobitos soils (7%) , Hugo and Josephine units (0%), Lobitos loam units (11%)	23.7, 35.5, 28.3	6.5, 14.0, 10.1	33 ft., 1,576 ft., 593 ft.	36%	22%, 50%	0, 12.2	E (8.3%), N (9.9%), NE (4.9%), NW (14.0%), S (14.5%) , SE (15.9%) , SW (13.4%), W (19.0%)	Namesake species is common in a variety of habitats, so considered suitable as a plant community.
<i>Cornus sericea</i> – <i>Salix (lasiolepis, exigua)</i> Association	380625, 514487	98.5%	Gazos and Lobitos soils (7%) , Hugo and Josephine units (1%), Lobitos loam units (16%)	24.4, 38.4, 31.2	6.0, 14.0, 9.1	42 ft., 1,810 ft., 817 ft.	47%	30%, 64%	0, 2.3	E (4.5%), N (25.9%), NE (18.3%) , NW (28.7%), S (2.3%), SE (2.2%), SW (3.7%), W (14.6%)	Restoration to focus on <i>Cornus sericea</i> due to lack of suitable mesic or riparian habitat.
<i>Eriophyllum staechadifolium</i> – <i>Erigeron glaucus</i> – <i>Eriogonum latifolium</i> Alliance	445183, 578783	94.9%	Gazos and Lobitos soils (0%), Hugo and Josephine units (0%), Lobitos loam units (0%)	22.7, 25.0, 23.9	8.5, 14.0, 12.3	1 ft., 555 ft., 86 ft.	40%	3%, 77%	0, 13.4	E (2.2%), Flat (0.9%), N (3%), NE (3.9%), NW (15.7%) , S (5.7%), SE (3.2%), SW (20.2%) , W (45.3%)	Restoration to focus on <i>Eriophyllum</i> . Associated soils not present but onsite soils assumed suitable due to abundance of species in the project site.
<i>Frangula californica</i> ssp. <i>californica</i> – <i>Baccharis pilularis</i> / <i>Scrophularia californica</i> Association	428146, 570751	100.5%	Gazos and Lobitos soils (<1%), Hugo and Josephine units (<1%), Lobitos loam units (8%)	22.7, 37.0, 30.7	4.5, 14.0, 11.9	19 ft., 1,863 ft., 900 ft.	42%	26%, 58%	0, 5.6	E (10.3%), N (15.2%), NE (13.7%), NW (19.8%) , S (5.9%), SE (6.6%), SW (10.9%), W (17.7%)	Community not mapped in area but all namesake species are quite common.
<i>Gaultheria shallon</i> – <i>Rubus (ursinus)</i> Alliance	401113, 540999	99.5%	Gazos and Lobitos soils (<1%), Hugo and Josephine units (<1%), Lobitos loam units (13%)	22.5, 36.3, 27.0	4.5, 14.0, 11.3	1 ft., 1,847 ft., 481 ft.	37%	17%, 57%	0, 7.8	E (5.2%), Flat (0.6%), N (24.6%), NE (13.4%), NW (26.5%) , S (3.1%), SE (2.3%), SW (6.3%), W (18.0%)	Restoration to focus on <i>Rubus ursinus</i> , which is very common in the area. <i>Gaultheria shallon</i> was not documented.
Mesic Coastal Scrub Mapping Unit	379770, 511564	98.8%	Gazos and Lobitos soils (<1%), Hugo and Josephine units (<1%), Lobitos loam units (18%)	23.0, 37.2, 28.7	4.5, 14.0, 10.8	5 ft., 2,168 ft., 598 ft.	45%	29%, 61%	0, 1.6	E (9.4%), Flat (0%), N (31.3%), NE (20.3%) , NW (25%) , S (1.5%), SE (2.9%), SW (1.8%), W (7.9%)	Includes many shrubs that could be planted as dominants in their own communities.
<i>Notholithocarpus densiflorus</i> Alliance	437444, 588557	102.5%	Gazos and Lobitos soils (0%), Hugo and Josephine loam units (<1%), Hugo and Josephine sandy loam units (70%) , Lobitos loam units (<1%)	28.6, 42.3, 38.1	4.5, 10.5, 6.9	352 ft., 2,506 ft., 1593 ft.	42%	24%, 60%	0, 1.2	E (12.3%), N (19.1%), NE (17%) , NW (14.8%), S (7.4%), SE (6.9%), SW (9.2%), W (13.3%)	Will not be planted due to associated with SOD, but included here due to its indication of habitat for other species.
<i>Quercus agrifolia</i> Alliance	472907, 585126	102.5%	Gazos and Lobitos soils (<1%), Hugo and Josephine loam units (8%) , Hugo and Josephine sandy loam units (3%) , Lobitos loam units (4%)	16.9, 41.0, 30.4	4.5, 13.5, 6.7	0 ft., 2,537 ft., 661 ft.	27%	10%, 45%	1.3, 21.6	E (13.9%) , Flat (0.5%), N (15.2%), NE (17.4%) , NW (12.3%) , S (9.2%), SE (10.7%), SW (10.6%), W (10.1%)	To be restored beyond modeled habitat due to presence beyond modeled habitat and adaptability of the namesake species.
<i>Rubus spectabilis</i> – <i>Morella californica</i> Alliance	409429, 531385	95.8%	Gazos and Lobitos soils (<1%), Hugo and Josephine units (0%), Lobitos loam units (13%)	22.6, 31.4, 24.8	7.0, 14.0, 12.4	33 ft., 957 ft., 340 ft.	33%	16%, 50%	0, 3.4	E (8%), Flat (0.7%), N (29.4%), NE (28.6%) , NW (17.9%) , S (0.9%), SE (1.1%), SW (2.5%), W (11%)	Restoration to focus on <i>Morella</i> , which forms unmapped stands in the area. <i>Rubus spectabilis</i> was not documented in the area.
<i>Sequoia sempervirens</i> Alliance	442864, 588962	103.5%	Gazos and Lobitos soils (<1%), Hugo and Josephine loam units (16%) , Hugo and Josephine sandy loam units (43%) , Lobitos loam units (<1%)	18.8, 42.4, 35.3	4.5, 14.0, 6.9	23 ft., 2,418 ft., 1069 ft.	38%	20%, 56%	3.5, 2.4	E (12.9%), Flat (0%), N (16%), NE (14.3%) , NW (13.3%) , S (9.8%), SE (9.3%), SW (11.9%), W (12.4%)	To be restored beyond modeled habitat due to presence beyond modeled habitat and adaptability of the namesake species.

1. Habitat types were selected based on alliances mapped within the project site and/or one or more of their primary plant species are present in substantial covers. Parameter values are based on habitats as mapped in San Mateo County by Tukman Geospatial, Inc. for the Golden Gate Parks Conservancy. Standard deviation data was expanded from 1 to 1.5 SD for the solar radiation parameter of *Quercus agrifolia* and *Sequoia sempervirens* Alliances based on habitat values within the project site.

2. This is the range considered to be the optimal habitat value.

3. Soil units include the sub-units listed below. Units considered to be habitat include only those greater than 1% that associated with a given plant community
GoF3 = Gazos and Lobitos soils, steep and very steep, severely eroded. Note also includes Gazos-Lobitos silt loam units (similar soils mapped in other parts of San Mateo County)

HuF = Hugo and Josephine loams, very steep

HyF = Hugo and Josephine sandy loams, very steep

LIE2 = Lobitos loam, steep, eroded

LIF2 = Lobitos loam, very steep, eroded

4. Units are daily hours of summertime fog or low cloud cover

Notes:

- Habitat parameters are based on values from habitats mapped throughout San Mateo County by Tukman Geospatial (2022).
- Existing mapped acreages from Tukman Geospatial; potential acreages are composite values derived from other overlaid values present in the table.
- Eriophyllum staechadifolium* – *Erigeron glaucus* – *Eriogonum latifolium* Alliance has no suitable soil alliances based on local database occurrences of the alliance in San Mateo County – however, the species has been identified on the site nonetheless, so potential acreage values do not reflect soil type as a limiting factor.
- “Flat” is excluded from some aspect fields for certain species where occurrences were not recorded.

Data Sources: USDA SSURGO soils GIS data (2022 SoilWeb), USGS 10m DEMs (1997), USGS 1m DEMs (2017), PRISM precipitation GIS data (1998), USGS fog/low cloud cover GIS data (2016)

Table 4. Summary of Invasive Plant Community Habitat Attributes.

Plant Community Name ¹	1 Standard Deviation Below, Above Mean Solar Radiation ²	Associated Soil Units in Restoration Area ³	Min, Max, Mean Precipitation (inches)	Min, Max, Mean Fog/Low Cloud Cover ⁴	Min, Max, Mean Elevation (feet)	Mean Slope	1 Standard Deviation Below, Above Mean Slope ²	Aspect by % Occurrence (top three are bolded)
<i>Acacia melanoxylon</i> Provisional Semi-Natural Association	549905, 618025	Gazos and Lobitos soils (6%) Hugo and Josephine units (33%) Lobitos loam units (60%), Pomponio loam units (<1%)	30.1, 31.6, 30.7	9.0	947, 1,380, 1,115,	32%	14%, 50%	E (5.2%), N (0.7%), NE (0.4%), NW (6.6%), S (26.0%), SE (25.5%), SW (18.5%), W (17.1%)
<i>Cortaderia (jubata, selloana)</i> Herbaceous Semi-Natural Alliance	543691, 603198	Lobitos loam units (57%) Pomponio loam units (43%)	30.0, 30.3, 30.1	9.0, 9.5, 9.1	693, 1,081, 984,	23%	9%, 39%	E (1.2%), N (1.2%), NE (0.8%), NW (5.3%), S (17.6%), SE (2.0%), SW (22.9%), W (31.5%)
<i>Eucalyptus spp.</i> Provisional Woodland Semi-Natural Alliance	511975, 596815	Hugo and Josephine units (2%) Lobitos loam units (98%)	29.6, 30.0, 29.8	9.0, 9.5, 9.5	506, 857, 632	26%	17%, 35%	E (0.3%), N (4.9%), NE (0.5%), NW (21.9%), S (16.1%), SE (4.5%), SW (27.0%), W (24.8%)
<i>Genista monspessulana</i> Provisional Shrubland Semi-Natural Alliance	543966, 609647	Gazos and Lobitos soils (22%) Lobitos loam units (78%)	30.5, 30.9, 30.7	9.0	960, 1,202, 1,109	25%	14%, 36%	E (0.3%), N (0.4%), NE (0.2%), NW (8.0%), S (11.7%), SE (1.5%), SW (46.0%), W (31.9%)
<i>Pinus radiata</i> Plantation Provisional Semi-Natural Association	542481, 610623	Lobitos loam units (100%)	29.4, 29.5, 29.4	9.5	428, 724, 565	41%	28%, 54%	E (0.8%), N (0.1%), NE (0.3%), NW 4.5%), S (29.1%), SE (7.7%), SW (42.4%), W (15.1%)

1. Habitat types were selected based on alliances mapped within the restoration area and/or one or more of their primary plant species are present in substantial covers. Parameter values are based on habitat types observed within the restoration area.

2. This is the range considered to be the optimal habitat value.

3. Soil units include the sub-units listed below. Units considered to be habitat include only those greater than 1% that associated with a given plant community

GoF3 = Gazos and Lobitos soils, steep and very steep, severely eroded. Note also includes Gazos-Lobitos silt loam units (similar soils mapped in other parts of San Mateo County)

HuF = Hugo and Josephine loams, very steep

HyF = Hugo and Josephine sandy loams, very steep

LIE2 = Lobitos loam, steep, eroded

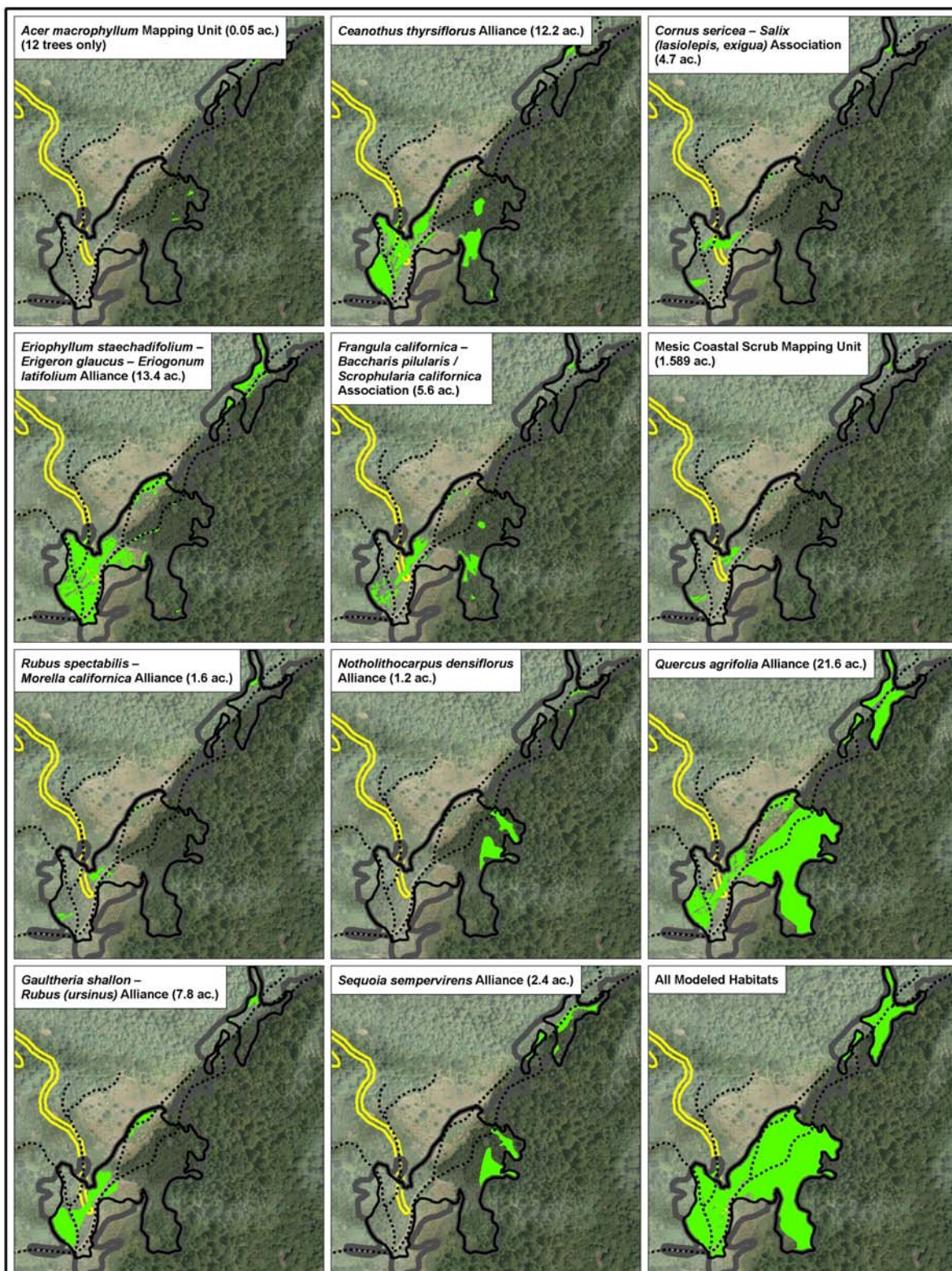
LIF2 = Lobitos loam, very steep, eroded

4. Units are daily hours of summertime fog or low cloud cover. When a single value is present, no variation of this value was observed in the case of that plant community.

Notes:

- Habitat parameters are based on values from habitats mapped throughout the restoration area by VNLC (2022).
- "Flat" is excluded from some aspect fields for certain species where occurrences were not recorded.

Data Sources: USDA SSURGO soils GIS data (2022 SoilWeb), USGS 10m DEMs (1997), USGS 1m DEMs (2017), PRISM precipitation GIS data (1998), USGS fog/low cloud cover GIS data (2016), VNLC (2022)



Legend

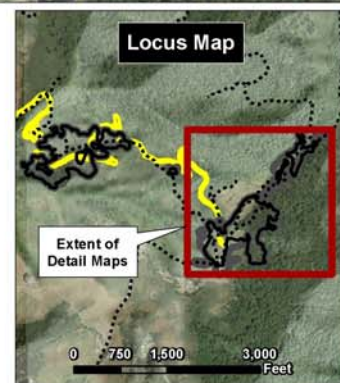
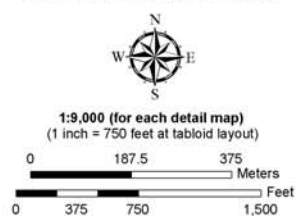
- Trail
- Project Boundary (42.1 ac.)
- Restoration Area (32.56 ac.)
- Purisima to the Sea 20-ft Buffer

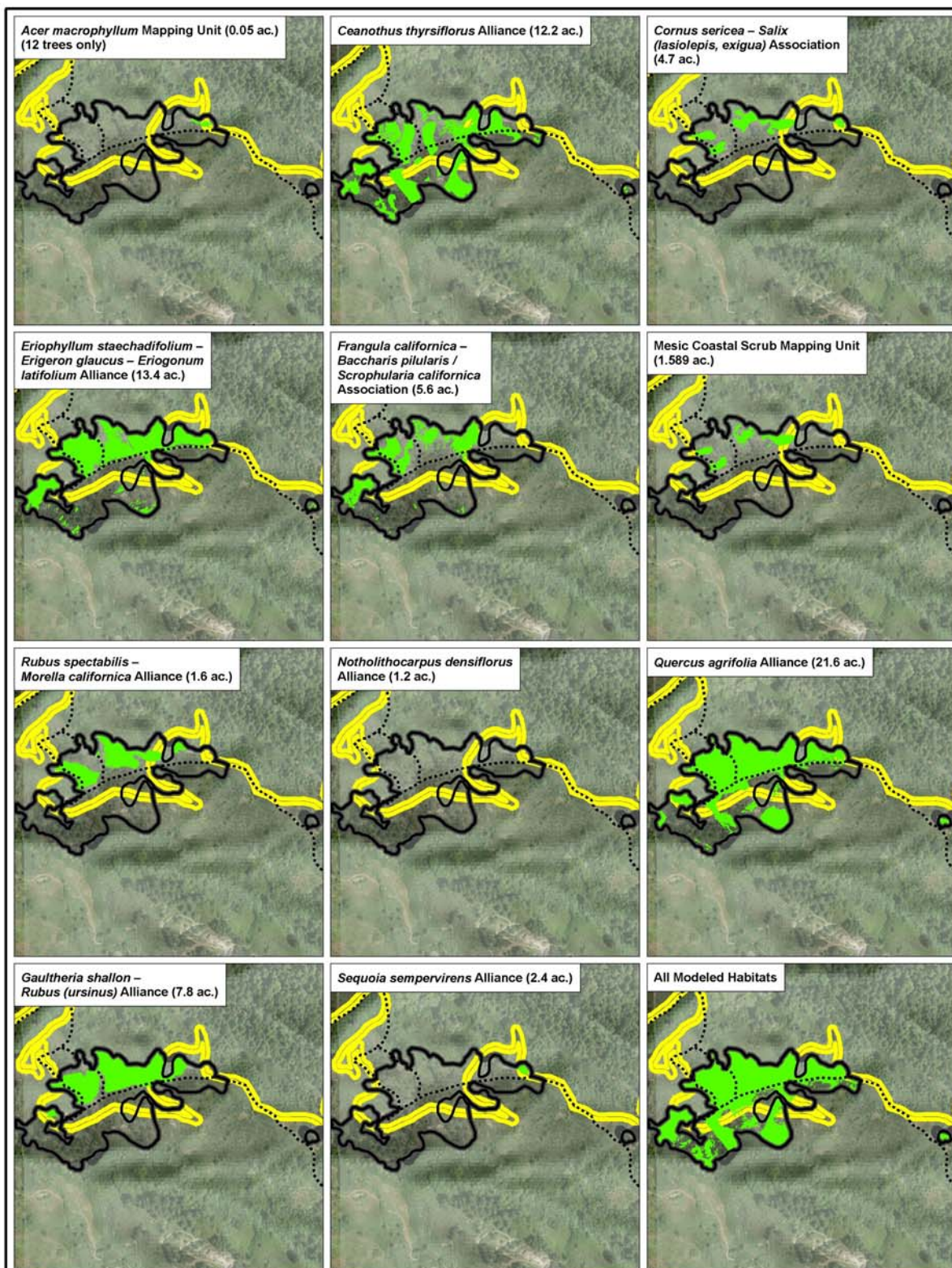
* Acreage applies to both Unit 1 and Unit 2



Data Sources: Midpen, 2021 | VMLC, 2022
GAP Analysis Project, 1998 | GGNRA, 2022
GIS/ Cartography by: Jake Schweitzer, Nov. 2022
Map File: Modeled-Hab-1_537_B-P_2026-0122.mxd

FIGURE 5-A
Modeled Habitat for
Plant Communities, Unit 1
Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California





Legend

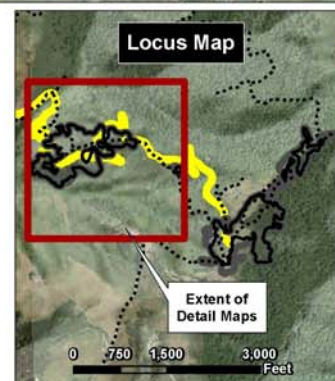
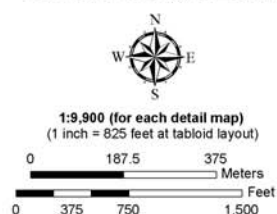
- Trail
- Modeled Habitat*
- Project Boundary (42.1 ac.)
- Restoration Area (32.56 ac.)
- Purisima to the Sea 20-ft Buffer

* Acreage applies to both Unit 1 and Unit 2



Data Sources: Midpen, 2021 | VMLC, 2022
GAP Analysis Project, 1998 | GGNRA, 2022
GIS/ Cartography by: Jake Schweitzer, Nov. 2022
Map File: Modeled-Hab-2_537_B-P_2026-0122.mxd

FIGURE 5-B
Modeled Habitat for
Plant Communities, Unit 2
Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California



communities and species with potential for restoration. The five communities listed above exclude the invasive tree communities that are mapped, as well as some native habitats that are considered unsuitable for restoration. Examples of the latter type include communities dominated by poison oak, Douglas fir, tanoak, or riparian species. In addition, grassland habitat is mapped within and surrounding the project site but is not proposed for restoration because there are no planned disturbance mechanisms that would maintain grassland, such as grazing, mowing, or prescribed fire. Poison oak is not proposed for restoration due to dermatological issues, while Douglas fir is not proposed for restoration because it is known to be problematic for oak woodlands, and because it is an aggressive species that will likely colonize the site without being planted. Tanoak is not proposed for restoration because it is both subject to and a vector for SOD. However, the *Notholithocarpus densiflorus* Alliance is included for analysis because the community often occurs as a transitional habitat between North Coast Coniferous Forest and Cismontane Woodland, and so its modeled habitat is valuable for potential restoration analysis. Finally, riparian tree species such as arroyo willow and red alder (*Alnus rubra*), both of which are mapped in the vicinity, are not proposed for planting due to a general absence of true riparian habitat. There are mesic microhabitats that could support such hydrophytes, but species with lower water requirements are preferred for planting within cleared areas. Examples of species proposed for mesic microhabitats include creek dogwood, California wax myrtle, and thimbleberry. These and other species are not mapped as plant communities in the area but are associated with the Mesic Coastal Scrub Mapping Unit and/or were noted as forming large stands in the area. Other plant species proposed for planting as part of the restoration which are not mapped as communities within or adjacent to the project site include California coffeeberry, blue blossom, seaside golden yarrow, and California blackberry. All of these similarly form substantial stands or at least are notable components of mapped plant communities such as the Mesic Coastal Scrub Mapping Unit.

As **Figure 5-A** and **5-B** show, there are small portions of both Unit 1 and Unit 2 where no habitat is modeled. These areas will be investigated in the field for microhabitat conditions, but it is anticipated that the most generalist plant communities can be established within these areas, including communities consisting largely of coyote brush, blue blossom, and coast live oak. These species show a lack of strong affinity towards specific soil types, slopes, aspects, and solar radiation values in the area. Additionally, based on the fact that coast redwood stands are more widespread than the modeled habitat, this species can likely be planted beyond its modeled habitat.

4.2 Rare Plant Habitat Modeling

A total of six special-status plant taxa have been determined to have at least some potential to be introduced to the project site, including Kings Mountain manzanita. The habitat parameters that were recorded by VNLC during 2022 field surveys of Kings Mountain manzanita populations are presented in **Table 5** below. A summary of field parameters recorded using remote analysis of this species as well as the other five special-status plants are presented in **Table 6**. The extent and locations of potentially suitable introduction habitat for each plant taxon within the project site are shown on **Figure 6-A** and **6-B**. As described in **Section 2** above, the mapping of potentially suitable introduction habitat for each plant is essentially a function of extrapolation from the parameter values most associated with each taxon. Given the potential for spatial imprecision within the rare plant location data as well as the environmental parameter data (e.g., the topographic, climate, and soils data), a relatively narrow range of the extrapolated values was used for assessing potential habitat areas. It should also be noted that the spatial data for some of the plants are based on a very limited number of occurrences, and/or are largely based on Calflora spatial data (see **Table 6**), for which there is little metadata or other documentation—the spatial precision of these mapped taxa may be quite imprecise. Summaries of each taxon's habitat parameters are provided in the context of introduction methods in **Section 7** below.

Table 5. Summary of King’s Mountain Manzanita Population Attributes.

Population Number	Population, Percent Cover, and Diameter of Kings Mountain Manzanita	Health of Population	Associated Tree Species (in order of cover)	Associated Shrub Species (in order of cover)	Associated Herb Species (in order of cover)	Aspect	Slope	Associated Soil in Population Area ³	Soil Texture and Observations	Associated Geologic Unit	General Habitat Type and Notes
1	<5, 5 - 25%, 50 ft	Fair	Blue oak (<i>Quercus kelloggii</i>). Coast live oak (<i>Q. agrifolia</i>). Gray pine (<i>Pinus sabiniana</i>). Pacific madrone (<i>Arbutus menziesii</i>)	French broom (<i>Genista monspessulana</i>). Poison oak (<i>Toxicodendron diversilobum</i>). Cotoneaster (<i>Cotoneaster franchetii</i>)	Slender wild oat (<i>Avena barbata</i>). Spring vetch (<i>Vicia sativa</i>). Bermuda buttercup (<i>Oxalis pes-caprae</i>)	E	80-100%	Alambique-McGarvey complex, 30 to 75 percent slopes	Gravelly clay loam; thin over sandstone bedrock	Vaqueros sandstone, Butano sandstone and Locatelli formation	Oak woodland; three plants; roadcut, artificial site; no over canopy
2	<5, 1 - 5%, 20 ft	Fair	California bay (<i>Umbellularia californica</i>). Blackwood acacia (<i>Acacia melanoxylon</i>)	Toyon (<i>Heteromeles arbutifolia</i>)	Italian thistle (<i>Carduus pycnocephalus</i>). Ripgut brome (<i>Bromus diandrus</i>). Herb Robert (<i>Geranium purpureum</i>)	E	50-80%	Alambique-McGarvey complex, 30 to 75 percent slopes	Gravelly clay loam; thin over sandstone bedrock	Vaqueros sandstone, Butano sandstone and Locatelli formation	Mixed evergreen forest; one plant; roadcut, artificial site; 50% canopy cover
3	5 - 10, 5 - 25%, 150 ft	Fair	Pacific madrone (<i>Arbutus menziesii</i>). California bay (<i>Umbellularia californica</i>)	Toyon (<i>Heteromeles arbutifolia</i>). Poison oak (<i>Toxicodendron diversilobum</i>)	Ground iris (<i>Iris macrosiphon</i>). Snowberry (<i>Symphoricarpos mollis</i>). Leafy bent grass (<i>Agrostis pallens</i>)	E	20-30%	Alambique-McGarvey complex, 30 to 75 percent slopes	Gravelly clay loam; thin over sandstone bedrock	Vaqueros sandstone, Butano sandstone and Locatelli formation	Mixed evergreen forest; roadcut, artificial site; 50% canopy overstory
4	<5, 5 - 25%, 25 ft	NA	California bay (<i>Umbellularia californica</i>). Blue oak (<i>Quercus douglasii</i>). Douglas fir (<i>Pseudotsuga menziesii</i>)	French broom (<i>Genista monspessulana</i>). Poison oak (<i>Toxicodendron diversilobum</i>)	Goldback fern (<i>Pentagramma triangularis</i>). Leafy bent grass (<i>Agrostis pallens</i>)	NE	20-30%	Alambique-McGarvey complex, 30 to 75 percent slopes	Gravelly clay loam; thin over sandstone bedrock	Vaqueros sandstone, Butano sandstone and Locatelli formation	Coastal scrub; one plant; lots of moss; roadcut, artificial site; 50% canopy overstory
5	<5, 1 - 5%, 15ft	Fair	Douglas fir (<i>Pseudotsuga menziesii</i>). Coast live oak (<i>Quercus agrifolia</i>). Pacific madrone (<i>Arbutus menziesii</i>). Tanoak (<i>Notholithocarpus densiflorus</i>)	None	Woodland brome (<i>Bromus laevipes</i>). Cleavers (<i>Galium aparine</i>). Pacific sanicle (<i>Sanicula crassicaulis</i>). Sheep sorrel (<i>Rumex acetosella</i>)	NW	0-3%	Hugo and Josephine sandy loams, moderately steep, erode d	Clay loam, some large gravel; 10YR 3/2	Pomponio mudstone member of Purisima formation, Monterey Group; Santa Cruz mudstone; Lambert shale and shale of Mt Pajaro area	Coastal scrub; one plant; artificial opening next to dirt road; 50% canopy overstory
6	<5, 5 - 25%, 30	Good	Douglas fir (<i>Pseudotsuga menziesii</i>). Coast live oak (<i>Quercus agrifolia</i>). Pacific madrone (<i>Arbutus menziesii</i>). Interior live oak (<i>Quercus wislizeni</i>)	Poison oak (<i>Toxicodendron diversilobum</i>). French broom (<i>Genista monspessulana</i>)	Snowberry (<i>Symphoricarpos mollis</i>). White flowered hawkweed (<i>Hieracium albiflorum</i>)	S	20-30%	Hugo and Josephine loams, steep	Clay loam, some large gravel; 10YR 3/2	Pomponio mudstone member of Purisima formation, Monterey Group; Santa Cruz mudstone; Lambert shale and shale of Mt Pajaro area	Conifer forest; three plants, with two sprouts; opening next to road; 50% canopy -reaching for sun
7	<5, 1 - 5%, 15ft	Poor	Douglas fir (<i>Pseudotsuga menziesii</i>). Pacific madrone (<i>Arbutus menziesii</i>). Coast live oak (<i>Quercus agrifolia</i>)	Brittle leaf manzanita (<i>Arctostaphylos crustacea</i>)	None	S	3-5%	Hugo and Josephine loams, steep	Clay loam, some large gravel; 10YR 4/2	Pomponio mudstone member of Purisima formation, Monterey Group; Santa Cruz mudstone; Lambert shale and shale of Mt Pajaro area	Conifer forest; one dead plant; natural site, high litter, dense Douglas fir forest; 80% over canopy
8	<5, 5 - 25%, 25 ft	Fair	Douglas fir (<i>Pseudotsuga menziesii</i>). Tanoak (<i>Notholithocarpus densiflorus</i>). Pacific madrone (<i>Arbutus menziesii</i>).	Evergreen huckleberry (<i>Vaccinium ovatum</i>). California blackberry (<i>Rubus ursinus</i>). French broom (<i>Genista monspessulana</i>)	Hairy bitter cress (<i>Cardamine hirsuta</i>). Sword fern (<i>Polystichum munitum</i>). Douglas iris (<i>Iris douglasiana</i>)	N	30-50%	Butano loam, very steep	gravelly clay loam, some large gravel; 10 YR 4/3	Pomponio mudstone member of Purisima formation, Monterey Group; Santa Cruz mudstone; Lambert shale and shale of Mt Pajaro area	Mixed evergreen forest; one plant; cut trees for management; plant bending to light

Note: Habitat parameters were recorded in 2022 by VNLC on Midpen preserve lands.

Data Sources: VNLC (2022), USDA SSURGO soils GIS data (2022 SoilWeb), USGS 10m DEMs (1997), USGS 1m DEMs (2017), USGS SF Bay Area Geologic Mapping (1997)

Table 6. Analysis of Special-Status Plant Habitat Attributes.

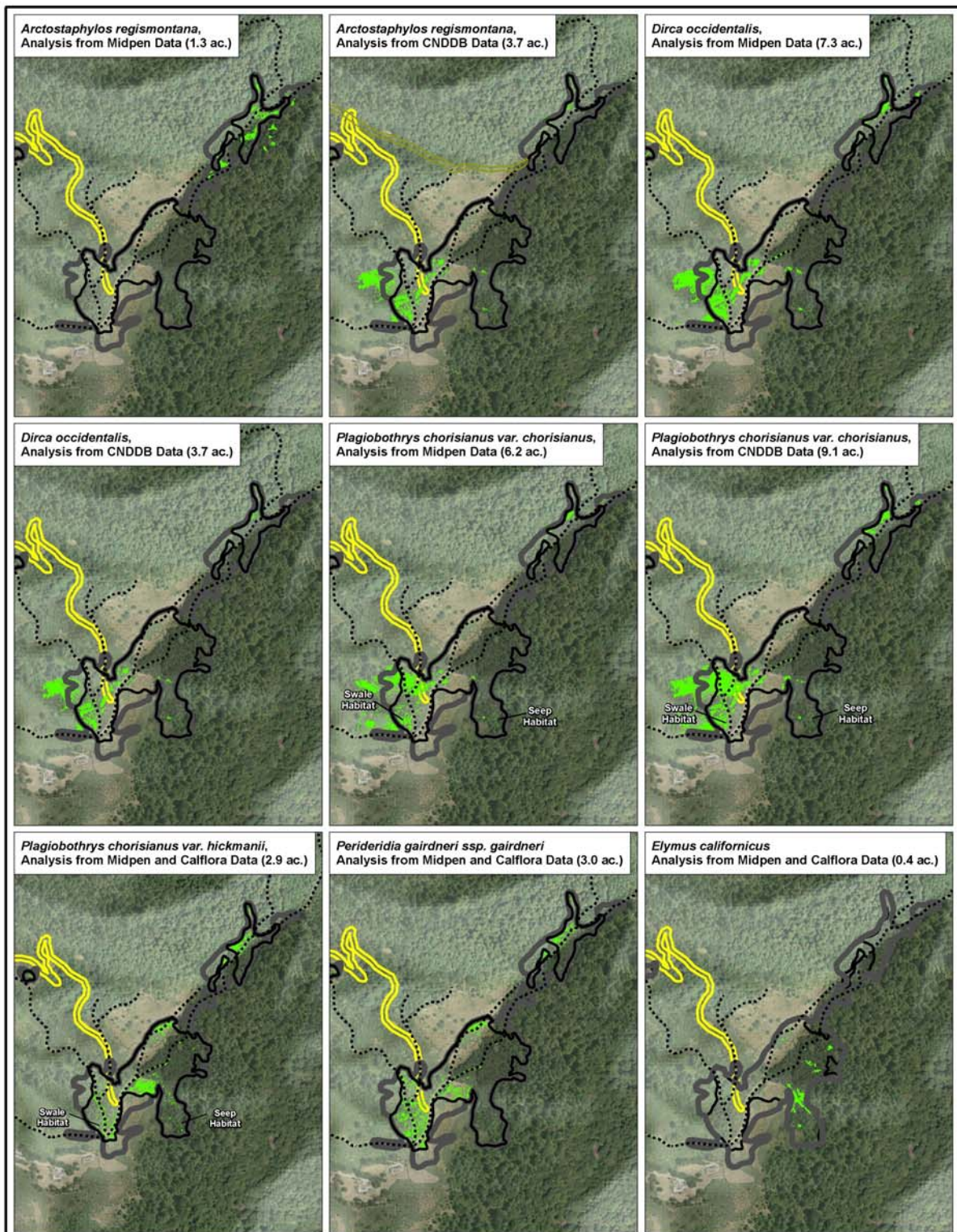
Plant Species Name	Data Source	Number of Observations in Database	1 Std. Dev. Below, Above Mean Solar Radiation ¹	Associated Soil Series in the Project Site ²	Distance and Direction of Nearest Occurrences from Project Site	Dominant Plant Community ³	Min., Max., Mean Annual Precipitation (inches)	Min., Max., Mean Fog/Low Summertime Cloud Cover ⁴	Min., Max., Mean Elevation (feet) ⁵	Mean Slope	1 Std. Dev. Below, Above Mean Slope ⁶	Aspect by % Occurrence (top three are bolded)
King's mountain manzanita (<i>Arctostaphylos regismontana</i>)	Midpen	93	518492, 628032	Alambique-McGarvey complex units (41.9%) Butano loam units (7.5%) Gazos loam units (3.2%) Hugo and Josephine units (43%) Rough broken land (4.3%)	2.1 miles Northwest	<i>Sequoia sempervirens</i> Alliance	37.3, 40.6, 39.1	5, 7, 6.25	893, 2406, 1751	31%	15%, 48%	E (18.28%) , N (3.23%) , NE (12.9%) , NW (8.6%), S (12.9%) , SE (29.03%) , SW (7.53%), W (7.53%)
	CNDDB	6	520322, 629338	Alambique-McGarvey complex units (33.3%) Hugo and Josephine units (33.3%) Los Gatos loam (16.7%) Rough broken land (16.7%)	2.6 miles North	<i>Sequoia sempervirens</i> Alliance	31.6, 40.6, 37.5	5.5, 7, 6	586, 2100, 1562.7	43%	15%, 70%	N (16.7%) NE (16.7%) NW (16.7%) S (16.7%) SW (16.7%) W (16.7%)
Western Leatherwood (<i>Dirca occidentalis</i>)	Midpen	12	448477, 581423	Cayucos clay loam units, (16.67%), Hugo and Josephine units, (58.33%), Lobitos loam units, (8.33%), Sweeney loam units, (16.67%),	5.8 miles West	<i>Quercus agrifolia</i> Alliance	30, 30.7, 30.3	5.5, 6.5, 5.92	355, 696, 537	27%	11%, 44%	N (25%) , NE (25%) , NW (8.33%), S (8.33%) SW (16.67%) , W (16.67%)
	CNDDB	8	500906, 577741	Alambique-McGarvey complex units (25%), Cayucos clay loam units (12.5%), Fagan loam units (12.5%), Hugo and Josephine units (12.5%), Los Gatos loam units (37.5%)	5.3 miles South	<i>Quercus agrifolia</i> Alliance	30.2, 33.2, 31.7	6, 6.5, 6.3	335, 565, 438.1	30%	20%, 40%	E (12.5%) NE (25%) NW (25%) S (12.5%) SE (12.5%) SW (12.5%)
California bottle grass (<i>Elymus californicus</i>)	Midpen	3	485930, 556528	Hugo and Josephine units (100%)	6.0 miles West	Occurrences are distributed evenly between <i>Alnus rhombifolia</i> Alliance, <i>Sequoia sempervirens</i> Alliance, and <i>Umbellularia californica</i> alliance.	30, 30.1, 30	6	466, 508, 488	28%	4%, 52%	E (33.33%) , N (33.33%) , W (33.33%)
	VNLC, Calflora	12	467349, 497655	Butano loam units (69%) Lockwood loam units (3%) Mindego clay loam units (11%) Santa Lucia loam units (17%)	6.3 miles Northwest	<i>Aesculus californica</i> Alliance (4%), <i>Quercus agrifolia</i> alliance (69%) <i>Sequoia sempervirens</i> alliance (37%)	29.49, 32.09, 31.42	5, 10.5, 7	161, 719, 652	19%	13%, 25%	E (58.33%) NE (16.67%) SE (16.67%) N (8.33%)
Gairdner's yampa (<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>)	Midpen	1	556219	Sweeney loam units (100%)	7.3 miles West	<i>Baccharis pilularis</i> Alliance	31	6.5	597	29%	NA	W (100%)
	Calflora	6	549430, 572082	Saurin-Bonnydoon complex units (33.3%) Sidrak variant sand (16.7%) Narbon laomy fine sand (33.3%) Bonnydoon-Rock outcrop complex (16.7%)	23.3 miles West	NA	18, 44, 30	6, 13, 9.4	8, 23, 152	15%	1%, 29%	NW (33.33%) SW (50.00%) W (16.67%)

Plant Species Name	Data Source	Number of Observations in Database	1 Std. Dev. Below, Above Mean Solar Radiation ¹	Associated Soil Series in the Project Site ²	Distance and Direction of Nearest Occurrences from Project Site	Dominant Plant Community ³	Min., Max., Mean Annual Precipitation (inches)	Min., Max., Mean Fog/Low Summertime Cloud Cover ⁴	Min., Max., Mean Elevation (feet) ⁵	Mean Slope	1 Std. Dev. Below, Above Mean Slope ⁶	Aspect by % Occurrence (top three are bolded)
Choris's popcornflower (<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>)	Midpen	27	470924, 559800	Cayucos clay loam units, (3.7%), Colma loam units, (22.22%), Gazos and Lobitos Soils, (14.81%), Hugo and Josephine units, (11.11%), Lobitos loam units, (33.33%), Tierra loam units (14.81%)	3.2 miles West	<i>Baccharis pilularis</i> Alliance	25.5, 31.2, 28	6, 11, 8.52	381, 1063, 587	27%	15%, 38%	E (18.52%) , N (7.41%), NE (22.22%) , NW (33.33%) , SE (11.11%), SW (3.7%), W (3.7%)
	CNDDB	11	471757, 571228	Fagan loam units (9.1%), Gazos-Lobitos soils (18.2%), Lobitos loam units (27.3%), Mapping not complete (9.1%), Terrace escarpments (9.1%), Tierra loam units (9.1%), Watsonville units (18.2%)	3.2 miles West	<i>Baccharis pilularis</i> Alliance	24.7, 31.4, 27.6	6, 12.5, 8.9	45, 1100, 383	23%	2%, 43%	E (9.1%) NW (27.3%) S (18.2%) SW (18.2%)
Hickman's popcornflower (<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i>)	Midpen	1	465553	Tunitas loam units (100%)	1.9, miles South	<i>Gaultheria shallon</i> – <i>Rubus (ursinus)</i> Alliance	25.3	10.5	197	31%	NA	E (100%)
	Calflora	10	549141, 576960	Arnold-Santa Ynez Complex (30.0%), Francisquito-Urban land complex (12.4%), Bonnydoon loam units (32.5%), Bonnydoon-Rock outcrop complex (12.4%), Danville loam units (12.4%)	6.4 miles North	California Perennial and Annual Grassland Macrogroup	16.0, 39.9, 28.1	3.5, 10.5, 6.6	69, 211, 159	9%	1%, 19%	NE (30%) NW (20%) S (10%) SW (10%) W (30%)

1. This value is the optimal habitat range. When a single observation is present, the mean across that occurrence polygon is displayed for this parameter.
2. Soil units include the sub-units listed below. Units considered to be habitat include only those greater than 1% that associated with a given rare plants
Cayucos clay loam, moderately steep, and very steep, eroded.
Gazos loam, moderately steep, eroded
Gazos and Lobitos soils, steep and very steep, severely eroded. Note also includes Gazos-Lobitos silt loam units (similar soils mapped in other parts of San Mateo County)
Hugo and Josephine loams, steep, very steep, eroded or not. Note also includes Hugo and Josephine sandy loam units (similar soils mapped in other parts of San Mateo County).
Lobitos loam, steep and very steep, eroded
SwD2 = Sweeney clay loam, steep, moderately steep, and very steep, eroded
WatR2 = Watsonville loam and sandy loam, gently sloping, eroded
3. Dominant plant community is from the San Mateo County fine scale vegetation map (Tukman Geospatial LLC 2022) using Manual of California Vegetation (MCV) alliance-level classifications. In the case of Gairdner's yampah, most occurrences were outside of San Mateo County and therefore not within the bounds of this vegetation mapping.
4. Units are daily hours of summertime fog or low cloud cover. When a single observation is present, no variation of this value was observed in the case of that plant community.

- Notes:**
- Habitat parameters are based on values from habitats mapped throughout the restoration area by VNLC (2022).
 - "Flat" is excluded from some aspect fields for certain species where occurrences were not recorded.

Data Sources: CNDDB, Midpeninsula Regional Open Space District, USDA SSURGO soils GIS data (2022 SoilWeb), USGS 10m DEMs (1997), USGS 1m DEMs (2017), PRISM precipitation GIS data (1998), Tukman Geospatial LLC, USGS fog/low cloud cover GIS data (2016), VNLC (2022)



Legend

- Trail
- Modeled Reintroduction Habitat*
- Project Boundary (42.1 ac.)
- Restoration Area (32.56 ac.)
- Purisima to the Sea 20-ft Buffer

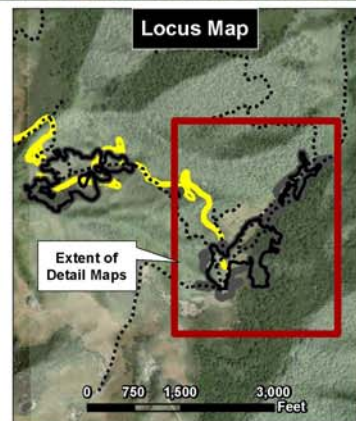
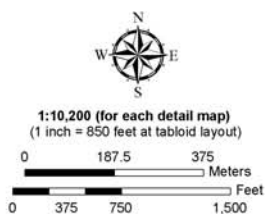
* Acreage applies to both Unit 1 and Unit 2

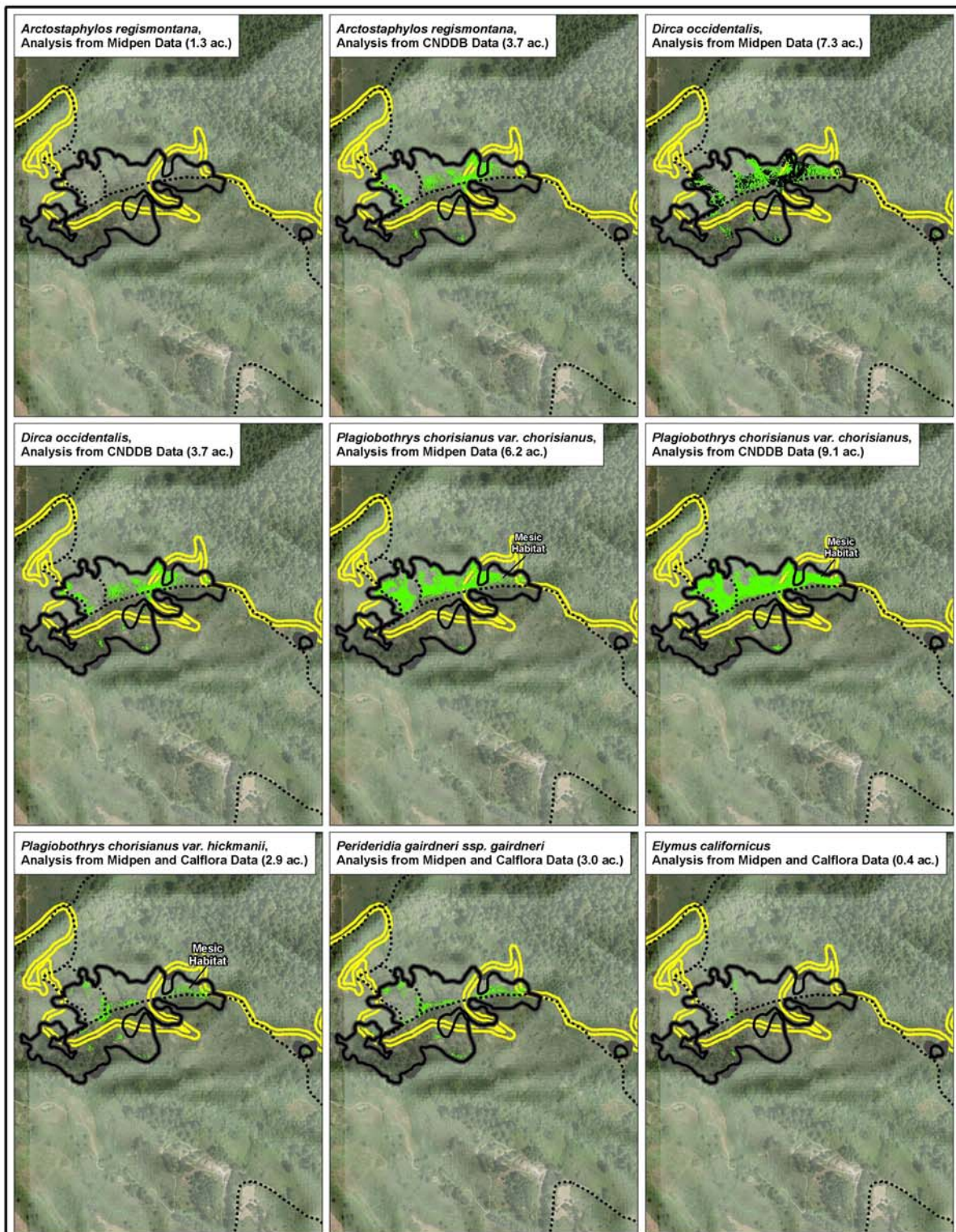


Data Sources: Midpen, 2021 | VNLC, 2022
 GAP Analysis Project, 1998 | GGNRA, 2022
 GIS/Cartography by: Jake Schweitzer, Nov. 2022
 Map File: Modeled-RP-1_537_B-P_2023-0626.mxd

FIGURE 6-A Modeled Habitat for Rare Plant Reintroduction, Unit 1

Irish Ridge Restoration Feasibility Study
 Purisima Creek Redwoods Open Space Preserve
 San Mateo County, California





Legend

- Trail
- Modeled Reintroduction Habitat*
- Project Boundary (42.1 ac.)
- Restoration Area (32.56 ac.)
- Purisima to the Sea 20-ft Buffer

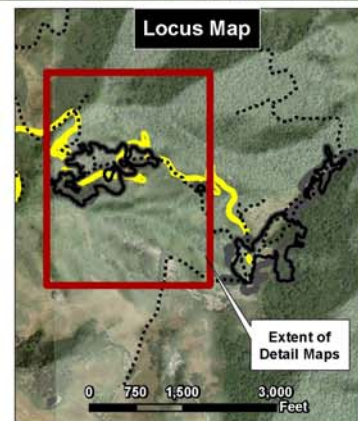
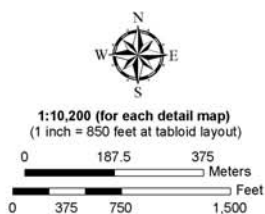
* Acreage applies to both Unit 1 and Unit 2



Data Sources: Midpen, 2021 | VMLC, 2022
GAP Analysis Project, 1998 | GGNRA, 2022
GIS/ Cartography by: Jake Schweitzer, Nov. 2022
Map File: Modeled-RP-2_537_B-P_2023-0626.mxd

FIGURE 6-B Modeled Habitat for Rare Plant Reintroduction, Unit 2

Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California



5.0 PROPOSED CONDITIONS

5.1 Methods for Native Plant Restoration Species Selection

The methods described in **Section 2** were used to identify which habitat types, and the associated native plant species found within those habitat types, would be best suited for native plant restoration within the project site. The three broad-level habitat types identified for restoration using these methods include Cismontane Woodland, Coastal Scrub, and North Coast Coniferous Forest. These are subdivided into alliances and associations, but rather than restore specific alliances or associations, this Plan proposes treatments based on the more broad-level plant communities that will be composed of the most suitable restoration species associated with the alliances or associations. The Plan also accounts for individual plant species' ability to compete against invasive species, adaptability to different microhabitats and climate change, and value as wildlife habitat and/or forage. The ecological benefits of targeted restoration plant species with respect to climate change are presented in **Appendix G**, as compiled by Point Blue Conservation Science. The tool used for analysis was developed for Marin County and Sonoma County, and the plant species addressed in the appendix include only those for which information has been compiled—there are numerous species included in this Plan that are not included in the analysis—but the information nevertheless serves as a useful reference.

5.1.1 Delineation of Restoration Sites

Specific restoration sites within Unit 1 and Unit 2 were delineated by analyzing data from the modeled habitat polygons within the restoration area and accounting for the adjacent communities mapped by Tukman.

Cismontane Woodland ('CW') restoration project sites were delineated by determining which areas would be best suited for coast live oak and tanoak based on the modeled habitat data as well as adjacency of the Tukman polygons. Coastal Scrub ('CS') restoration project sites were delineated by determining which areas would be best suited for coyote brush, and California coffeeberry, though needlegrass grassland ('NG') would also be included in the community between the planted shrubs. North Coast Coniferous Forest ('NCCF') restoration project sites were delineated by determining which areas would be best suited for coast redwood. The delineation of specific restoration project sites also took into account transition areas between the restoration area and the vegetation mapped by Tukman. For example, if the modeled habitat data showed an area suitable for Cismontane Woodland/coast live oak restoration located directly adjacent to an area outside the restoration area mapped as coast redwood by Tukman, the immediate restoration project site adjacent to the mapped vegetation was delineated as NCCF to allow for a transition restoration area between existing coast redwood and the Cismontane Woodland restoration area.

This method resulted in the creation of 19 distinct planting sites within Unit 1 and Unit 2. The Purisima-to-the-Sea Trail ('P2S') area was also delineated as a project site and may require restoration. This component was added to the project subsequent to the field surveys, such that detailed information is not available for the area. These restoration project sites are shown in **Figure 7** below.

5.1.2 Restoration Treatment Type Classifications

Multiple restoration treatment types and target restoration habitat types exist within the project area and are separated into 10 different classifications. These 10 classifications describe the relationship between the invasive plant population targeted for removal and the habitat type and associated plant species for targeted restoration. The classifications also consider historical and current vegetation types within and adjacent to the restoration areas. These restoration classifications are presented in **Table 7** below. The restoration action for each treatment is vegetation removal and plant installation.

5.1.3 Plant Palette Species Selection

Four different plant palettes were developed to address native plant restoration objectives for the project. Three palettes are specifically for container plant stock, and one palette is for native seed and container stock. Each palette includes a diverse mix of native tree, shrub, and herbaceous plant species that are suited for both relatively mesic and relatively xeric conditions throughout the restoration areas (adaptability). The plant palettes include species that will allow for rapid initial establishment of native grasses, forbs, and shrubs, as well as long-term establishment of long-lived tree species. This section does not address the establishment of rare plants targeted as part of the project, as these are addressed in a separate section below. Individual native plant restoration species were selected based on the following criteria:

1. Plant species that were observed within and/or adjacent to the project sites during field surveys
2. Plant species that align with modeled habitat analysis, as well as other species that are suitable for the various types of soil, aspect, and climate variables that exist throughout the project site
3. Plant species noted as commonly occurring among the target plant communities as described in the MCV
4. Plant species that are notably adaptable to a variety of microhabitats and therefore to potentially changing climatic conditions
5. Plant species with limited potential to exacerbate wildfire conditions
6. Plant species that are commonly used and have proven success on regional native plant restoration projects
7. Plant species that provide multiple habitat restoration objectives including wildlife forage and/or pollen nectar, slope stability, ability to outcompete or temporarily co-exist with invasive plants;
8. Plant species that are commonly available at regional native plant nurseries
9. Plant species which the design team has experience working with on habitat restoration projects

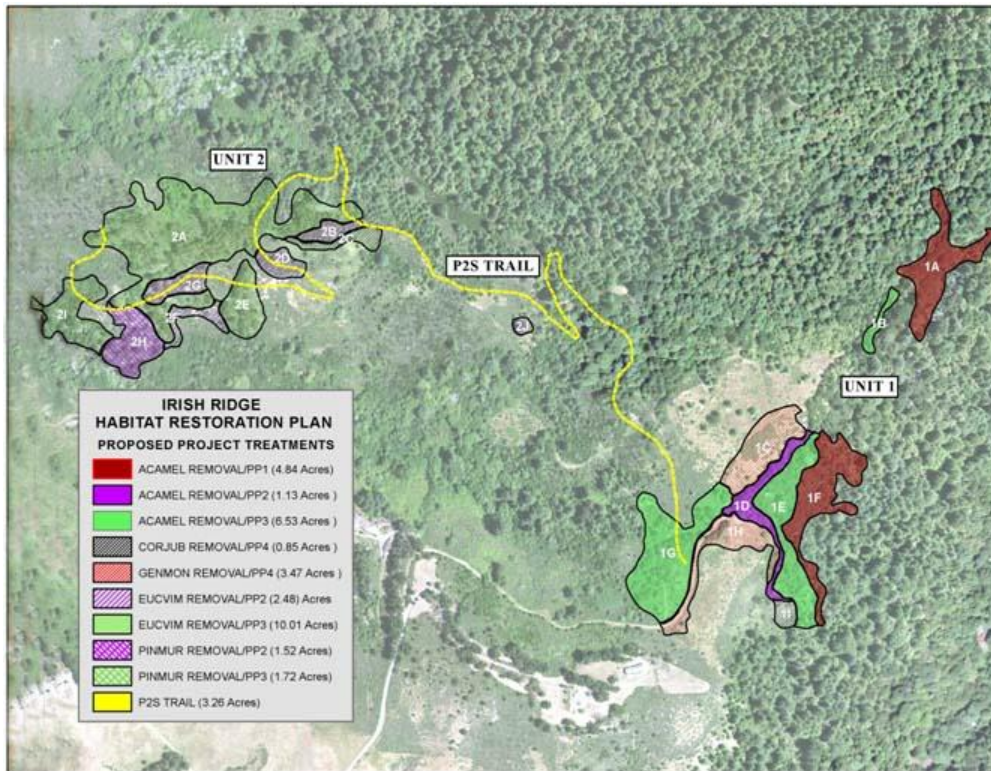


Figure 7. Restoration Treatments

Note: See **Table 13** for additional treatment information, and **Appendix E** for large-scale maps

Table 7. Restoration Treatment Type Classifications

Note: See **Table 8** below for plant palette information

Treatment Type Classifications				
Treatment Class Number	Assumed Pre-1948 Plant Communities	Existing Non-Native Target Vegetation	Targeted Restoration Habitat Type ¹	Plant Palette Number (see Table 8)
1	North Coast Coniferous Forest	<i>Acacia melanoxydon</i>	NCCF/CS	1
2	Coastal Scrub	<i>Acacia melanoxydon</i>	CS/CW/NG	2
3	Cismontane Woodland	<i>Acacia melanoxydon</i>	CW/CS	3
4	Coastal Scrub	<i>Cortaderia jubata</i>	CS	4
5	Coastal Scrub	<i>Genista monspessulana</i>	CS	4
6	Coastal Scrub	<i>Eucalyptus viminalis</i>	CS/CW/NG	2
7	Cismontane Woodland	<i>Eucalyptus viminalis</i>	CW/CS	3
8	Coastal Scrub	<i>Pinus muricata</i>	CS/NG	2
9	Cismontane Woodland	<i>Pinus muricata</i>	CW/CS	3
10	North Coast Coniferous Forest ('NCCF')	P2S Trailside invasive plants	NCCF/CS	1

1. Targeted Restoration Habitat Type Acronyms:

CW = Cismontane Woodland, CS = Coastal Scrub, NCCF = North Coast Coniferous Forest, NG = Needlegrass Grassland

Each planting palette contains a similar composition of species but with different quantities of those species planted, depending on the target habitat type. This design method allows for a mix of species to be planted that have a chance of survival in various microsite and climatic conditions. Each planting palette contains a similar mix of grass, forb, and shrub species, with higher densities of coast redwood and more mesic species in North Coast Coniferous Forest restoration areas, higher densities of coast live oak and more xeric species in Cismontane Woodland restoration areas, and higher densities of Coastal Scrub shrub species in Coastal Scrub restoration areas. Note that, per the request of Midpen, the density of coast redwoods conforms to CalFire recommendations to minimize unnecessary fuels. With the exception of foothill needlegrass planting areas (see below), tree species included within the planting palettes for Coastal Scrub restoration areas will be concentrated in low numbers along the margins of the habitat, as transition zones. A few may also be planted within areas observed as optimal for trees within microhabitats of the scrub, such as within small depressions. One other plant palette was designed specifically for areas where French broom and jubatagrass will be removed. This palette will address competition from new jubatagrass and French broom seedlings, as well as possible erosion issues on the sites, while re-establishing Coastal Scrub plant communities. A summary of the four planting palettes is found in **Table 8** below. Microhabitat conditions, such as soil texture and solar radiation, will be accounted for in determining the species planting locations.

Foothill needlegrass will be established within the Coastal Scrub restoration areas, but only within areas currently dominated by invasive tree species (Sites 1D, 2H, 2B, 2D, 2F, 2G, and 2J), an area amounting to 5.13 acres. Trees will be more readily kept at bay relative to French broom and Jubatagrass, thus allowing the needlegrass to better establish. This will be the dominant grass planted in these restoration areas, as at least an acre is required to meet the mitigation requirements from the impacts associated with the Purisima-to-the-Sea trail work. Trees will not be planted in these sites, and the shrub density is relatively low, in order to make more space for the needlegrass. The needlegrass will be planted between shrubs, as microhabitats allow, and will be augmented by seeds of the species. Specifically, 23,531 plugs will be planted, each within an approximately 1x1-foot area, and these will be augmented by 155 pounds of seeds (see **Table 12**). Other herb species will be reduced in density to accommodate this species, if necessary, though there should be sufficient space for one acre.

Table 8. Summary of Plant Palette Types

Note: See Table 9 below for species acronyms

Plant Palette No.	Targeted Restoration Habitat Type	Acres	Plant Type	Species Mix
1	North Coast Coniferous Forest (NCCF)	4.84	Container	SEQSEM, QUEAGR, ARBMEN, CEATHY, CORCOR, CORSER, DIPAU, FRACAL, GUASHA, HOLDIS, LONHIS, LONINV, MORCAL, RIBMEN, RIBSAN, RUBGYM, RUBPAR, RUBSPE, RUBURS, SAMRAC, SYMMOL, VACOVA, ARTDOU, CLIDOU, FESCAL, LYSLAT, POLMUN, MELSUB, SANCRA, SCRCAL
2	Coastal Scrub (CS)	5.13	Container/ Acorn	ARBMEN, QUEAGR, SEQSEM, ARTCAL, CEATHY, CORCOR, CORSER, DIPAU, ERISTA, FRACAL, GUASHA, HETARB, HOLDIS, LONHIS, LONINV, LUBALB, MORCAL, RIBMEN, RIBSAN, RUBPAR, RUBSPE, RUBURS, SAMRAC, ERICON, SYMMOL, VACOVA, ARTDOU, CLIDOU, DANCAL LUPBIC, SANCRA, SCRCAL, STILEP, SYMCHI
3	Cismontane Woodland/Coastal Scrub (CW)	18.28	Container/ Acorn	ARBMEN, ACEMAC, QUEAGR, SEQSEM, CEATHY, CORCOR, CORSER, DIPAU, ERISTA, FRACAL, GUASHA, HETARB, HOLDIS, LONHIS, LONINV, LUBALB, MORCAL, RIBMEN, RIBSAN, ROSGYM, RUBPAR, RUBURS, SAMRAC, SYMMOL, VACOVA, ARTDOU, CLIDOU, DANCAL LUPBIC, GALCAL, GALTRI, SCRCAL, SYMCHI
4	CORJUB/GENMON Areas - Coastal Scrub (CS)	4.32	Container/ Acorn	QUEAGR, ARBMEN, ARTCAL, CEATHY, DIPAU, ERISTA, FRACAL, GUASHA, HETARB, HOLDIS, LONHIS, LONINV, LUBALB, MORCAL, RIBMEN, RIBSAN, RUBPAR, RUBSPE, RUBURS, SAMRAC, VACOVA, ARTDOU, CLIDOU, DANCAL LUPBIC, SCRCAL, SYMCHI
			Herbaceous Seed	BROSIT, ELYGLA, DESELO, STIPUL, ACMAME, ARTCAL, ESCCAL, LUPBIC, NEMPAR, SYSBEL

Table 9. Species Code Definitions

Species Code	Scientific Name	Common Name	Type
ACEMAC	<i>Acer macrophyllum</i>	Bigleaf Mapple	Tree
ARBMEN	<i>Arbutus menziesii</i>	Pacific Madrone	Tree
QUEAGR	<i>Quercus agrifolia</i> var. <i>agrifolia</i>	Coast Live Oak	Tree
SEQSEM	<i>Sequoia sempervirens</i>	Coast Redwood	Tree
ARTCAL	<i>Artemisia californica</i>	California Sage	Shrub
CEATHY	<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	Blue Blossom	Shrub
CORCOR	<i>Corylus cornuta</i> ssp. <i>californica</i>	California Hazel	Shrub
CORSER	<i>Cornus sericea</i> ssp. <i>sericea</i>	Redosier Dogwood	Shrub
DIPAU	<i>Diplacus aurantiacus</i>	Sticky Monkeyflower	Shrub
ERISTA	<i>Eriophyllum staechadifolium</i>	Seaside Woolly Sunflower	Forb/herb
ESCCAL	<i>Eschscholzia californica</i>	California Poppy	Forb/herb
FRACAL	<i>Frangula californica</i> ssp. <i>californica</i>	California Coffeeberry	Shrub
GAUSHA	<i>Gaultheria shallon</i>	Salal	Shrub
HETARB	<i>Heteromeles arbutifolia</i>	Toyon	Shrub
HOLDIS	<i>Holodiscus discolor</i>	Oceanspray	Shrub
LONHIS	<i>Lonicera hispidula</i>	Pink Honeysuckle	Shrub
LONINV	<i>Lonicera involucrata</i> var. <i>ledebourii</i>	Coast Twinberry	Shrub
LUPALB	<i>Lupinus albifrons</i> var. <i>albifrons</i>	Silver Lupine	Shrub
MORCAL	<i>Morella californica</i>	California Wax Myrtle	Shrub
RIBMEN	<i>Ribes menziesii</i>	Canyon Gooseberry	Shrub
RIBSAN	<i>Ribes sanguineum</i> var. <i>glutinosum</i>	Flowering Currant	Shrub
ROSGYM	<i>Rosa gymnocarpa</i>	Wood Rose	Shrub
RUBPAR	<i>Rubus parviflorus</i>	Thimbleberry	Shrub
RUBSPE	<i>Rubus spectabilis</i>	Salmonberry	Shrub
RUBURS	<i>Rubus ursinus</i>	California Blackberry	Shrub
SAMRAC	<i>Sambucus racemosa</i>	Red Elderberry	Shrub
SYMMOL	<i>Symphoricarpos mollis</i>	Creeping Snowberry	Shrub
VACOVA	<i>Vaccinium ovatum</i>	Huckleberry	Shrub
ACMAME	<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish Lotus	Forb/herb
ARTDOU	<i>Artemisia douglasiana</i>	Mugwort	Forb/herb
CLIDOU	<i>Clinopodium douglasii</i>	Yerba Buena	Forb/herb
ESCCAL	<i>Eschscholzia californica</i>	California Poppy	Forb/herb
GALCAL	<i>Galium californicum</i> ssp. <i>californicum</i>	California Bedstraw	Forb/herb
GALTRI	<i>Galium triflorum</i>	Sweet-Scented Bedstraw	Forb/herb
LUPBIC	<i>Lupinus bicolor</i>	Miniature Lupine	Forb/herb
LYSLAT	<i>Lysimachia latifolia</i>	Pacific Starflower	Forb/herb
NEMPAR	<i>Nemophila parviflora</i> var. <i>parviflora</i>	Small Flowered Nemophila	Forb/herb
POLMUN	<i>Polystichum munitum</i>	Western Sword Fern	Forb/herb
SANCRA	<i>Sanicula crassicaulis</i>	Pacific Blacksnakeroot	Forb/herb
SCRCAL	<i>Scrophularia californica</i>	California Figwort	Forb/herb
SYMCHI	<i>Symphotrichum chilense</i>	California Aster	Forb/herb

Species Code	Scientific Name	Common Name	Type
SYSBEL	<i>Sisyrinchium bellum</i>	Blue-Eyed-Grass	Forb/herb
BROSIT	<i>Bromus sitchensis</i>	California Brome	Graminoid
ELYGLA	<i>Elymus glaucus</i> ssp. <i>glaucus</i>	Blue Wildrye	Graminoid
DANCAL	<i>Danthonia californica</i>	California Oat Grass	Graminoid
DESELO	<i>Deschampsia elongata</i>	Slender Hair Grass	Graminoid
FESCAL	<i>Festuca californica</i>	California fescue	Graminoid
MELSUB	<i>Melica subulata</i>	Alaskan Oniongrass	Graminoid
STILEP	<i>Stipa lepida</i>	Foothill Needlegrass	Graminoid
STIPUL	<i>Stipa pulchra</i>	Purple Needlegrass	Graminoid

5.2 Results of Native Plant Restoration Species Selection

Descriptions of each plant palette are provided below. A complete list of species included in each palette, as well as associated plant spacing, installation densities, and quantities per site can be found in **Appendix F**. The high initial densities proposed in this plan will allow for overplanting of project sites to allow for some plant mortality and assumes an average of 50 percent of plants will survive after the fifth year of establishment. All the plant palettes were designed to include a diverse composition of overlapping native species to buffer against potential high rates of plant mortality as well as to provide ecosystem function and resiliency. Prior to plant installation, a qualified professional will determine the plant layout that will yield the highest survival and overall success, considering aspect, soil moisture and other site-specific environmental factors.

The ***North Coast Coniferous Forest Plant Palette*** targets establishment of coast redwood forest with a diverse mix of both mesic and xeric shrub, forb, and grass species. This plant palette will be planted in areas that demonstrate a potential for establishment of coast redwood and other mesic species through modeled habitat analysis and site assessments. It includes higher densities of coast redwood and mesic shrub species, while also allowing for establishment of coast live oak, Pacific madrone, and more xeric shrub and herbaceous species at drier sites. This plant palette will allow for installation of coast redwood at approximately 125 trees per acre (per CalFire recommendations), coast live oak at 50 trees per acre, and Pacific madrone at 50 trees per acre. Shrubs will be planted in clusters of three plants, and average five foot spacing between each shrub. Forbs will be planted in clusters of three plants, and average three foot spacing between each plant. Grasses will be planted in clusters of 20 spaced throughout the planting unit, and average two foot spacing between plants. No foothill needlegrass will be planted in these units.

The ***Cismontane Woodland/Coastal Scrub Plant Palette*** targets establishment of coast live oak forest with high densities of both mesic and xeric shrub, forb, and grass species. This plant palette will be planted in areas that demonstrate a potential for restoration of coast live oak and other mesic and xeric species through modeled habitat analysis and site assessments. It includes higher densities of coast live oak, Pacific madrone and mesic and xeric shrub and herbaceous species, while also allowing for establishment of coast redwood and more mesic shrub and herbaceous species in areas with moderate soil moisture. This plant palette will allow for installation of coast live oak at approximately 200 trees per acre, Pacific madrone at 50 trees per acre, and coast live oak at 20 trees per acre. Shrubs will be planted in clusters of three plants, and average five foot spacing between each shrub. Forbs will be planted in clusters of three plants, and average three foot spacing between each plant. Grasses will be planted in clusters of 20 spaced throughout the planting unit, and average two foot spacing between plants. No foothill needlegrass will be planted in these units.

The ***Coastal Scrub Plant Palette*** targets establishment of Coastal Scrub species with a diverse mix of both mesic and xeric shrub, forb, and grass species. This plant palette will be planted in areas that demonstrate a potential for establishment of coastal scrub species through modeled habitat analysis and site assessments. It includes higher densities of Coastal Scrub shrubs while also allowing for establishment of coast live oak and Pacific madrone in low densities along the margins as transitional habitat, and also within localized areas of suitable habitat, such as within small depressions. This plant palette will allow for installation of high densities of shrubs that will be planted in clusters of three plants, and average five foot spacing between each shrub. Within the tree treatment sites (blackwood acacia, Bishop pine, and manna gum), the trees will be planted only along the southern half of the restoration sites, to allow for the establishment of foothill needlegrass. Similarly, the number of shrubs will be reduced relative to other treatment areas. Forbs will be planted in clusters of three plants, and average three foot spacing between each plant. Grasses will be planted in clusters at a spacing of two feet between the trees and shrubs. One acre of foothill needlegrass will be planted in the tree treatment areas (see **Figure E-1** and **E-2, Appendix E**) to be restored as Coastal Scrub. No trees will be planted in these sites to make extra space in those areas. Using the habitat modeling maps (**Figure 5A** and **5B**), coast live oak will be installed in other sites at approximately 25 trees per acre, but closer to 12 per acre in the tree treatment areas. Pacific madrone and coast redwood will be installed at approximately 10 trees per acre, or approximately five per acre in the tree treatment areas.

The ***Coastal Scrub Plant Palette for GENMON/CORJUB Areas*** targets establishment of coastal scrub species in areas dominated with French broom and jubatagrass. Upon removal of the target invasive plant species, the sites will be dominated by mostly bare soil. Due to this factor, and the main objective of this plant palette being mitigation against future establishment of French broom and jubatagrass, this palette includes both direct seeding and container plant installation to ensure high densities of native plants are established on the sites. It includes a diverse mix of both mesic and xeric shrub, forb, and grass species. This plant palette will be planted in areas that demonstrate a potential for establishment of coastal scrub species through modeled habitat analysis and site assessments. It includes higher densities of coastal scrub shrubs species such as coyote brush, blue blossom, California coffeeberry, and silver bush lupine as well as higher densities of herbaceous Coastal Scrub species such as mugwort (*Artemisia douglasiana*) and California oatgrass, which are more competitive to target invasive plant species. This plant palette will also allow for establishment of high densities of Pacific madrone, which is already naturally occurring in the portions of the project site. Shrubs will be planted in clusters of three plants, and average five foot spacing between each shrub. Forbs will be planted in clusters of three plants, and average three foot spacing between each plant. Grasses will be planted in clusters of 20 spaced throughout the planting unit, averaging two foot spacing between plants. No foothill needlegrass will be planted in these units.

Plant Propagation Method Selection (Container vs. Seed)

Prior to plant installation, large areas of the project site will be cleared of the targeted invasive plants. The vegetation removal will likely include mastication and chipping of woody material. This method will leave a chip layer on the surface of the planting area. As noted above, the material should be left to weather for nine months or longer, in order to reduce potential allelopathic compounds. Areas that do not have a chip layer will likely have existing plants left in place. To have successful native plant restoration through direct seeding, the surface of the planting area must have bare soils with no or very minimum vegetation present. This enables seed to soil contact that allows for adequate germination potential and decreases competition from other plants. Due to these factors, seeding of native plants throughout most of the project area will not be feasible. Containerized plants will allow for target restoration species to be propagated in a nursery and be installed in native soils below the chip layer, allowing for proper rooting and growth. Many of the species selected are also more commonly planted

through a method of container stock installation as opposed to a direct seeding method. This standard method allows for the installed plants to have a “head start” and therefore to be more competitive against invasive or non-target plant species.

For coast live oak installation, a method of direct seeding of acorns was chosen based on prior experience. This standard restoration method is a cost-effective method for establishing this species.

Seeding is a feasible option in areas where French broom and jubatagrass will be removed because those sites will be dominated by bare soils after vegetation removal. Seed will be installed in addition to container stock to reduce the potential of French broom and jubatagrass to re-establish.

Native Plant Container Size Selection

Selecting the right container size for native plant restoration projects is critical to the success of the project. A container size should be selected that will provide the best survival for each individual species while ensuring cost-effective installation. Plant container sizes for this project were selected that will allow for adequate root and stem growth for each species in the nursery setting, while providing adequate ability to compete against non-native plant species once planted. The selected container sizes also take into consideration the associated costs of plant delivery and the required installation method.

Container sizes were selected based on the following criteria:

1. The container size is appropriate for proper growth and health of each species and has proven propagation success for each species in a nursery setting
2. The container size will allow the plant to reach a stem and root volume that will allow for proper establishment and be able to compete with non-native plants and once planted
3. The container size will allow the plant to reach a stem and root volume within the project timeline
4. The container size is commonly available at regional native plant nurseries
5. The container size is commonly used in native plant restoration projects
6. The container size will allow for the most cost-effective delivery and installation methods while considering survival and competition from non-native plants
7. The design team has experience working with the container size on habitat restoration projects

6.0 RESTORATION OBJECTIVES

The restoration activities described in this document are recommended to restore the native plant communities and associated habitat that are presumed to have existed prior to human caused vegetation change prior to 1948 and more recent invasive plant encroachment into the project areas, and to enhance existing native plant communities adjacent to the restoration areas. To the extent possible, native vegetation will be left intact to maintain habitat qualities and facilitate restoration. Snags (standing dead trees) will be created by girdling larger invasive trees, in order to benefit wildlife. The restoration methods have been designed to have clear beneficial ecological outcomes that address both biological and physical habitat issues within the project site. At the completion of the project, a total of 32.56 acres of habitat will be restored. A summary of total restoration area by habitat type can be found in **Table 10**.

Table 10. Restoration Area to be Restored by Habitat Type.

Restoration Habitat Type	Restored Area (acres)
Cismontane Woodland	18.28
Coastal Scrub (including STILEP, other herbs, and trees)	9.44
North Coast Coniferous Forest	4.84
TOTAL	32.56

The restoration plan has three primary restoration objectives:

Objective 1: Mechanical and manual removal of large stands of non-native plant species including blackwood acacia, French broom, jubatagrass, manna gum, Bishop pine, and Monterey pine.

Objective 2: Establishment of a diverse assemblage of native plants through installation of native containerized plants and native seed.

Objective 3. Maintenance of restoration areas through implementation of long-term invasive plant follow up treatments and plant maintenance.

A summary of the project objectives, outcomes, and performance measure can be found in **Table 11** below.

Table 11. Restoration Objectives, Outcomes, and Performance Measures.

Restoration Task	Objective	Restoration Outcomes	Performance Measure
1. Invasive Plant Removal	Mechanical and manual removal of invasive plants from restoration areas	1. Decreased potential of wildfire 2. Decreased competition to native plant species 3. Restoration of historic soil composition	Annual monitoring for 10 years after removal
2. Native Plant Installation	Establish a diverse assemblage of native plants on removal restoration areas	1. Increased native plant communities 2. Increased native plant diversity 3. Increased pollinator species habitat	Annual monitoring for 5 years after plant installation
3. Project Site Maintenance	Remove new populations of target invasive plant species after project implementation	1. Increased survival of planted species 2. Increased native plant diversity	Seasonal maintenance for 10 years after removal

7.0 RESTORATION RECOMMENDATIONS

The following general restoration recommendations are based on the analysis previously described in this plan. Locations of restoration sites are shown on **Figure 7**.

- **UNIT 1, Sites 1A, 1B, 1D, 1E, 1F, 1G:** Remove 12.50 acres of Blackwood Acacia trees from project site restoration areas. Girdle one to two large trees per acre and allow them to become snags, in order to enhance wildlife habitat for birds, bats, and cavity-dwelling mammals. Use material to build terrestrial habitat structures at a density of one structure per acre. Install removed material every 20 ft. on slope contour to mitigate surface erosion. Transport larger trees with commercial value offsite for donation to local mills. Use an air curtain burner and excavator mounted forestry mulcher to dispose of remaining material. After completion of vegetation removal, install native plants at planting densities detailed in each plant palette.
In 1D, no trees will be planted and the number of shrubs is reduced to allow space for planting of foothill needlegrass (**Figure E-1**). This site will be planted with 5,977 needlegrass plugs as well as 35 pounds of seeds.
- **UNIT 1, Sites 1C, AND 1H:** Remove 3.47 acres of French broom as well as scattered Monterey pines trees from the project restoration areas. After completion of vegetation and seed removal, install native plants and native seed at planting densities detailed in each plant palette.
- **UNIT 1, Site 1I:** Remove 0.30 acre of jubatagrass from the project restoration areas. After completion of vegetation, install containerized plant material detailed in each plant palette.

- **UNIT 2, Sites 2A, 2B, 2D, 2E, 2F, 2G, 2J:** Remove 12.50 acres of manna gum trees from the project restoration areas. Girdle one to two large trees per acre to create snags that may enhance wildlife habitat. After completion of vegetation removal, install native plants at planting densities detailed in each plant palette. In Site 2A, install 12 bigleaf maples in modeled habitat (**Figure 5-B**). No trees will be planted within Sites 2B, 2D, 2G, and 2J (**Figure E-2**), and the shrub density will be reduced to allow space for planting of foothill needlegrass. These areas will be planted with 1,995 needlegrass plugs as well as 75 pounds of seeds.
- **UNIT 2, Sites 2C:** Remove 0.55 acre of jubatagrass from the project areas. After completion of vegetation, install native plants and native seed at planting densities detailed in each plant palette.
- **UNIT 2, Sites 2H AND 2I:** Remove 3.24 acres of Bishop pine trees from the project areas. Girdle one to two large trees per acre to create snags that may enhance wildlife habitat. After completion of vegetation removal, install native plants at planting densities detailed in each plant palette. No trees will be planted within Site 2H and the shrub density will be reduced to allow space for planting of foothill needlegrass. This site will be planted with 15,549 needlegrass plugs as well as 45 pounds of seeds.

A summary of the proposed restoration treatments for all project areas is presented in **Table 12**. A summary of the proposed restoration treatments for each site is presented in **Table 13**. A summary of specifications for each restoration treatment type can be found in **Table 14**. More detailed specifications for each treatment type can be found below in **Section 8**, Restoration Specifications. The restoration site plan detailing locations of project sites, associated treatments, and plant installation quantities for each site is included in **Appendix F**.

8.0 RESTORATION METHODS AND SPECIFICATIONS

- Prior to all restoration activities described below, all state, federal and county permits shall be complete.
- Prior to any work, a qualified biologist will survey project areas and access roads to assess immediate impacts to aquatic and terrestrial wildlife.
- The project may be carried out in a phased approach.
- Passive restoration may be implemented where feasible. This will be dependent upon observations of native plant recruitment, the invasive plant cover, and general conditions over time.
- As is standard for Midpen projects, all seed collection, nursery plant propagation, and planting will follow Accreditation to Improve Restoration Program best management practices ('BMP'), as presented in the following website: <https://airnursery.ucdavis.edu/best-management-practices>
- All appropriate avoidance and minimization measures will be implemented based on survey results prior to beginning work.
- If Midpen chooses to implement fully active restoration, the plant densities listed in this Plan represent the maximum amounts, but they can be adjusted as warranted given site conditions. Plant densities are listed in **Appendix F**.

8.1 Construction Access and Project Setup

- A) Contract a qualified biologist to survey all sites for wildlife and to flag sensitive botanical resources (e.g., native grass stands, locally rare plants, MCV-ranked sensitive plant communities), per permits.
- B) Install stabilized construction entrance and erosion control materials as needed throughout access roads and treatment areas.
- C) Mobilize equipment and personnel to staging areas and restoration areas.
- D) Prior to entering the restoration area, all equipment shall be checked for noxious weeds.
- E) Prior to entering the restoration area or moving between Unit 1 and Unit 2, all equipment and personal items with potential to contact soil, such as vehicle tires, equipment, and shoes, shall be sanitized in the manner outlined below to prevent the spread of SOD. This is especially important given that an infested area would be crossed when accessing the project site.
 - 1. Small equipment, shoes, and similar project and personal items should be cleaned using Lysol or a 10% bleach solution before visiting the site and then onsite after local work is done.
 - 2. For vehicles and large equipment, power wash or similar mechanism to remove from equipment as much plant debris and soil as possible. Washing should continue until no dirt is visible
 - 3. Spray the equipment with Lysol or a 10% bleach solution.
 - 4. Disinfect using 70 percent alcohol, in order to avoid the spread of *Phytophthora ramorum*, which is responsible for SOD, and other plant pathogens.
 - 5. For vehicles, it may be appropriate to select designated staging areas to set up a cleaning station. A tarp or commercial plastic lining should be placed under the area dedicated to cleaning using water sprays, ensuring the runoff ends up in a collector that can be treated with chloramines following the guidelines used for drinking water. Cleaning stations should be at the bottom of local drainages to avoid infestation associated with gravity-driven runoff.
 - 6. When planting species with potential to transmit SOD, such as Pacific madrone and toyon, they shall be planted at least 30 feet (approx. 10m) away from coast live oak and tanoak trees, whether remnant or planted.

Table 12. Summary of Restoration Treatments for the Project Site.

Treatment Type	Treatment Acres	Plant Installation				
		Trees (Plants)	Shrubs (Plants)	Herbs (Plants)	STILEP (Plants)*	Seed Mix (lbs)
Blackwood Acacia Removal; Container/Acorn Plant Installation	12.5	5,947	12,329	12,097	5,977	35 (STILEP in Site 1D))
Manna Gum Removal; Container/Acorn Plant Installation	12.5	6,703	11,827	11,247	1,995	75 (STILEP in CS sites)
French Broom Removal; Container/Acorn and Herbaceous Seed Installation	3.47	110	2,396	1,102	0	59
Jubata Grass Removal; Container/Acorn and Herbaceous Seed Installation	0.85	452	9,820	4,212	0	243.2
Bishop Pine Removal; Container/Acorn Plant Installation	3.24	1,153	2,862	2,300	15,549	45 (STILEP in Site 2H)
Total	32.56 ac.	14,365	39,234	30,958	23,521	457.2

*Accounts for one plug for each 1x1' area in portions of sites that are not occupied by trees or shrubs (planted between shrubs). Augmented by seeds.

Table 13. Summary of Restoration Treatments per Site.

Site ID	Acres	Proposed Treatments	Plant Palette Number
1A	2.22	ACAMEL Removal; Container Plant Installation	1
1B	0.32	ACAMEL Removal; Container Plant Installation	3
1C	1.85	GENMON Removal; Container and Seed Installation	4
1D	1.13	ACAMEL Removal; Container Plant Installation	2
1E	2.52	ACAMEL Removal; Container Plant Installation	3
1F	2.62	ACAMEL Removal; Container Plant Installation	1
1G	3.69	ACAMEL Removal; Container Plant Installation	3
1H	1.62	GENMON Removal (incl. some PINRAD); Container and Seed	4
1I	0.30	CORJUB Removal; Container and Seed Installation	4
2A	8.80	EUCVIM Removal; Container Plant Installation	3
2B	0.46	EUCVIM Removal; Container Plant Installation	2
2C	0.55	CORJUB Removal; Container and Seed Installation	4
2D	0.59	EUCVIM Removal; Container Plant Installation	2
2E	1.22	EUCVIM Removal; Container Plant Installation	3
2F	0.51	EUCVIM Removal; Container Plant Installation	2
2G	0.76	EUCVIM Removal; Container Plant Installation	2
2H	1.52	PINMUR Removal; Container Plant Installation	2
2I	1.72	PINMUR Removal; Container Plant Installation	3
2J	0.16	EUCVIM Removal; Container Plant Installation	2
PS2	2.82	Trailside Invasive Plant Removal; Container and Seed Installation	1

Table 14. Summary of Restoration Treatments Specifications.

Treatment Type	Specifications
Blackwood Acacia Removal	Harvest and dispose of trees using multiple types of equipment and methods detailed in Section 8.3.1 below.
Manna Gum Removal	In late spring or early summer, masticate 100% of trees with excavator mounted forestry mulcher or similar equipment.
Bishop Pine and Monterey Pine Removal	In late spring or early summer, masticate 100% of trees with excavator mounted forestry mulcher or similar equipment.
French Broom Removal	Remove entire plant with mid-sized excavator using thumb and bucket and remove material from project site. Using a front-end loader, excavator or similar equipment, scrape the top 4" of topsoil from the entire removal area and bury 2' below ground
Jubatagrass Removal	When feasible, mechanically remove with excavator and pile on-site. Remove all other areas manually by removing entire plant and piling on-site. Consider the use of herbicides to treat this and other species on this list, as detailed in Section 8.3.3 below.
Native Tree Installation	Install trees at microsites best suited for each species in the fall following vegetation removal. Install at spacing detailed in plant palette. Remove chips or woody vegetation from a 1' by 1' planting area. Excavate hole with shovel, hoedad, or augur to 1.5 times the width and depth of the plant volume. Install plant in hole with top of root collar at grade. Backfill with native soil, leaving a 1' diameter by 1" deep basin around the plant. Ensure in-situ or added mulch is 3-4 inches deep and surrounds each plant 3-4 feet.

Native Shrub Installation	Install trees at microsites best suited for each species in the fall following vegetation removal. Install in groupings of 3 plants of the same species. Install plants at approximately 5' apart. Remove chips or woody vegetation from a 1' by 1' planting area. Excavate hole with shovel, hoedad, or augur to 1.5 times the width and depth of the plant volume. Install plant in hole with top of root collar at grade. Backfill with native soil, leaving a 1' diameter by 1" deep basin around the plant. Ensure in-situ or added mulch is 3-4 inches deep and surrounds each plant 3-4 feet.
Native Forb Installation	Install forbs at microsites best suited for each species in the fall following vegetation removal. Install in groupings of 3 plants of the same species. Install plants at approximately 3' apart. Remove chips or woody vegetation from a 6" by 6" planting area. Excavate hole with shovel or hoedad, to 1.5 times the width and depth of the plant volume. Install plant in hole with top of root collar at grade. Backfill with native soil, leaving a 6" diameter by 1" deep basin around the plant.
Native Grass Establishment	Install grasses at microsites best suited for each species in the fall following vegetation removal. Install in groupings of 10 plants of the same species. Install plants at approximately 2' apart. Remove chips or woody vegetation from a 6" by 6" planting area. Excavate hole with shovel or hoedad, to 1.5 times the width and depth of the plant volume. Install plant in hole with top of root collar at grade. Backfill with native soil, leaving a 6" diameter by 1" deep basin around the plant.
Native Grass Seed Mix	Install seed on bare soils using ATV mounted seed broadcaster in fall or spring following vegetation removal. Harrow seed in using tractor or ATV and harrow.

8.2 Native Plant Salvage

- A) Salvage any native plants as required by project permits or recommended by the project botanist. Also avoid impacts to native plants as well as to a targeted number of snags, to the extent feasible.
- B) Salvage areas shall be delineated by a qualified botanist.
- C) Plant salvage shall be conducted under the supervision of a qualified botanist or other biologist.
- D) Salvaged native plant materials should be removed with roots in-tact, temporarily placed in moist soil and staged in the shade until they are transported to a native plant nursery for further care.

8.3 Vegetation Removal

This section presents the specific measures to clear the project site of the primary invasive plants, with a focus on the larger and most widespread invasive plants. It is important to emphasize the presence of remnant native vegetation throughout the project site, including plants of all strata, especially within Unit 1, where blackwood is abundant. While it is clearly difficult to completely avoid impacting native plants with the heavy equipment required to clear large stands of invasive plants, every effort should be made to avoid such impacts. It is especially important to preserve as many existing native trees as possible, as they would provide shade and other benefits to plants to be established as part of the restoration. Additionally, there are many tanoak trees throughout much of the project area, including many healthy individuals, and stands of them form a sensitive plant community. As indicated above, this species has suffered extreme mortality in the region from SOD. While it is not advisable to plant them due to the likelihood of impacts from SOD, it is particularly important to avoid unnecessary harm to the trees, especially healthy ones that may have some amount of genetic resistance to SOD. In contrast, any California bay trees encountered should be removed in order to reduce the potential for SOD to spread in the area. As indicated above, no individuals of this species were observed during protocol-level project surveys in 2019, nor during the various surveys in 2022, but presence of the species cannot be completely ruled out.

8.3.1 Blackwood *Acacia*

- A) Vegetation removal shall be overseen by a qualified practitioner and completed by a Class A C61/D49 or C27 licensed contractor. One to two large trees per acre will be girdled, using a chainsaw, to produce snags, thus enhancing wildlife habitat.

- B) Use a chainsaw and/or heavy equipment (cut-to-length ‘CTL’ harvester, excavator) to cut and pile trees and slash material to build terrestrial habitat structures at one structure per acre. Structures may vary in size from 100 square feet to 400 square feet.
- C) Use a chainsaw, CTL harvester, and/or excavator to cut and install trees every 20 feet on slope contour to mitigate surface erosion.
- D) Harvest larger diameter trees with commercial value with a CTL harvester or other equipment and transport offsite for donation to local mills.
- E) Use an air curtain burner to dispose of remaining material where feasible.
- F) Use an excavator mounted forestry mulcher or tracked mulcher to masticate all remaining trees and slash material.
- G) Root wads must be removed and masticated, unless herbicide application is to be used to prevent re-sprouting.
- H) Blackwood acacias are likely to be infected by two generalist pathogens, namely *Dothiorella viticola* (Dv) and *Diaporthe foeniculina* (Df). Df in particular can be very aggressive and can affect roots, stems, and branches of blackwood acacias. Therefore, the following measure should be implemented to avoid spreading these pathogens:
 1. As root infection is difficult to identify, a pathologist with direct experience with these two pathogens should visit the site to identify infections.
 2. Trees with identified symptoms should be transported off of the site and transported to a central location.
 3. If possible, tree cutting should be done in the middle of the dry season so as to transport the wood that has partially dried, and to allow for further drying of any wood left in place for the remainder of the dry season.
 4. Avoid thick layering of chipped material and ensure that chips receive sunlight during the dry season.
 5. Just before the wet season, mix the chips with the duff layer and topsoil: this should be effective given that Dv and Df are not soil organisms and should be out-competed by them.
 6. Stumps of trees that exhibit symptoms of these pathogens or that show significant dieback should be removed or macerated in place if possible.
- I) Vegetation removal shall occur a minimum of nine months before plant installation activities to allow for follow up treatments of new seedlings or stump sprouting prior to plant installation, and to give chips time to decompose as well as to reduce potential allelopathic compounds. Vegetation removal should not take place during times of high fire danger, during red flag conditions, and crews should maintain fire suppression tools and extinguishers in a fire box, per the California Forest Practice Rules.
- J) Timing of removal should occur when seed on flowering plants is not viable to limit spread of seed. The optimal timeframe is during summer or fall.

8.3.2 French Broom

- A) Vegetation removal shall be overseen by a qualified practitioner and completed by a Class A, C-27, or C61/D49 licensed contractor.
- B) Vegetation removal shall occur a minimum of nine months before plant installation activities to allow for follow-up treatments of new seedlings and stump sprouts, and pile burning, prior to plant installation.
- C) Removal methods may include manual pulling (e.g., weed wrench), mid-sized excavator, herbicides, green flaming (e.g., propane flame-thrower), or some combination thereof.
- D) If using manual or excavator methods, remove entire plant by using the thumb and bucket to pinch the above ground portion of the plant with the largest diameter stem, and pulling the entire plant, including roots, out of the ground. Shake off any soil attached to roots and pile on-site.

- E) French broom removal shall take place in early spring to early summer when soil moisture is adequate to allow for adequate removal of entire plant. If green flaming, this should occur during wet periods.
- F) Manual removal treatments shall follow mechanical treatments to remove plants too small for equipment to remove, or where plants are located in outlying areas that are mixed with native plants.
- G) Timing of removal should occur before the fruiting stage, which is typically in May to June, to limit the spread of seed.
- H) Multiple manual removal follow-up treatments may be required prior to installation of native plant materials.

8.3.3 Jubatagrass

- A) Vegetation removal shall be overseen by a qualified practitioner and completed by a Class A, C61/D49, or C27 licensed contractor.
- B) Vegetation removal shall occur a minimum of nine months before plant installation activities to allow for follow-up treatments of new seedlings and pile burning, prior to plant installation.
- C) Removal shall take place in spring or early summer when soil moisture is adequate to allow for adequate removal of entire plant.
- D) Using a mid-sized excavator, remove entire plant by using the thumb and bucket to pinch the above ground portion of the plant, and pulling the entire plant, including roots, out of the ground. Shake off any soil attached to roots and pile on-site.
- E) Manual removal treatments shall follow mechanical treatments to remove plants from areas that are greater than 50 percent slope, plants that are too small for equipment to remove, or are in outlying areas that are mixed with native plants. For manual removal, remove the top 2/3 of the above ground portion of the plant with a weed whipper, and excavate the remaining portion of the plant and roots from the ground using a pick mattock and shovel.
- F) Timing of manual removal should occur when seed on flowering plants is not viable to limit the spread of seed. The optimal timing is during the summer or early fall.
- G) Multiple manual removal follow-up treatments may be required prior to installation of native plant materials.
- H) Herbicides, especially in combination with manual removal, may also serve as an effective measure for eliminating Jubatagrass. Glyphosate or imazapyr, when applied in the late summer or fall, may provide consistent control. This timeframe is after the flowering period, when translocation of herbicide to the base of tillers and rhizomes is at its peak. Being that such broad-spectrum herbicides may not be desirable, Fusilade (with flauzifop as the active ingredient), a grass-specific herbicide, may be effective. Cal-IPC provides detailed recommendations for the application of all three of these herbicides at the website listed below. Recommendations are also provided for treating many of the other targeted species addressed in this Plan.

https://wric.ucdavis.edu/information/natural%20areas/wr_C/Cortaderia_jubata-selloana.pdf.

8.3.4 Manna Gum

- A) Vegetation removal shall be overseen by a qualified practitioner and completed by a Class A, C61/D49, or C27 licensed contractor. One to two large trees per acre will be girdled to produce snags, thus enhancing wildlife habitat.
- B) Vegetation removal shall occur a minimum of nine months before plant installation activities to allow for follow up treatments of new seedlings or stump sprouting prior to plant installation, and to give chips time to decompose. Vegetation removal should not take place during times of high fire danger, during red flag conditions, and crews should maintain fire suppression tools and extinguishers in a fire box.

- C) Using an excavator mounted forestry mulcher or tracked mulcher, masticate all trees and slash material. Larger trees may need to be felled using a chainsaw prior to mastication.
- D) Root wads must be removed and masticated, unless herbicide application is to be used to prevent re-sprouting.
- E) Timing of removal should occur when seed on trees is not viable to limit spread of seed. The optimal timeframe is during late spring to early summer. The most effective removal method involves the use of large equipment such as Bobcats backhoe on multiple mature individuals. Hand pulling should be used for controlling this plant in the seedling stage.

8.3.5 Bishop Pine and Monterey Pine

- A) Vegetation removal shall be overseen by a qualified practitioner and completed by a Class A or C61/D49 Licensed contractor. One to two large trees per acre will be girdled to produce snags, thus enhancing wildlife habitat.
- B) Vegetation removal shall occur a minimum of nine months before plant installation activities to allow for follow up treatments of new seedlings or stump sprouting prior to plant installation, and to give chips time to decompose. Vegetation removal should not take place during times of high fire danger, during red flag conditions, and crews should maintain fire suppression tools and extinguishers in a fire box.
- C) Using an excavator mounted forestry mulcher or tracked mulcher, masticate all trees and slash material. Larger trees may need to be felled using a chainsaw prior to mastication.
- D) Timing of removal should occur when seed on trees is not viable to limit spread of seed. The optimal timeframe is during summer or fall.

8.4. Mechanical Vegetation Removal Closeout

Following removal of the invasive vegetation, the following actions will be required:

- A) To the extent feasible, scrape off topsoils where seeds of invasive plants may be especially problematic, such as areas of dense French broom, which have very long-lasting seeds.
- B) Ensure that chipped materials to be left onsite are evenly spread, ideally at a depth of three to four inches, in order to serve as mulch. As noted previously, the chipped materials should ideally be left to weather over a wet season.
- C) Inspect project areas for any construction waste and/or spills, and remove from site.
- D) De-mobilize equipment from the project site.
- E) Remove temporary erosion control materials.

8.5 Native Plant Restoration

- A) *Site Plan*: Prior to plant installation, a qualified practitioner will determine the plant layout that will yield the highest survival and overall success and take into consideration aspect, soil moisture and other site-specific environmental factors. Plants shall be installed as detailed in the Site Plan in **Appendix E** and in the quantities detailed in **Appendix F**. Planting areas shall conform to the areas delineated in **Appendix E**, but installation should be prioritized in areas with the best post-vegetation removal areas. Exact planting locations shall be finalized by a Project Manager or qualified practitioner.
- B) *Plant Materials*: All native plant materials should be sourced from similar habitats either from the local watershed (the Purisima Creek Watershed or greater San Gregorio Creek – Frontal Pacific Ocean Watershed) or, if it is more desirable to account for climate change, from regions with slightly warmer and drier climates. Collection from the latter may result in the established species being more resilient to climate change. A significant majority of the plants proposed as part of the Plan

occur in areas subject to higher temperatures and/or less summertime fog. Relative to the project site, these areas are primarily farther inland (east) from the coast and/or farther south. For example, coast redwood occurs in San Mateo County east of the project site and within areas where the average hours per day of summertime fog is as low as 5.5 hours, within temperature ranges at least two degrees warmer than the averages within the project site (see **Figure 3** for mapped temperature and fog values). Collecting plant materials from such areas might be more resilient to warmer temperatures and reduced summer fog as predicted due to climate change. In any case, container plants shall be root tight upon delivery and show no sign of disease or pests. For native seeding projects, seed shall be free of weeds and show no sign of mold or rot. Seed should be stored in a dry cool location prior to installation. All plant materials shall be inspected by a plant installation project manager prior to installation and should follow Midpen's existing detailed BMPs for avoiding plants that are potentially infected with pathogens (see **Section 8.0** above).

- C) *Seed Collection*: If seed is collected from natural populations, all relevant permits must be obtained prior to collection. No more than 50 percent of seed from individual plants should be collected. Seed should be collected from multiple individuals to ensure genetic diversity. Seed will be processed, stored, managed, and grown using native plant propagation BMPs. See Item B above for information pertaining to the collection of materials from other regions to account for the potential effects of climate change.
- D) *Site Preparation*: At jubatagrass and French broom removal areas, all piles shall be burned and the seed bed shall be prepared prior to plant installation. The top six inches of soil will be removed to eliminate the invasive seed bed. Harrow ripped/disked soils prior to seed installation—this should not be problematic with respect to the invasive species if the seed bank is removed.
- E) *Seed Installation*: Seed shall be installed based on installation specifications listed in **Table 14** and in densities listed in **Appendix F**. Distribute seed by hand or ATV broadcaster and harrow in seed to ensure soil contact so that at least ½ inch of soil is covering seed. Seeding should take place in fall or spring, prior to or immediately after, a significant rainfall that will increase soil moisture to levels adequate for planting. Irrigation may be installed as needed to maintain adequate soil moisture for successful germination.
- F) *Follow-up Seeding*: Some seed should be reserved for follow up spot seeding of areas with low germination. The seeding site shall be inspected between fall and spring to identify areas with low germination. Spot seeding should occur when soil moisture and soil temperatures are adequate for seeding.
- G) *Native Plant Installation*: Individual planting sites will be chosen by a qualified practitioner. Microsite selection will be used to ensure the most appropriate planting site for each individual species. Planting sites may be flagged prior to plant installation by using color coded pin flags to differentiate between species. Plant installation will take place after October 1, or after soil moisture is adequate for planting, and before March 31. The Project Manager shall visit the planting site after significant rainfall and prior to installation to determine if soil moisture is adequate for planting. Plants shall be installed at densities and composition described in **Appendix F**.
- H) *Containerized and plug plant installation specifications*:
 - 1. Plants shall be transported to the site no more than seven days prior to installation to ensure proper care at the nursery until time of planting. A temporary on-site nursery shall be constructed prior to planting. The temporary nursery shall protect plants from deer browse and provide irrigation necessary to keep plants healthy until time of installation.
 - 2. Prior to planting, remove chips or woody vegetation from a 1-foot by 1-foot planting area.
 - 3. Planting holes shall be excavated by hand using a shovel, hoedad, or a gas-powered auger, depending on plant container size.
 - 4. Planting holes shall be no less than 1.5 times the size of container.
 - 5. Plants shall be installed with soil level in container equal to soil level at grade.

6. Backfill with native soil while tamping to remove air pockets, leaving a one-foot diameter by one-inch-deep basin around the plant.
 7. Irrigate plants until soil is saturated and standing water is present in the basin.
 8. Using on-site wood chips, install wood chips around each plant at a depth of one to two inches.
- I) *Coast live oak acorn installation specifications:*
1. Install acorns at microsites best suited for survival in the fall following vegetation removal and after adequate soil moisture is achieved. Install at spacing detailed in plant palette in **Appendix F**.
 2. Remove chips or woody vegetation from a one-foot by one-foot planting area.
 3. Prepare the seed bed by breaking up soil with a shovel, augur or hands.
 4. Install acorns on their side and gently press acorn into moist prepared soil one to two inches deep. Install three acorns per planting hole, spaced three to four feet apart.
 5. Backfill with native soil, leaving a one-foot diameter by one-inch-deep basin around the acorns.
 6. Irrigate plants until soil is saturated and standing water is present in the basin.
 7. Lightly mulch, three to four inches deep, with on-site material.
 8. Install a six-inch wide by three feet tall Tubex tree protector over each planting location. Secure tree protection with two one inch by two inches by four-foot wooden stakes or similar stake, ensuring that one inch of stake is installed below grade. Once the trees grow to the top of the shelters, the shelters should be replaced by at least five-foot-tall open steel mesh shelters.

9.0 RARE PLANT INTRODUCTION

The restoration of the project site presents an opportunity to include special-status plants as part of the planting palette, thus increasing the diversity of the site as well as providing a chance to expand such species ranges and even to provide mitigation for impacts to a given species—Hickman’s popcornflower (*Plagiobothrys chorisianus* var. *hickmanii*) is an example of a species that may require mitigation for impacts. This section presents recommended methods for introducing special-status plants to the site, including the targeted habitat and microhabitat for each plant. The targeted locations for introduction are based on the mapped parameters for each plant as presented in **Table 5** and **Table 6** and as mapped on **Figure 6-A** and **6-B**. Note that the modeled areas extend beyond some restoration boundaries, as these areas may be considered for introduction if the areas are to be thinned, resulting in available habitat.

9.1 General Planting Recommendations

For each of the special-status plant taxa, it is advisable to plant both seeds and seedlings, to the extent possible, as each features advantages over the other. Seeds are advantageous in that they typically do not require the same amount of irrigation because they will “wait” for sufficient precipitation, and unlike seedlings, they are not susceptible to the environmental shock of being transplanted to native soils and other habitat conditions that differ from the greenhouse conditions (e.g., Knight 2012). On the other hand, seedlings also have some clear advantages, especially for establishing pioneer populations. Seedlings are less susceptible to the direct impacts of birds and small mammals (from consumption of cotyledons and seeds) and establish more quickly, allowing for an increased likelihood of establishing a pioneer population. Additionally, seedlings may be more successful in part because less successful individuals are filtered out. That is, they have already survived to the size appropriate for out-planting, and thus represent inherently more hearty individuals—many seeds of most plant species do not germinate at all, and even fewer survive to become healthy seedlings (Forbes pers. comm.). Regardless of the composition of seeds or seedlings, it is advisable to cluster plants together in localized areas of suitable habitat, in order to attract pollinators and ensure robust pioneer populations. This is particularly important for the herbs, and even more so for the annual species (e.g., the *Plagiobothrys* species). A typical number of plants to cluster would be at least 100 to 200 plants for the herbs, though woody plants can be planted as smaller clusters of individuals (e.g., as few as three).

The site preparation and planting methods should be similar for all of the introduced plants. All planting areas should be cleared of existing plants, but not to the extent that the surrounding soils are substantially disturbed, as this may invite the colonization of invasive plants. Plants to be manually pulled should be removed with care, by holding the soil in place and pulling slowly. Pulling plants during wet periods is facilitated by moist soil and reduces soil disturbance. Invasive plants with extensive root systems, such as English ivy, may be best removed using herbicides.

For the planting of native seeds, the seeds should be planted approximately one-quarter inch below the ground surface, then packed down. If seedlings are established, they should be planted at the same level as the surrounding earth (i.e., with the tops of the seedling soil flush with the ground). The hole into which they are planted should be deeper than the seedling's soil depth, with the removed soil placed back into the hole, such that there is loosened soil surrounding the planted seedling. However, the surrounding soil should then be packed firmly around the sides of the seedling. The planted seedlings should then be well watered into their new environment, but watering is not necessary for planted seeds. Assuming they are planted as seedlings, it is recommended that mulch be added around the woody plants to reduce competition and to retain moisture. The preferred material is one that does not alter the soil conditions, as would the chips of cedar and other coniferous trees. The mulch should be approximately three to four inches deep and extend three to four feet beyond the planted seedlings. Mulch is not recommended for the herbaceous plants, especially the annual taxa, because it would impede the future seed crop of such species.

As with most vegetation restoration and plant establishment efforts in the arid west, it is advisable to plant in the late fall/early winter season, and ideally prior to one or more forecasted rain event. This timeframe is the typical germination period for most native California plants and would reduce the necessity of irrigation and other maintenance.

9.2 Kings Mountain Manzanita

9.2.1 Species Background and Habitat Requirements

Kings Mountain manzanita is a perennial shrub in the heath family (Ericaceae) that grows to approximately seven to 16 feet (2-5 meters) tall and that features hanging clusters of white to light pink bell-shaped flowers that bloom from January to March (or occasionally from December to April). The species lacks the basal lignotuber, or burl, that is present on some manzanitas, and also features leaves that are similar on both the top and bottom surfaces, as well as leaf-like bracts. It is distinguished from its closest relatives by having boat-shaped leaves that are glandular-sticky in youth (Jepson eFlora 2023). The species is designated by the CNPS as CRPR 1B.2, indicating the taxon is "rare, threatened, or endangered in California and elsewhere" ("1B") and "moderately threatened in California" ("0.2") (CNPS 2023).

The natural range of Kings Mountain manzanita is limited to the Santa Cruz Mountains at elevations ranging from approximately 500 to 2560 feet (150-780 meters). The nearest occurrence to the project site is 2.1 miles to the northwest, near the crest of the Santa Cruz Mountains. Based on analysis of 96 occurrences in Midpen's database of rare plants as well as the CNDDDB, the average elevation for the species is 1,751 feet (537 meters), which is a little over 300 feet higher than the maximum elevation within the project site (1,406 feet). There are occurrences as low as 893 feet, which is well within the range of the project site, though it is notable that those occurrences are on the eastern flanks of the mountain range. The mean annual precipitation for the species ranges from 37.3 to 39.1 inches, with a mean of 40.6 inches. The mean value for the project site is lower, at approximately 34 inches, but the area experiences higher summer fog, with an average of 9 to 9.5 hours per day as compared to an

average of 7 hours per day for the species occurrence locations. The plant community most associated with Kings Mountain manzanita is the *Sequoia sempervirens* Alliance, a community that is fairly strongly associated with moisture and relatively low wind. The most commonly associated trees, shrubs, and herbs observed during field surveys for the species are quite variable, as indicated in **Table 5**.

With respect to geomorphology and substrates, it seems that the latter plays a more significant role as a habitat factor for Kings Mountain manzanita. The slope and aspect values for the mapped occurrences are highly variable (**Table 5**), so these are likely not significant habitat factors. In contrast, there is a consistent association with particular substrates. The Jepson Manual (Baldwin et al. 2012) lists the species' microhabitat as "granite, sandstone outcrops, edge of conifer forest, chaparral." A notable majority of occurrences of the species are indeed mapped on granite or sandstone substrates, particularly sandstone. Nearly 42 percent of the 93 occurrences mapped by Midpen are on the Alambique-McGarvey complex unit, a sandstone-derived soil with a slightly acidic pH (5.6) and a surface texture listed as gravelly loam (USDA 2023). Similarly, based on the 2022 VNLC field survey as well as most descriptions in the CNDDDB, most occurrences are at edges of forest, though not necessarily conifer forest. Indeed, the only occurrence observed by VNLC within the deep shade of forest consisted entirely of dead plants—all other occurrences were found within forest openings and along road cuts, where solar exposure is more prevalent. As with most manzanitas, the species is not well adapted to deep shade and may be declining at least in part as a result of fire suppression within its native range.

9.2.2 Introduction to the Project Site

Using habitat data based on the 93 more precise Midpen occurrences as a guide, 1.3 acres of potentially suitable habitat for Kings Mountain manzanita has been modeled within the project site. The modeled habitat is concentrated within the northern portion of Unit 1, at the highest elevations of the site and in association with Lobitos loam and Hugo and Josephine loam and sandy loam soil types. As a result of the orographic influence, precipitation is highest in this zone (see **Figure A-1, Appendix A**), though summer fog is slightly lower in comparison to lower elevations. As noted above, these two factors may balance each other—the anomalous presence of redwood along south-facing slopes in the area may be a function of the combination of high precipitation and presence of abundant summer fog, as well as the fact that prevailing wind is from the northwest, which may bring salt spray. Aside from the apparent affinity for redwood forest, it is unclear how these factors might affect the potential for Kings Mountain manzanita to thrive in the area. In any case, the CNDDDB occurrence data results in 3.7 acres of mapped potentially suitable habitat, which is more than twice the habitat modeled from the Midpen data. The modeled habitat also extends to Unit 2, which does also feature some redwood habitat in the area. The CNDDDB data is based on only six occurrences, and though these are all "Precise" occurrences, they must be assumed to be less precise than the Midpen data, such that the modeled habitat should be considered tentative. Nevertheless, if local habitat conditions appear favorable for introduction of the species in Unit 2, the area should not be ruled out. Given the subtle differences in climate and substrate variables, localized conditions such as suitable sandy loam soils and canopy openings may be more important. The presence of permanent openings in the canopy may in fact be a critical factor, since in the absence of active vegetation management such as grazing, thinning, or prescribed fire, succession may be the most limiting factor for the growth and persistence of Kings Mountain manzanita in the area. It is possible or even likely that, among the modeled habitat, the most suitable habitat may be along edges of areas of planted Coastal Scrub and/or of planned active management, such as along the edges of trail alignments. If planted along the edges of maintained trails, special precautions should be made to avoid impacting the plants, as they may be susceptible to damage from cutting or via impacts from vehicles and heavy machinery. Workers would need to be trained to identify the species and to avoid such impacts.

9.3 Western Leatherwood

9.3.1 Species Background and Habitat Requirements

Western leatherwood (*Dirca occidentalis*) is a deciduous shrub that is the only California native in the Daphne (Thymelaeaceae) family, a family more common to the southern hemisphere, particularly Australia and Africa (Jepson eFlora 2023). Western leatherwood is rare and endemic to six counties in the Bay Area, where there are four evolutionarily distinct populations. These populations are in the San Francisco Peninsula, in the East Bay, the North Bay, and along Salmon Creek near Bodega. The species produces small but showy pendant yellow flowers in the late winter and early spring (January to March) before the leaves come out. The flowers themselves have reduced flower petals but bright yellow sepals, stamens, and anthers which turn into a single-seeded yellow green fruit in early summer. The leaves are soft, large and deciduous, alternating along the plant stems and branches that reach from six to ten feet tall. The twigs are flexible and the leaves leathery, earning the genus its common name. The species is designated by the CNPS as CRPR 1B.2, indicating the taxon is “rare, threatened, or endangered in California and elsewhere” (“1B”) and “moderately threatened in California” (“0.2”) (CNPS 2023).

Most observations of the existing western Bay Area population are reported along the northern Santa Cruz Mountains (Calflora 2023) where western leatherwood occurs as an understory or midstory species in moist, forested areas, often within the coastal fog belt (Calflora 2023; Jepson online 2023). Twelve observations of western leatherwood are in the Midpen database, with the nearest location 5.8 miles west of the project site. CNDDDB reports eight observations, with the nearest 5.3 miles south of the project site. The average slopes for these observed locations are 27 percent and 30 percent for the Midpen and CNDDDB databases, respectively, with standard deviations pushing this range out to 10 percent to 44 percent slopes. Similarly, the observations occur on a range of aspects, with the most common aspects facing north. In the vicinity of the project site, western leatherwood is most commonly mapped within the *Quercus agrifolia* Alliance, though other plant communities reported elsewhere range from North Coast Coniferous and Closed-cone Pine Forests to “wetland-riparian” (Calflora 2023). From five observations recorded in the CNDDDB, repeatedly associated species include coast live oak, California bay, California buckeye, poison oak, and blackberry (*Rubus* spp.) (CNDDDB 2023). Based on remote data, the mean annual precipitation for these observations in the local region range from 30.0 to 37.5 inches, which straddles the annual precipitation for the project site (34 inches). Periods of summer fog in the known occurrence areas range from 5.5 to 6.5 hours per day, less than the project site’s average summer daily fog duration at 9 to 9.5 hours. Its association with less foggy conditions may be related to its lack of occurrence along the immediate coast in the region, though it is documented in similar landscape positions in areas south of the project site.

9.3.2 Introduction to the Project Site

Using habitat data based on the 12 Midpen occurrences as guides, 7.3 acres of potentially suitable habitat for western leatherwood has been modeled within the project site. Using habitat data based on the smaller dataset from the 7 CNDDDB occurrences as guides, 3.7 acres of potentially suitable habitat for the species was modeled within the project site. Both models overlap significantly: in Unit 1, both models indicate appropriate locations focused on the southwestern portion and several smaller areas located in the northeastern section (**Figure 6-A**). Within Unit 2, modeled habitat is focused north of the Purisima-to-the-Sea trail (**Figure 6-B**). In both units, these locations are mid to upper portions of west and north-west facing hillsides that range from 5 to 35 percent slope. The modeled areas are located on Lobitos loam soil types and within locally concave drainage areas where litter and water are likely to collect and create nutrient rich and sheltered conditions.

Reintroduction is recommended on west and northwest facing slopes and drainages where there is modest but not high shade cover from either trees or taller shrubs (Kriewall 2001 observations). These areas will have a rich litter layer and moist soils. Propagation of young seedlings may benefit from shade cover structures to maintain moisture levels, as the species is most often found in the shade of tree canopy. Modest shade and shelter from intense solar radiation is likely important for the propagation and survival of these plants. Planting by seed can be done with three months of cold stratification (Kriewall 2001). Plant growth and seed productivity is likely to be greatest in local low areas on north – northwest facing slopes with modest shade to maintain high moisture and moderate insulation for growth.

9.4 Choris's Popcornflower and Hickman's Popcornflower

9.4.1 Species Background and Habitat Requirements

Choris's popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*) and Hickman's popcornflower are both varieties of *Plagiobothrys chorisianus*. These are both annual herbs which feature an inflorescence of small white flowers with partially fused petals surrounding central, yellow appendages. Choris's popcornflower blooms from March through June, while Hickman's popcornflower blooms from April through July (Jepson eFlora 2023). The two taxa are distinguished by the former having its lowest pair of leaves generally fused at the leaf base, having its vegetative growth branched from the upper axils, and by having pedicels (floral stems) which are generally longer than the sepals (ibid). The CNPS notes that taxonomic work is needed, as the two taxa intergrade with each other, and it is thought that some of the morphological differences between variations may be induced by the environment (CNPS 2023). Choris's popcornflower is ranked as CRPR 1B.2, with the rank of "1B" indicating the taxon is "rare or endangered", and the rank of "0.2" designating plants which are "moderately threatened in California" (ibid). Hickman's popcornflower carries a CRPR rank of 4.2, indicating the taxon is of "limited distribution" ("4") and "moderately threatened in California."

The two closely related taxa inhabit similar environments, though Hickman's popcornflower may have a slightly higher preference for more moist sites. Choris's popcornflower is described as occurring in "Coastal Scrub and Chaparral, within grassy, moist places, and along ephemeral drainages," while Hickman's variety is described as occurring in "moist places, vernal pools, sandy deposits over clay pans" (Jepson eFlora 2023). The two taxa have similar ranges and primarily occur in San Mateo County, though Hickman's variety has been collected as far south as San Luis Obispo County and does not extend north of San Mateo County, while Choris's variety is found near the coast between Monterey County and Marin County. A total of 38 occurrences of Choris's variety (27 mapped by Midpen and 11 mapped in the CNDDDB) are mapped in the greater vicinity of the project site, along the western face of the Santa Cruz Mountains. The closest population to the project site is mapped 3.5 miles to the west, along the coastal plain. Hickman's variety is not mapped in the CNDDDB database within the region, but one occurrence is mapped in the Midpen database and 10 are mapped in the Calflora database. The nearest population is just under two miles southwest of the site, along the outer floodplain of Purisima Creek. The Jepson eFlora (2023) lists the elevation range for Choris's popcornflower as less than 1,970 feet (650 meters), and Hickman's as less than 656 feet (200 meters), putting both in the range of the project site. Within the project region, Hickman's variety is most associated with grassland habitats, while Choris's variety is mapped mostly with the *Baccharis pilularis* Alliance, but this simply suggests an association with Coastal Scrub in general, primarily with openings within scrub. More specifically, as indicated above, the taxa tend to occupy relatively moist coastal habitats—the species as a whole is listed by Lichvar et al. (2020) as an obligate wetland plant, but both taxa regularly occur in areas that would not qualify as wetlands based on associated plant species. Non-wetland habitats include swales, seasonally saturated grasslands, and areas of clay or otherwise compacted soils, such as along the margins of roads and trails. As indicated on **Table 6**, it is most often found on northerly exposures, often

along toes of slopes and within depressions, where there is greater moisture and lower evapotranspiration. Both taxa tend to occur in open, herbaceous habitats rather than under a canopy of trees or shrubs.

9.4.2 Introduction to the Project Site

Modeled habitat is similar for both Choris's and Hickman's popcornflowers, though more habitat is modeled for Choris's, possibly due to the larger number of points used as reference data. Using habitat data based on the 27 more precise Midpen occurrences as a guide, 6.2 acres of potentially suitable habitat for Choris's popcornflower has been modeled within the project site. The modeled habitat is most concentrated within the southwestern portion of Unit 1 and along the northern portion of Unit 2. Most of these areas are north-facing slopes and within concave topography where moisture levels are greater. The CNDDDB-derived modeling resulted in a very similar footprint, but with more complete coverage, amounting to 9.1 acres of potentially suitable habitat. Hickman's popcornflower, being modeled from only 11 occurrences, 10 of which are from Calflora (the one Midpen occurrence is not on its own sufficient for habitat analysis), yielded 2.9 acres of modeled habitat. Most of the habitat aligns with Choris's variety, but in more scattered patches.

Within the modeled habitat for both taxa, it is advisable to plant the species within concave areas, toes of slopes, and along the margins of seeps and drainages. During field surveys within the project site, a low-gradient drainage was identified near the southwestern portion of Unit 1 (**Figure 6-A**), and potentially suitable mesic habitat that currently supports California wax myrtle along the northern margin of Unit 2 (**Figure 6-B**). The drainage supports a mosaic of wetland and quasi-wetland plants, and California wax myrtle is a facultative wetland species (Lichvar et al. 2020), indicating potentially suitable habitat for the popcornflower at those locations. Additionally, there is a seep near the southeastern edge of Unit 1 (**Figure 6-A**) that likewise supports a mix of wetland and upland plants and may be suitable for reintroduction of one or both of the popcornflower taxa, despite the lack of modeled habitat there. There are also small, scattered stands of shrubs that are good indicators of mesic conditions, such as creek dogwood, red elderberry, and arroyo willow, which are worth investigating more closely as potential introduction habitat. All of these areas are currently too wooded for successful establishment of popcornflower, and currently support a majority of native plants rather than invasive species that are targeted for removal, but weed removal and fuels thinning in the areas may result in suitable introduction habitat.

9.5 Gairdner's Yampah

9.5.1 Species Background and Habitat Requirements

Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*) is a perennial herb in the carrot family (Apiaceae) that grows up to five feet tall. Larger pinnate basal leaves become narrow subdivided lobes that are increasingly simplified farther up the plant stem. Flowering occurs from June through October, with compound white umbels of tiny white flowers that produce small, ribbed seed fruits. The species is distinguished from other Yampah species by having one-pinnate basal leaves with three to five pairs of primary leaflets (versus 2-3 pairs), a single tuberous root, and flower petals that are one-veined (Jepson online 2023). Gairdner's yampah is ranked as a 4.2 species with limited distribution, uncommon in California, and considered moderately threatened in the state.

In California, the range of Gairdner's yampah extends from the Monterey County along the central coast range to the southern portion of the north coast range, although sightings are reported farther inland in the Coast Range and foothill areas and as far south as San Diego (Jepson online 2023). Occurring most often in moist meadows and along streambanks, Gairdner's yampah prefers full sun and moderately to

poorly drained loamy or clay rich soils; however, this species can be found in a wide range of habitat types. It is classified by Lichvar et al. (2020) as a facultative wetland species (FAC), equally likely to occur in wetlands and non-wetlands. Seven observations of the species are reported within the project site vicinity: one from the Midpen database and six from Calflora. The observation from Midpen is 7.3 miles southeast of the project site within a coyote brush vegetation type while the closest observation from Calflora is approximately 25 miles southeast of the site. Most of the occurrences are westward facing, ranging from southwest to northwest aspects. Annual precipitation at these sites covers a wide range, from 18 to 55 inches, averaging 30 inches; summertime fog or cloud cover averages 9.5 hours, suggesting it can tolerate extended fog. In this small data set, slopes also cover a wide range as does elevation (from 8 to 597 feet above sea level) (**Table 6**).

9.5.2 Introduction to the Project Site

Combining habitat data from the single Midpen and six Calflora observations as guides, 3.0 acres for introduction of Gairdner's yampah may be suitable based on habitat modeling (**Figures 6-A and 6-B**). These areas are dispersed between Units 1 and 2 with slightly more area modeled for Unit 1. The primary guiding condition in the habitat model was slope and aspect. Modeled areas in Units 1 and 2 are under 30 percent slope, at elevations below 1,000 feet, and generally west facing. Soils within the proposed introduction areas include Lobitos, Pomponio, and Gazos loams (**Table 6**). These areas overlap with proposed restored habitats for the coast live oak, coyote brush, and the herbaceous woolly sunflower – seaside daisy - seaside buckwheat alliances. As with the two popcornflower taxa discussed above, this species would likely be most successfully introduced into relatively mesic but open habitats, in openings within Coastal Scrub, at toes of slopes, and along edges of swales and seeps or compacted soils (e.g., adjacent to current or historical trails and logging roads).

9.6 California Bottlebrush Grass

9.6.1 Species Background and Habitat Requirements

California bottlebrush grass is a relatively tall perennial species in the grass family (Poaceae) that features a bristly (“bottlebrush” like) inflorescence. This species is distinguished from other *Elymus* species by having no glumes, and typically blooms from May to August (uncommonly to November). The species is endemic to California and is found in Marin, Santa Cruz, San Mateo, and Sonoma counties, at elevations below 1,640 feet (500 meters) (Jepson eFlora 2019). Its mean elevation in the vicinity of the project site is 508 feet (**Table 6**). Its habitat is described as conifer forest (ibid). California bottlebrush grass is designated by the CNPS as CRPR 4.3, indicating the taxon is of “limited distribution” (“4”) and “not very threatened in California” (“0.3”) (CNPS 2019).

Most observations of California bottlebrush grass are along the outer Coast Ranges of the Bay Area, where it mingles with a wide range of hardwood and coast redwood forests. It also occurs in riparian corridors, often along perennial stream terraces that support white alder (*Alnus rhombifolia*), willows, and associated species. Associated soil types are of loam and clay loam textures. It is mapped on a variety of slopes and aspects but is most often along relatively shaded lower slopes and concave draws, where soils are relatively moist. In more topographically exposed sites, it is typically found under a canopy of trees. Three observations of California bottlebrush grass are mapped in the Midpen database and 12 in the Calflora database, with the closest occurrences in both databases being approximately six miles to the southeast. All of the regional occurrences are farther from the coast than the project site is, but the elevation and climate variables for the species are very close to or within the range of the site. The site's average annual precipitation of 33.9 inches and average annual summer fog hours of 9-9.5 are similar to the range for the species of 32.1 inches and up to 10.5 hours. Moreover, the species occurs on

soil types mapped within the project site, namely the Hugo and Josephine sandstone. Therefore, it may be worth introducing the species to the project site.

9.6.2 Introduction to the Project Site

Combining habitat data from the Midpen and 12 Calflora observations as guides, a 0.4-acre area may be suitable as habitat for the introduction of California bottlebrush (**Figures 6-A and 6-B**). These areas are within both Units 1 and 2, but a majority of habitat is mapped within concave areas and eastern slopes of the eastern half of Unit 1, where the Hugo and Josephine soil unit is most prevalent. This eastern area in general, and concave or shaded slopes with rich soils, are likely the most optimal locations to establish California bottlebrush grass. The plant should establish well from either seeds or seedlings but would likely benefit from being planted in the shade of other, larger plants.

10.0 EROSION AND SEDIMENT CONTROL PLAN

All project activities will be conducted between June 15 and October 15 when minimal chances for precipitation will be present, or according to any other construction window restrictions that are specified in the project permits. After completion of vegetation removal and restoration plantings, a native erosion control seed mix and/or mulch straw may be installed in erosion prone areas to protect surface soils and to mitigate sediment delivery. Additional erosion and sediment control measures may be recommended upon development of the Stormwater Pollution Prevention Plan ('SWPPP') for the project, which is anticipated to be required by the State Water Resources Control Board ('SWRCB') since the project will temporarily disturb more than one acre of land. The need for any additional erosion or sediment control BMPs is anticipated to be limited, due to the presence of existing vegetation adjacent to the restoration area that will act as a vegetative buffer to protect water quality downstream of the project.

11.0 AVOIDANCE AND MINIMIZATION MEASURES

To avoid or minimize adverse impacts to any special-status fish and wildlife resources with the potential to occur in the project area, the Permittee shall implement Avoidance and Minimization Measures ('AMMs') that are identified during the permitting and environmental review of this project and/or any other Midpen projects that will utilize this project as mitigation. The measures will be implemented based on survey results prior to beginning work. The following guidelines shall be adhered to:

Permitted Project Activities: All work will be implemented in accordance with county, state, and federal permits.

Species Avoidance: A qualified biologist shall be on-site prior to and during de-watering activities and as needed throughout the project to determine impacts to aquatic and terrestrial species prior to and during construction activities. No crossing construction or reconstruction shall occur if water is present, unless a visual encounter survey is conducted for all life-stages of any special-status aquatic species with the potential to occur in the project area. Such a survey should be conducted by a qualified biologist (knowledgeable of all life stages of these and similar species) within the project area no more than three hours prior to operations. Visual encounter surveys shall consist of walking the entire survey reach and visually scanning in the water and on the banks. Any federal or state listed sensitive amphibian/reptile species encountered shall be relocated to nearby suitable habitat upstream of the project site, provided the appropriate permits (e.g., Biological Opinion, Species Recovery Permit, etc.) are obtained for the project. If these permits are not obtained to relocate these species, then work must stop until these species leave the work area on their own accord and/or the CDFW and USFWS, as appropriate, are

contacted to determine the appropriate action. All trees shall be checked for wildlife use, including nesting birds, bats, and other tree-dwelling species, prior to felling, per the standard BMPs described in Midpen's Resource Management Policies. It should be reiterated that these are all example measures and that the permitting process will determine the full suite of measures that will be required (as stated at the beginning of this section).

Minimum Vegetation Removal: No native riparian vegetation shall be removed from the project sites, except where authorized permits and required for restoration activities. Permittee shall limit the disturbance or removal of native vegetation to the minimum necessary to achieve design guidelines and standards for the Authorized Activity. Permittee shall take precautions to avoid damage to vegetation outside the work area. Vegetation management shall not include treatment with herbicides.

Equipment and Vehicles: A spill kit will be present in all project vehicles and equipment. All equipment that will be working within 150 feet of a stream shall be cleaned daily, to remove materials deleterious to aquatic and terrestrial life or riparian habitat including non-native species, oil, grease, hydraulic fluid, soil, and other debris. Cleaning of equipment shall take place a minimum of 150 feet from top of bank or edge of the riparian zone, whichever results in a greater stream buffer. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat. Refueling of machinery or heavy equipment, or adding or draining oil, lubricants, coolants or hydraulic fluids shall not take place within 150 feet of the stream bed, channel and bank. All pumps and small engine equipment shall be stored in secondary containment.

Staging and Storage Areas: Short-term staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than 150 feet from the top of bank or edge of the riparian zone, whichever results in a greater stream buffer. All equipment and fuel stored on site shall be bermed to contain any spilled material and shall be protected from rain. Berms shall consist of plastic covered dirt or sandbags. All materials shall be promptly removed following the completion of project work.

Hazardous Spills. Any material, which could be hazardous or toxic to aquatic life and enters a stream (i.e., a piece of equipment tipping-over in a stream and dumping oil, fuel or hydraulic fluid), the Permittee shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550, and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours at 707-445-6493 and consulted regarding clean-up procedures.

12.0 MAINTENANCE

Maintenance on all project sites will be required for a five-year period, or until restoration objectives have been achieved. Project maintenance is required to ensure effectiveness of restoration treatments. The maintenance requirements detailed below are specified on an as-needed basis. A summary of monitoring, maintenance, and reporting requirements can be found in **Table 15** below.

12.1 Invasive Species

Vegetation Removal Maintenance (Manna Gum and Blackwood Acacia): Manna gum and Blackwood acacia are both able to resprout from cut stumps and therefore require vigilance to prevent their re-establishment. Treated areas should be surveyed and re-treated for re-sprouting and re-establishment two times per year. Individual re-sprouting sites should be treated with manual removal of root mass if possible. If manual removal is not possible, root mass should be treated with herbicide as recommended

by a licensed herbicide applicator for each species. Individual plants that have established from seed shall be removed through manual hand pulling and piled on-site.

Vegetation Removal Maintenance (Bishop Pine and Monterey Pine): Bishop pine and Monterey pine areas should be surveyed and re-treated for re-establishment two times per year. Individual plants that have established from seed shall be removed through manual hand pulling and piled on-site.

Vegetation Removal Maintenance (French Broom and Jubatagrass): French broom and jubatagrass areas should be surveyed and re-treated for re-establishment a minimum of two times per year. Individual plants that have established from seed shall be removed through manual hand pulling and piled on-site.

12.2 Native Plant Restoration and Rare Plant Introductions

Container plant and seed installation sites shall be maintained for a five-year period to ensure sites have adequate soil moisture for survival, competing vegetation is removed from planting location, and tree protection is functioning properly.

Irrigation: The project site is located within an area that receives substantial precipitation as well as abundant summer fog (see **Section 3.2** above). Additionally, the number of installed plants enumerated in this Plan accounts for substantial mortality. As such, irrigation may not be necessary for the establishment of installed plants. However, it is advisable as part of the monitoring effort to carefully check the restoration areas for dry soils and plants that appear to be suffering from insufficient water. This would be especially important during drought years. During summer months of the five-year establishment period, plants may require irrigation to maintain adequate soil moisture for survival and growth. As needed, plants that appear to be unhealthy due to lack of soil moisture should be spot irrigated. If needed, a drip irrigation system may be installed in larger areas that require irrigation.

Competing Vegetation: During each of the five years, the entire project site and immediate surrounds should be carefully surveyed to look for invasive plants, with a focus on species ranked as High or Moderate in the Cal-IPC inventory, excepting commonly occurring annual grasses ranked as Moderate (e.g., *Avena*, *Bromus*, and *Festuca* species). The survey should ideally be conducted in late spring/early summer, when a majority of invasive annual species can be readily identified. Invasive plants should be targeted during other visits to the site on an opportunistic basis at other timeframes, in order to document species that are better identified at other timeframes. Invasive plants should be removed, prioritizing those within or immediately surrounding the installed plants (e.g., within 3-5 feet) and using the most effective approach, as recommended by the Cal-IPC. Treatment methods are provided in the following website: <https://www.cal-ipc.org/plants/profiles/>

Tree protection: Tree protection around acorns shall be checked and maintained throughout the establishment period.

13.0 MONITORING

Monitoring of the restored habitats and introduced rare plants will be important for tracking the success of the efforts over time and space, to ensure that the results conform to the success criteria and overall project goals. Monitoring of the project site is recommended for at least five years. Note that this timeframe will ultimately be determined by the resource agencies during permitting / environmental review. If the project is implemented as a stand-alone restoration project, it is possible that three years of monitoring could be accepted. However, if the project is utilized as mitigation, then 5-10 years is more

likely to be required. The specific methods for monitoring the primary components are described below. In addition to the methods, photographic monitoring points should be established throughout the project site, with at least two points established within each major restored habitat type and at least one among each introduced rare plant population. The locations should be marked with a t-post, rebar, or other such marker that will last at least five years, and the locations should be mapped with a professional sub-meter GPS unit in order to document the locations. Photographs should aim to capture representative conditions with respect to installed plants and general ecological conditions. The photo monitoring locations should be re-occupied each year and standardized photographs taken in a manner that duplicates the first year's content with respect to bearing and frame.

13.1 Vegetation Removal Monitoring

Invasive plant treatment areas will be monitored by establishing 1/100th acre baseline monitoring plots within the treatment zone targeted at sampling a minimum of 3 percent of the treatment area. The type of target invasive species per plot will be recorded immediately after completion of vegetation removal. Treatment areas will be monitored for re-sprouting and re-establishment from seed annually. At each plot, data will be collected on species, if growth is from seed or re-sprout, individual plants per plot, and average height of plant. Data will be used to guide maintenance prescriptions and to determine if maintenance treatments are effective.

13.2 Native Plant Installation

Seeding areas will be monitored by establishing 1/1,000th acre baseline monitoring plots within the seeding zone at time of installation with a targeted sampling size of a minimum of 10 percent of the planted area. Seeding areas will be monitored for cover in late spring during the first five years of establishment. Areas with less than 80 percent native vegetative cover at time of monitoring will be re-seeded in the fall to bring native cover percentage back to 80 percent.

Containerized planting areas will be monitored by establishing 1/100th acre baseline monitoring plots within planting zones targeted at sampling a minimum of 10 percent of the planted population. Quantity of plants, by species, per plot will be recorded immediately after installation. Planting areas will be monitored for survival in late summer during the first five years of establishment. Species with less than 50 percent survival after each year will be re-planted to bring survival percentage back to 50 percent.

Table 15. Monitoring and Maintenance Requirements

Restoration Task	Monitoring Requirements	Success Criteria	Maintenance Requirement	Reporting Requirement
1. Invasive Vegetation Removal	Annual monitoring for 5 years	Decrease in re-sprouting and re-establishment of native plants	Annual removal of re-sprouts and newly established plants	Pre- and post-project photos, annual photos, monitoring report
2. Native Plant Installation	Vegetative cover and survival data collection at revegetation sites for 5 years	50% survival of native plants, 80% native vegetative cover	Maintain plants as through weeding and irrigation to achieve success criteria, maintain tree protection	Pre- and post-project photos, annual photos, monitoring report

13.3 Introduced Rare Plants

Any rare plant taxa introduced into the project site should be monitored along with the restored plant communities. The monitoring may be conducted concurrently with the other native plants that have been installed, but it will be important to conduct the rare plant monitoring during peak blooming periods of the targeted taxa, especially the herbaceous species, and in particular the annual species (i.e., the two *Plagiobothrys* taxa). The optimal timeframe for the two annual species is May, which is well within the peak blooming phase for the two popcornflowers.

The monitoring should include both quantitative and qualitative methods. The quantitative methods should involve a population census and an estimation of the health conditions as a percentage of each population. Qualitative monitoring should involve general assessments of environmental variables such as soil erosion, the presence and general abundance of invasive plants, vandalism, and the like. Permanent photo monitoring points should be established among the planted populations and standardized photographs should be taken at consistent bearings to document habitat changes over time.

For the census, every plant should be counted within any established rare plant taxon with an estimated population of less than 1,000. Populations that exceed 1,000 may be estimated by counting subsets and then extrapolating based on area coverage.

Woody Species

Planted woody species (e.g., Kings Mountain manzanita and western leatherwood) should be individually assessed with respect to health conditions, height, and observed problems related to soil erosion, competition with invasive plants, herbivory, disease, and other forms of physical damage. Height may be quantified according to classes, such as 1-6 inches, 6-12 inches, 12-18 inches, 18-24 inches, 24-36 inches, 36-48 inches, etc. The health of woody species may be quantified using Midpen's standard health assessment system for restored habitats, as listed below:

- **High health and vigor:** 75-100% healthy foliage and vigorous new growth observed throughout plant
- **Medium health and vigor:** 25-75% healthy foliage and vigorous growth observed only at terminal bud
- **Low health and vigor:** 0-25% healthy foliage and stem dieback observed; no new growth evident
- **Dead:** No live foliage; twig brittle; no evidence of growth
- **Absent:** Missing plant (if the plant locations are marked)

Each of the five years, the location of each plant should be recorded as a point with a professional-grade GPS unit, with the health and physical characteristics of the plant recorded as attributes within the point. This will facilitate analysis of spatial patterns with respect to plant health and general environmental variables.

Herbaceous Species

Herbaceous plants need to be assessed in a manner that differs from woody plants because they are more likely (and hopefully) to form larger populations and because their population boundaries are more likely to change on an annual basis (especially the annual species) or semi-annual basis (for the perennial species). Assuming that large numbers of the species become established, and that the populations are dense enough that trampling is a concern, the populations may need to be assessed as subpopulations, or even as total populations. For example, estimated percentages of populations may be

classified as being in High, Medium, or Low health, or as dead. Rather than assessing health based on foliage, conditions may be assessed based on the presence of wilting, height, and the average number of flowering branches. The phenology of the population should be recorded along with health conditions, as blooming conditions can be indicative of or predictive of health and of environmental condition. For example, exceptionally early blooms or reduced blooming may be indicative of suboptimal soil or solar radiation conditions. If it is infeasible to map boundaries of different health zones, the general distribution of the various health classes should be noted during monitoring. Regardless, the outer perimeters of all stands should be recorded each year, in order to document spatial change over time. "Stands" should be defined as a consistent mapping unit, such as 400 square feet (e.g., 20x20', 10x40', etc.) and with a specified distance that determines whether adjacent plants are included as part of the stand. For example, if a plant is more than five feet away from a mapped stand, it would not be included as part of the stand. Outlying populations should be mapped separately as points, with the number of plants present and the overall health assessed for the outlying population.

13.4 Reporting

Each year during the five-year monitoring period, the monitoring organization shall prepare a report that summarizes the methods and results of the monitoring effort. The report should provide a detailed account of the percent survivorship and health ratings of the planted native and rare plant species. For woody species, the height of the planted species should also be noted, in order to track growth. The recorded conditions should be compared to the goals and success criteria of the restoration and rare plant introduction efforts. General ecological conditions should also be reported, including the presence of problems such as erosion, SOD, or vandalism, and the presence, abundance, and distribution of invasive plants. Issues pertaining to restoration infrastructure should be addressed, such as the condition of protective cages/shelters, irrigation lines, and fencing, as appropriate. Maps and graphs should be provided to graphically depict health and vigor trends over time and spatially within the project site. Photographs from each photographic monitoring point as well as representative photos of plants, habitat conditions, and features of interest, should likewise be included to provide visual images of ecological changes over time and space. If any management activities have taken place since the previous monitoring effort, those activities should be described in detail. Finally, recommendations should be provided to address problems and deficiencies.

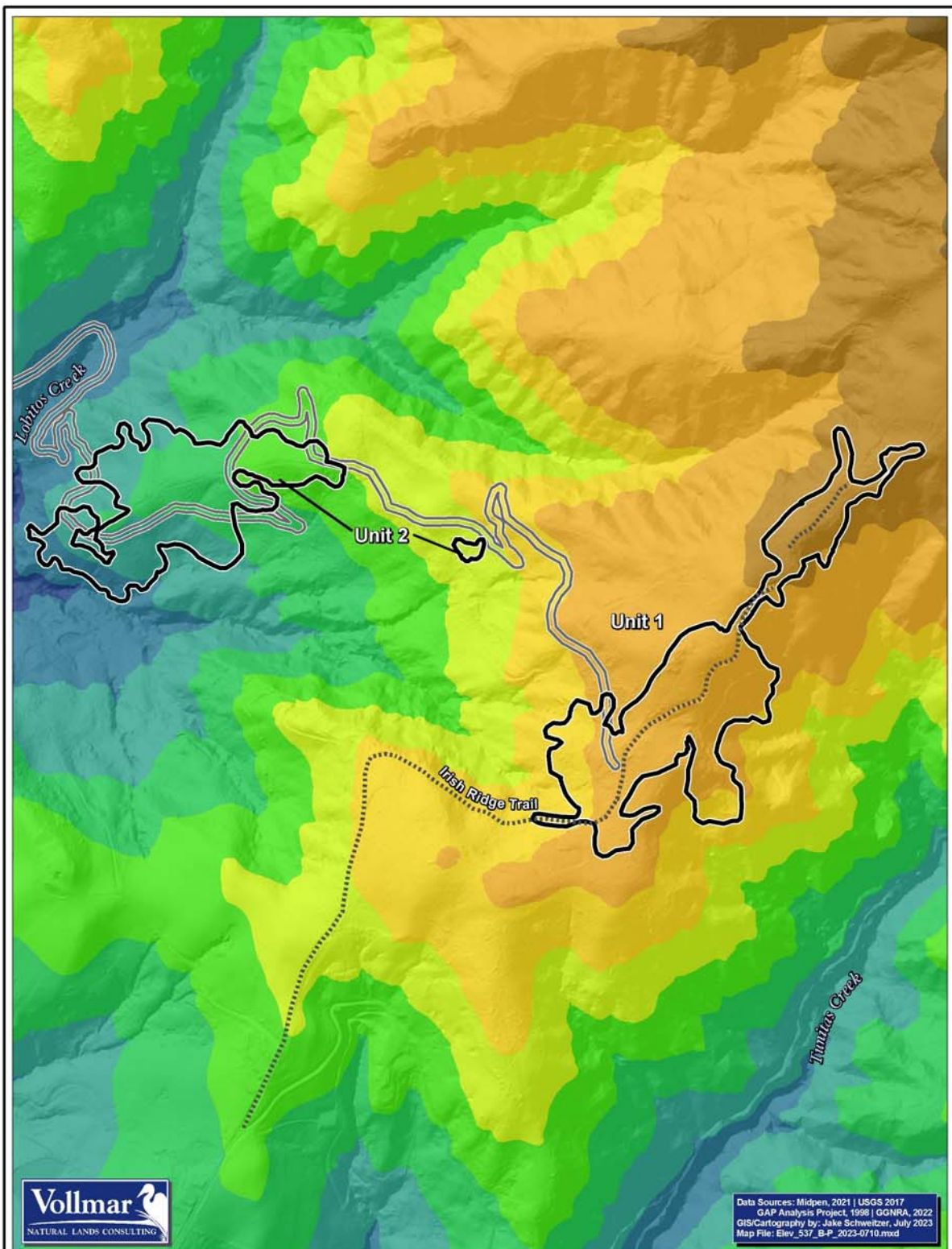
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APPENDIX A:

Maps of Environmental Parameters

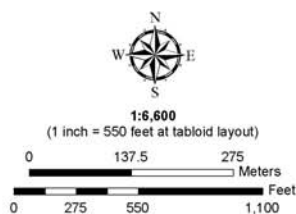


Legend

- Irish Ridge Trail
- Project Site Boundary
- Purisima to the Sea 20-ft Buffer
- Elevation (NGVD feet)**
- 1,501 - 1,710
- 1,251 - 1,500
- 1,001 - 1,250
- 901 - 1,000
- 801 - 900
- 701 - 800
- 601 - 700
- 501 - 600
- 401 - 500
- 337 - 400

FIGURE A-1 Project Site Elevation

Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California



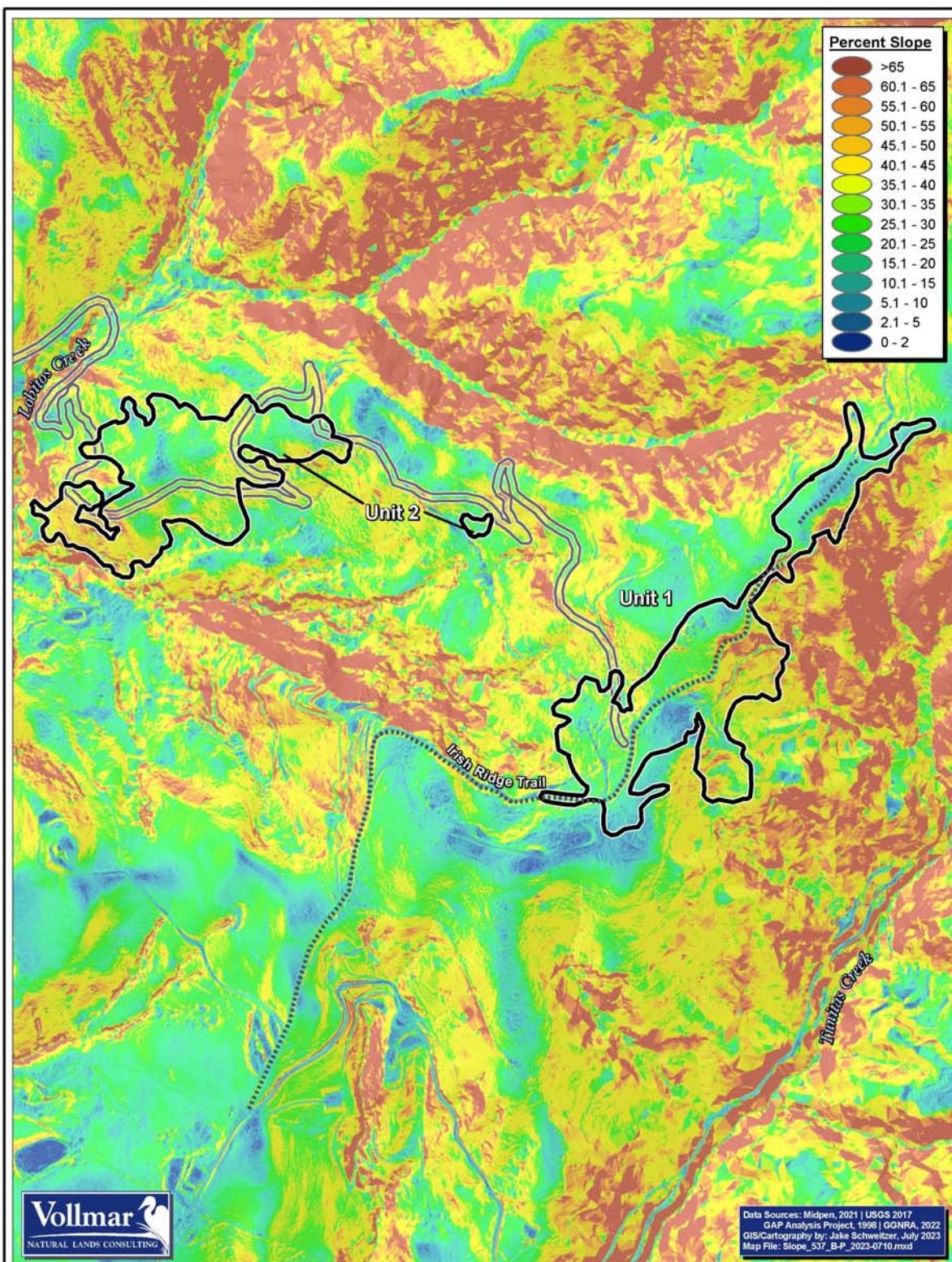
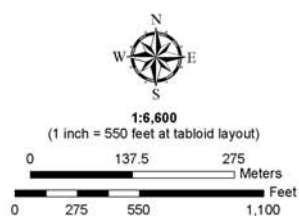


FIGURE A-2
Project Site Slope

Irish Ridge Restoration Feasibility Study
 Purisima Creek Redwoods Open Space Preserve
 San Mateo County, California



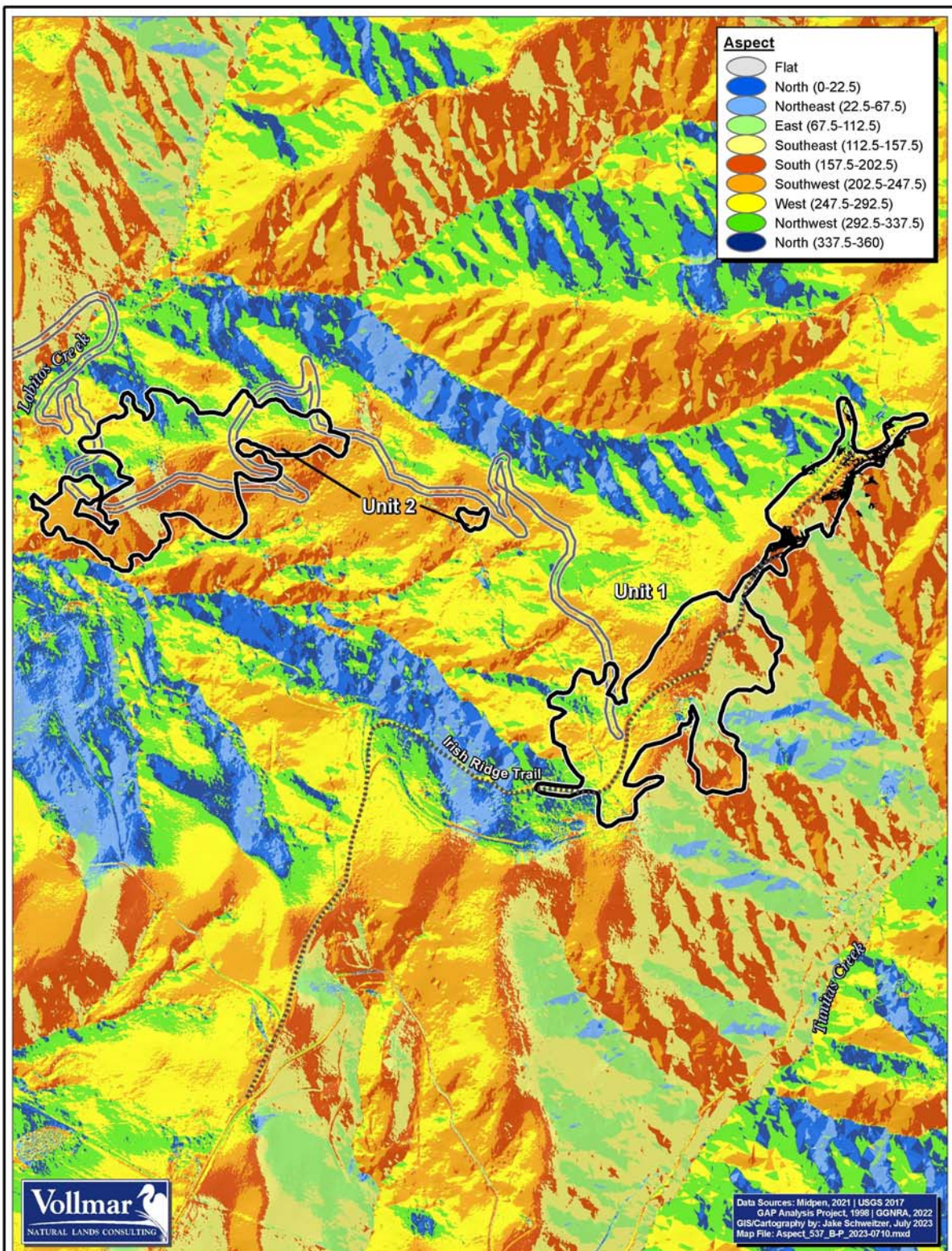
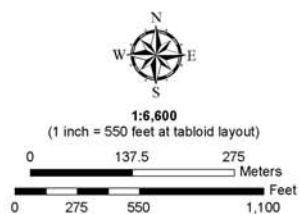
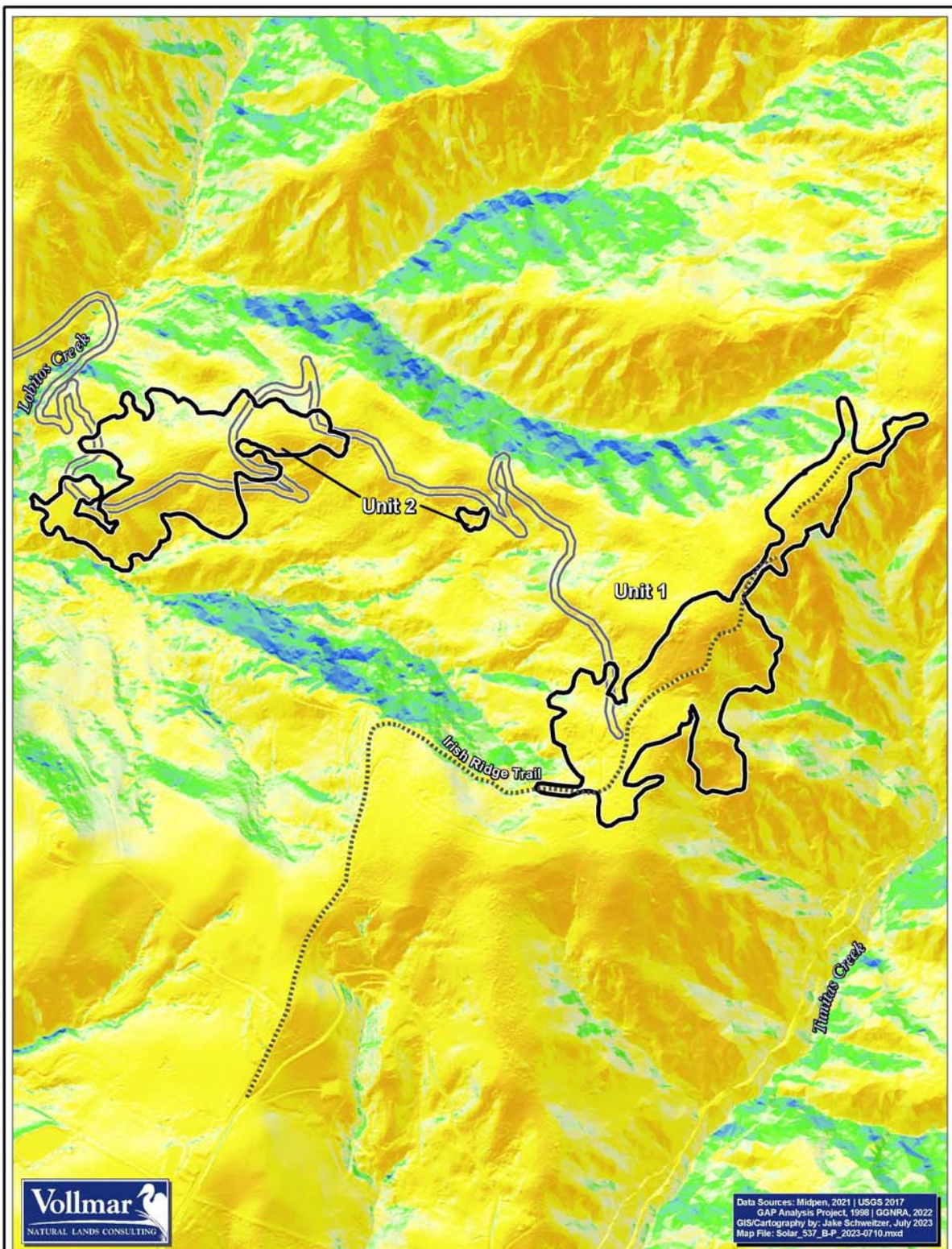


FIGURE A-3
Project Site Aspect

Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California



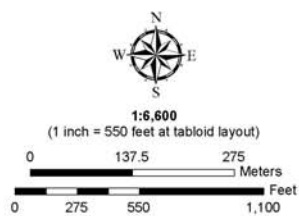


Legend

- Irish Ridge Trail
- Project Site Boundary
- Purisima to the Sea 20-ft Buffer
- Solar Radiation Levels**
- High (643125 kw hrs.)
- Low (143604 kw hrs.)

FIGURE A-4
Project Solar Radiation

Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California



APPENDIX B:

**Representative Photographs
of the Project Site
(May to September 2022)**

Appendix B. Representative Photographs of the Project Site



**Introduced Blackwood Acacia Habitat (with high litter accumulation)
Central Portion of Unit 1**



**North Coast Coniferous Forest (coast redwood forest)
Northwestern Portion of Unit 1**

Appendix B. Representative Photographs of the Project Site



**View of French Broom and Monterey Pine
Along Western of Unit 1 (Irish Ridge trail)**



View of Jubatagrass Along Edge of Unit 2

Appendix B. Representative Photographs of the Project Site



**View of Recruiting Monterey Pine
Along Outside Edge of Unit 2**



**View of Blackwood Acacia Seedling
Central Portion of Unit 1**

Appendix B. Representative Photographs of the Project Site



**View of Manna Gum
Along Edge of Unit 2**



**View of Monterey Cypress Grove
Along Western Edge of Unit 1**

Appendix B. Representative Photographs of the Project Site



**Woodrat Nest in Dense Coastal Scrub Habitat
Southwestern Portion of the Project Site**



**Grassland with Sapling Blackwood Acacia and
Open Coastal Scrub Habitat (in the distance)
Southern Portion of the Project Site**

Appendix B. Representative Photographs of the Project Site



**Cismontane Woodland
Central Portion of Unit 1**



**Transition from Cismontane Woodland to North Coast
Coniferous Forest. Central Portion of Unit 1**

Appendix B. Representative Photographs of the Project Site



**View of Medium Loam (MELO) Soils at Soil Pit 3A
Within *Sequoia sempervirens* Alliance at Northeastern Edge of Unit 1**



**View of moderately fine sandy clay loam (MFSA) at Soil Pit 6A
Within stand of jubatagrass near eastern edge of Unit 2**

Appendix B. Representative Photographs of the Project Site



**View of partially excavated soil pit and collection bag at
Within *Quercus agrifolia* Alliance Central portion of Unit 1**



**View of litter measurement within Stand of Blackwood acacia
Central Portion of Unit 1**

Appendix B. Representative Photographs of the Project Site



**View of mixed litter from coast redwood and blackwood acacia
Within central portion of Unit 1**



**View of litter within stand of *Eucalyptus* Semi-Natural Association
Within western portion of Unit 2**

APPENDIX C:

Reference Site Relevé Data Forms

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association
I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION			
Database #: <u>IRR101</u>	Date: <u>07/12/22</u>	Name of recorder: <u>Jake Schweitzer</u>	circle: Relevé or <u>RA</u>
	UID:	Other surveyors: <u>Christopher Jamison</u>	
		Location Name: <u>Middle Irish Ridge</u>	
GPS name: <u>7X</u> For Relevé only: Bearing°, left axis at ID point ____ of Long / Short side			
UTME <u>556482</u> UTMN <u>4140319</u> Zone: 11 NAD83 GPS error: ft./ m./ PDOP <u>22"</u>			
Decimal degrees: LAT ____ LONG ____			
GPS within stand? <u>Yes</u> No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____			
and record: Base point ID ____ Projected UTM: UTM ____ UTMN ____			
Camera Name: <u>JS Phone</u> Cardinal photos at ID point: <u>0569-0572</u>			
Other photos: <u>0573 - Understory of sloping habitat</u>			
Stand Size (acres): <1, <u>1-5</u> , >5 Plot Area (m²): 100 / ____ Plot Dimensions <u>20 x 20</u> m RA Radius ____ m			
Exposure, Actual °: <u>115</u> NE NW <u>SE</u> SW Flat Variable Steepness, Actual °: <u>10</u> 0° 1-5° <u>>5-25°</u> >25			
Topography: Macro: top <u>upper</u> mid lower bottom Micro: <u>convex</u> flat concave undulating			
Geology code: <u>SAND</u> Soil Texture code: <u>MESIL</u> <u>Upland</u> or Wetland/Riparian (circle one)			
% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)			
H20: <u>0</u> BA Stems: <u>2</u> Litter: <u>90</u> Bedrock: <u>0</u> Boulder: <u>0</u> Stone: <u>0</u> Cobble: <u>0</u> Gravel: <u>1</u> Fines: <u>7</u> =100%			
% Current year bioturbation <u>+</u> Past bioturbation present? Yes / <u>No</u> % Hoof punch <u>0</u>			
Fire evidence: Yes / <u>No</u> (circle one) If yes, describe in Site history section, including date of fire, if known.			
Site history, stand age, comments: <u>Coast live oak woodland with interspersed conifers and a few invasive Acacia melanoxylon.</u> <u>Used as a reference site for restoration, not pristine but representative of onsite topography and climate.</u> <u>Western portion near open habitats is flatter 10-15° ~5° and with a sparse understory. Eastern portion = 10-15° and with greater diversity. (Moister?) Soils analyzed from here.</u>			
Disturbance code / Intensity (L,M,H): <u>5 / L</u> <u>SOD</u> / <u>L</u> ____ / ____ / ____ "Other" ____ / ____			
II. HABITAT DESCRIPTION			
Tree DBH: <u>T1</u> (<1" dbh), <u>T2</u> (1-6" dbh), <u>T3</u> (6-11" dbh), <u>T4</u> (11-24" dbh), <u>T5</u> (>24" dbh), <u>T6</u> multi-layered (T3 or T4 layer under T5, >60% cover)			
Shrub: <u>S1</u> seedling (<3 yr. old), <u>S2</u> young (<1% dead), <u>S3</u> mature (1-25% dead), <u>S4</u> decadent (>25% dead)			
Herbaceous: <u>H1</u> (<12" plant ht.), <u>H2</u> (>12" ht.)			
Desert Riparian Tree/Shrub: <u>1</u> (<2ft. stem ht.), <u>2</u> (2-10ft. ht.), <u>3</u> (10-20ft. ht.), <u>4</u> (>20ft. ht.)			
Desert Palm/Joshua Tree: <u>1</u> (<1.5" base diameter), <u>2</u> (1.5-6" diam.), <u>3</u> (>6" diam.)			
III. INTERPRETATION OF STAND			
Field-assessed vegetation Alliance name: <u>QUE AGR</u>			
Field-assessed Association name (optional): ____			
Adjacent Alliances/direction: ____ / ____ / ____			
Confidence in Alliance identification: L M <u>H</u> Explain: ____			
Phenology (E,P,L): Herb <u>L</u> Shrub <u>P</u> Tree <u>P</u> Other identification or mapping information: ____			

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

SPECIES SHEET

Database #: IRRI 01

IV. VEGETATION DESCRIPTION

% Cover - Conifer tree / Hardwood tree: 3 / 50 % NonVase cover: 2 Total % Vase Veg cover: 60
 Regenerating Tree: 3 Shrub: 5 Herbaceous: 4
 Height Class - Conifer tree / Hardwood tree: 7 / 7 Regenerating Tree: 3 Shrub: 4 Herbaceous: 1
 Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T	Quercus agrifolia	40		
T	Arbutus menziesii	2		
T	Sequoia sempervirens	2		
T	Notholithocarpus densiflorus	7		
T	Pseudotsuga menziesii	1		
T	Acacia melanoxylon	1		
S	Rubus ursinus	3		
S	Toxicodendron diversilobum	2		
S	Rubus parviflorus	2		
S	Corylus cornuta	2		
S	Vaccinium ovatum	+		
S	Diplacus aurantiacus	+		
S	Ribes sanguineum	+		
SA	Quercus agrifolia	2		
SA	Acacia melanoxylon	+		
SA	Sequoia sempervirens	+		
S	Genista monspessulana	+		
H	Stachys bullata	3		
H	Symphoricarpos mollis	1		
H	Dryopteris arguta	1		
H	Clinopodium douglasii	+		
H	Polystichum munitum	+		
H	Fragaria vesca	+		
H	Bromus laevipes	+		
H	Galium tricornutum	+		
H	Galium aparine	+		
H	Lonicera hispidula	+		
H	Lathyrus vestitus	+		
H	Epipactis helleborine	+		
SA	Arbutus menziesii	+		
SE	Quercus agrifolia	+		
SA	Notholithocarpus densiflorus	1		
N	Lichen	2		
N	Moss	+		
Unusual species: _____				

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association
I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION			
Database #: <u>IRRI 02</u>	Date: <u>07/12/2022</u>	Name of recorder: <u>Jake Schweitzer</u>	circle: <u>Relevé</u> or RA
UID:		Other surveyors:	
		Location Name:	
GPS name: <u>7x</u> For Relevé only: Bearing°, left axis at ID point _____ of <u>Long</u> / <u>Short</u> side			
UTME <u>556697</u> UTMN <u>4140637</u> Zone: 11 NAD83 GPS error: <u>6</u> m./ PDOP <u>6</u>			
Decimal degrees: LAT _____ LONG _____			
GPS within stand? <u>Yes</u> / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____			
and record: Base point ID _____ Projected UTM: UTM _____ UTMN _____			
Camera Name: <u>JS Phone</u> Cardinal photos at ID point: <u>575-578</u>			
Other photos: <u>579 - Ground</u>			
Stand Size (acres): <1, 1-5, <u>>5</u> Plot Area (m²): 100 / _____ Plot Dimensions <u>20</u> x <u>20</u> m RA Radius _____ m			
Exposure, Actual °: <u>315</u> NE <u>NW</u> SE SW Flat Variable Steepness, Actual °: <u>17</u> 0° 1-5° <u>>5-25°</u> > 25			
Topography: Macro: top upper mid lower bottom Micro: convex flat concave <u>undulating</u>			
Geology code: <u>SAND</u> Soil Texture code: <u>MESIL</u> <u>Upland</u> or Wetland/Riparian (circle one)			
% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)			
H ₂ O: <u>0</u> BA Stems: <u>2</u> Litter: <u>95</u> Bedrock: <u>0</u> Boulder: <u>0</u> Stone: <u>0</u> Cobble: <u>0</u> Gravel: <u>+</u> Fines: <u>3</u> =100%			
% Current year bioturbation <u>0</u> Past bioturbation present? Yes / <u>No</u> % Hoof punch <u>0</u>			
Fire evidence: <u>Yes</u> / No (circle one) If yes, describe in Site history section, including date of fire, if known.			
Site history, stand age, comments: <u>Stand of second growth redwood along NW facing slope near ridgetop. Adjacent to area impacted by Acacia melanoxylon, serving as reference site for upper elevation redwood restoration.</u> <u>Most Sequoia sempervirens "saplings" are sprouts. Many Sequoia sempervirens stumps.</u>			
Disturbance code / Intensity (L,M,H): <u>SOD L</u> / _____ / _____ / _____ "Other" _____ / _____			
II. HABITAT DESCRIPTION			
Tree DBH: <u>T1</u> (<1" dbh), <u>T2</u> (1-6" dbh), <u>T3</u> (6-11" dbh), <u>T4</u> (11-24" dbh), <u>T5</u> (>24" dbh), <u>T6</u> multi-layered (T3 or T4 layer under T5, >60% cover)			
Shrub: <u>S1</u> seedling (<3 yr. old), <u>S2</u> young (<1% dead), <u>S3</u> mature (1-25% dead), <u>S4</u> decadent (>25% dead)			
Herbaceous: <u>H1</u> (<12" plant ht), <u>H2</u> (>12" ht.)			
Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)			
Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)			
III. INTERPRETATION OF STAND			
Field-assessed vegetation Alliance name: <u>SEQ SEM</u>			
Field-assessed Association name (optional): _____			
Adjacent Alliances/direction: _____ / _____ / _____			
Confidence in Alliance identification: L M <u>H</u> Explain: _____			
Phenology (E,P,L): Herb <u>L</u> Shrub <u>P</u> Tree <u>P</u> Other identification or mapping information: _____			

Database #: IRRI 02

SPECIES SHEET

Database #:

SPECIES SHEET

% Cover - Conifer tree / Hardwood tree: 65 / 2 % NonVasc cover: 3 Total % Vasc Veg cover: 83
 Regenerating Tree: 3 Shrub: 4 Herbaceous: 7
 Height Class - Conifer tree / Hardwood tree: 9 / 6 Regenerating Tree: 4 Shrub: 4 Herbaceous: 1
 Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

% NonVasc cover: 3 Total % Vasc Veg cover: 83

% Cover - Conifer tree / Hardwood tree: 65 / 2 Regenerating Tree: 3 Shrub: 4 Herbaceous: 7

Height Class - Conifer tree / Hardwood tree: 9 / 6 Regenerating Tree: 4 Shrub: 4 Herbaceous: 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

[illegible]

Unusual species:

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association
I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION			
Database #: <u>IRR103</u>	Date: <u>07/12/2022</u>	Name of recorder: <u>Jake Schweitzer</u>	circle: <u>Relevé</u> or RA
	UID:	Other surveyors:	
		Location Name: <u>Irish Ridge</u>	
GPS name: <u>7x</u> For Relevé only: Bearing°, left axis at ID point <u>center</u> of <u>Long</u> / <u>Short</u> side			
UTME <u>556559</u> UTMN <u>4140303</u> Zone: <u>10</u> NAD83 GPS error: ft./ m./ PDOP <u>32"</u>			
Decimal degrees: LAT _____ LONG _____			
GPS within stand? <u>Yes</u> / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____			
and record: Base point ID _____ Projected UTM: UTM _____ UTMN _____			
Camera Name: <u>JS</u> Cardinal photos at ID point: <u>581-584</u>			
Other photos:			
Stand Size (acres): <1, 1-5, <u>>5</u> Plot Area (m²): 100 / _____ Plot Dimensions <u>20x20</u> m RA Radius _____ m			
Exposure, Actual °: <u>160°</u> NE NW <u>SE</u> SW Flat Variable Steepness, Actual °: <u>20°</u> 0° 1-5° <u>>5-25°</u> >25			
Topography: Macro: top <u>upper</u> mid lower bottom Micro: convex flat concave <u>undulating</u>			
Geology code: <u>SAND</u> Soil Texture code: <u>MESIL</u> <u>Upland</u> or Wetland/Riparian (circle one)			
% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)			
H ₂ O: <u>0</u> BA Stems: <u>2</u> Litter: <u>95</u> Bedrock: <u>0</u> Boulder: <u>0</u> Stone: <u>0</u> Cobble: <u>0</u> Gravel: <u>0</u> Fines: <u>3</u> =100%			
% Current year bioturbation <u>0</u> Past bioturbation present? Yes / <u>No</u> % Hoof punch <u>0</u>			
Fire evidence: <u>Yes</u> / No (circle one) If yes, describe in Site history section, including date of fire, if known.			
Site history, stand age, comments: <u>Nearly all NOTDEN are dead. Large SEQSEM stumps present. GPS point recorded at center of releve</u>			
Disturbance code / Intensity (L,M,H): <u>38/M</u> / _____ / _____ / _____ "Other" _____			
II. HABITAT DESCRIPTION			
Tree DBH: <u>T1</u> (<1" dbh), <u>T2</u> (1-6" dbh), <u>T3</u> (6-11" dbh), <u>T4</u> (11-24" dbh), <u>T5</u> (>24" dbh), <u>T6</u> multi-layered (T3 or T4 layer under T5, >60% cover)			
Shrub: <u>S1</u> seedling (<3 yr. old), <u>S2</u> young (<1% dead), <u>S3</u> mature (1-25% dead), <u>S4</u> decadent (>25% dead)			
Herbaceous: <u>H1</u> (<12" plant ht.), <u>H2</u> (>12" ht.)			
Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)			
Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)			
III. INTERPRETATION OF STAND			
Field-assessed vegetation Alliance name: <u>Redwood</u>			
Field-assessed Association name (optional): _____			
Adjacent Alliances/direction: _____			
Confidence in Alliance identification: L M <u>H</u> Explain: _____			
Phenology (E,P,L): Herb <u>L</u> Shrub <u>P</u> Tree <u>P</u> Other identification or mapping information: _____			

Database #: IRRO3

(Revised March 27, 2018)

SPECIES SHEET

IV. VEGETATION DESCRIPTION

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular
% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

[illegible]

Unusual species:

(Revised March 27, 2018)

Page 1

(Revised March 27, 2018)

SPECIES SHEET

% NonVasc cover: 1 Total % Vasc Veg cover: 55

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

(mostly on edge of slot)

APPENDIX D:

CNPS Relevé Protocol Documentation and Instructions

CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form

(February 21, 2019)

Introduction

This protocol describes the methodology for both the Relevé and Rapid Assessment (RA) vegetation sampling techniques as recorded in the Combined Vegetation Rapid Assessment and Relevé Field Form. The same environmental data are collected for both techniques. However, the relevé sample is a plot demarcated with a measuring tape, and each species in the plot is recorded along with its cover. The rapid assessment sample is not based on a taped plot, but is based on a visually estimated, usually circular area within a representative portion of the entire stand, with up to 20 of the dominant or characteristic species and their cover values recorded.

In general, collect rapid assessments in woody vegetation and relevés in herbaceous vegetation. When working in an area that has not been sampled before, RAs in woody vegetation may list more than 20 species.

Defining a Stand

A stand is the basic physical unit of vegetation in a landscape. It has no set size. Some vegetation stands are very small, such as a portion of a vernal pool, and some may be several square kilometers in size, such as a forest type. All samples should be in stands that meet the minimum mapping unit of 1 acre for upland and 0.5 acre for special stands such as small wetlands, riparian and serpentine barrens.

A stand is defined by two main unifying characteristics:

- 1) It has compositional integrity. Throughout the site, the combination of species is similar. The stand is differentiated from adjacent stands by a discernable boundary that may be abrupt or indistinct.
- 2) It has structural integrity. It has a similar history or environmental setting that affords relatively similar horizontal and vertical spacing of plant species. For example, a hillside forest originally dominated by the same species that burned on the upper part of the slopes but not the lower would be divided into two stands. Likewise, sparse woodland occupying a slope with very shallow rocky soils would be considered a different stand from an adjacent slope with deeper, moister soil and a denser woodland or forest of the same species.

The structural and compositional features of a stand are often combined into a term called homogeneity. For an area of vegetated ground to meet the requirements of a stand, it must be homogeneous (uniform in structure and composition throughout).

Selecting a bounded plot (Relevé) or representative area (Rapid Assessment) to sample within a stand

Stands to be sampled may be selected by evaluation prior to a site visit (e.g., from aerial photos) or they may be selected on site during reconnaissance to determine extent and boundaries, location of other similar stands, etc.

Because many stands are large, it may be difficult to summarize the species composition, cover, and structure of an entire stand. A sample of vegetation is selected to be representative of the entire stand and should be conducted in a standardized way to ensure that it can be compared to samples of other stands. This means that you are not randomly selecting a plot; on the contrary, you are actively using your own best judgment to find a representative example of the stand.

Selecting a relevé plot or RA area requires that you see enough of the stand you are sampling to feel comfortable in choosing a representative plot location. Take a brief walk through the stand and look for variations in species composition and in stand structure. In hilly or mountainous terrain, look for a vantage point from which you can get a representative view of the whole stand. Variations in vegetation that are repeated throughout the stand should be included in your plot.

Once you assess the variation within the stand, attempt to locate a sample area that captures the stand's common species composition and structural condition.

Tracking sampled vegetation types

For large projects, the number of samples should be tracked daily or weekly by field-assessed Alliance and Association type so that samples are distributed as evenly as possible over types and time is not wasted collecting excessive numbers of samples of certain types. When multiple teams are in the field in the same week, daily communication between teams about Alliances and Associations sampled can ensure even sampling. *Prior to selecting a stand to sample, determine if what you are going to sample is needed based on this tracking.*

Selecting samples to avoid spatial autocorrelation

In no case should you sample the same stand more than once. For large projects, select sample locations to limit spatial autocorrelation. When possible, do not sample adjacent stands. Do not take a sample within 1000 meters of a survey of the same vegetation type. Exceptions can be made due to limited access to private lands. For example, samples taken from different formations, subclasses, or classes (e.g., wetlands vs. uplands, lithomorphic vs. mesomorphic) adjacent to one-another have a lower probability of sharing a number of species and may be sampled within 1000 meters of each other. However, avoid sampling adjacent stands that tend to have more species overlap even if they are technically different formations, such as a grassland adjacent to an open woodland.

Plot Size

All relevés of the same type of vegetation need to be the same size if they are to be analyzed together. Plot shape and size are somewhat dependent on the type of vegetation under study. Therefore, general guidelines for plot sizes of tree, shrub, and herbaceous communities have been established. Sufficient work has been done in temperate vegetation to be confident the following conventions will capture species richness:

Herbaceous communities: 100 m² plot

Special herbaceous communities of small size, such as vernal pools, fens: 10 m² plot

Shrublands and riparian forest/woodlands: 400 m² plot

Open desert and other shrublands with widely dispersed but regularly occurring woody species: 1000 m² plot

Upland Forest and woodland communities: 1000 m² plot

Plot Shape

A relevé has no fixed shape, though plot shape should reflect the character of the stand and is either a square, rectangle, or circle. Adjust the orientation and dimensions of the plot to incorporate the best approximation of stand homogeneity. If the stand is about the same size as a Relevé, the plot boundaries may be similar to that of the entire stand. If we are sampling streamside riparian or other linear communities, our plot dimensions should not go beyond the community's natural ecological boundaries. Thus, a relatively long, narrow plot capturing the vegetation within the stand, but not outside it, would be appropriate. Species present along the edges of the plot that are clearly part of the adjacent stand should be excluded from the plot.

Location of GPS Points

For Relevés, one point will be considered the plot identifier (ID point) and should be in the SW corner of a rectangular or square plot, if possible, or in the center of a circular plot. If it is taken in another location, this should be noted in the Site History section.

Definitions of fields in the Field Form

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION

Relevé or RA: Circle the appropriate survey type.

Database #: This is the unique ID number for Relevés and Rapid Assessments, in the form of *PPPPxxxx*, where *PPPP* is the 4-character project code and *xxxx* is a unique 4-digit number (e.g. CARR0001 for Carrizo sample #1). If this is a long-term plot, a character from A to Z can be added to the unique ID for each re-sampling survey; so the first re-sample for CARR0001 would be CARR0001A.

Base Points: For a projected RA (GPS within stand = No), a Base Point will be taken where the surveyors are standing and a separate point will be projected into the stand. The ID of the basepoint is *B_PPPPxxxx*, i.e. *B_CARR0001*.

Photo Points: Occasionally, stand photos will be taken from a vantage point outside the stand, or in a place other than the survey point. The ID for this point is *PPPPxxxx_P#*, i.e. the first Photo Point for CARR0001 will be CARR0001_P1.

Date: Date of the sampling.

UID: The ID number of a reference point that this survey describes.

Name of recorder: The full name of the recorder should be provided for the first field form for the day. On successive forms, initials can be recorded.

Other Surveyors: The full names of each person assisting should be provided for the first field form for the day. On successive forms, initials of each person assisting can be recorded.

Location Name: The name of the property or park, or the location within large holdings (like USFS or BLM properties).

GPS name: The name/number assigned to each GPS unit. This can be the serial number if another number is not assigned.

Bearing°, left axis at ID point of Long / Short side: Fill this in for Relevés only. For square or rectangular plots: from the ID Point, looking towards the plot, record the bearing of the axis to your left. If the plot is a rectangle, indicate whether the left side of the plot is the long or short side of the rectangle by circling “long” or “short” side (no need to circle anything for square plots). If there are no stand constraints, set up the plot with boundaries running in the cardinal directions and place the ID Point in the SW corner.

UTM coordinates: Easting (**UTME**) and northing (**UTMN**) location coordinates using the Universal Transverse Mercator (UTM) grid. Record the information from your GPS unit. These coordinates are always the base point of the survey. Soil samples and photos are taken from this point, and exposure, steepness, topography, etc. are measured here. If the GPS point is not within the stand (i.e., the point is projected or digitized in the field), these are the UTM's of the base point. Important: a projected point or a point digitized in the field must always have a base point associated with it (projected surveys are preferred). A base point can serve as the base for several distance surveys.

For Relevé plots, take the waypoint in the southwest corner of the plot whenever possible or in the center of a circular plot.

Zone: Universal Transverse Mercator zone. Zone 10 is for California west of the 120th longitude; zone 11 is for California east of 120th longitude (the straight portion of California's eastern boundary).

NAD83: This is the default GPS datum. If you use a different one, cross this out and write in the correct datum.

GPS error: ft./ m./ PDOP: Circle the appropriate unit of measure and record the error reading from the GPS unit.

Decimal degrees: *Use this only if your GPS unit will not record UTM coordinates.* Latitude–Longitude reading in decimal degrees. Record the information from your GPS unit. These coordinates are always the base point of the survey. Soil samples and photos are taken from this point, and exposure, steepness, topography, etc. are measured here.

For Relevé plots, take the waypoint in the southwest corner of the plot whenever possible or in the center of a circular plot.

GPS within stand? Yes / No: Circle “Yes” to denote that the GPS waypoint was taken directly within or at the edge of the stand being assessed for a Rapid Assessment, or circle “No” if the waypoint was taken at a distance from the stand (such as with a binocular view of the stand). If the point is taken at the edge of the stand, note the direction to the stand.

If No, cite from GPS to stand: distance (m), bearing°, inclination°: From the base GPS point, measure the distance to the projected point using a range finder. Record the compass bearing from the base point to the projected point; record the inclination if the base and projected points are not at the same elevation.

and record Base point ID: This is the ID of the base GPS point, where the surveyors were standing to record the distance survey. This is required for both projected points and points digitized in the field (gathering projection data is preferred).

and Projected UTM: These are the coordinates of the projected point, the point being surveyed. They are generated in the field if the GPS units have the ability to calculate projected points. If the GPS unit does not have this capability, make a note to that effect and leave these fields blank. Note that a digitized point, e.g., using your finger to plunk the location that you are surveying in Collector, is NOT a projected point.

Camera Name: Write the camera name or code as identified by the users.

Cardinal photos at ID point: Take four photos in the main cardinal directions (N, E, S, W) clockwise from the north, from the ID Point, and record the jpeg numbers here. Try to include the horizon in at least some of these photos. If this is a distance survey to a projected point, take the four cardinal photos at the base point and at least one photo of the stand. A digital camera with a minimum 10 megapixel resolution must be used.

Other photos: This may include cardinal photos at additional corners or other relevant photos. Notes regarding photo locations or subjects can go here.

Stand Size: Estimate the size of the entire stand in which the sample is taken. As a measure, one acre is about 4,000 square meters (approximately 64 x 64 m), or 208 feet by 208 feet. One acre is similar in size to a football field.

Plot Area (m²): If this is a Relevé, circle “100” for a 100m² plot, or record the plot size.

Plot Dimensions: Record the length and width of the Relevé plot in meters.

RA Radius: Enter the radius in meters of the visually estimated sample area for Rapid Assessments (should be a 20-meter radius at minimum). For a large stand, this limits the area covered by the RA. If you can see and assess the entire stand, the length and width should be recorded. If it is a long, narrow stand, note the width of the stand at your location. If your point is on the edge of the stand, record the radius into the stand, but note your location and the direction to which the RA Radius applies in the Site History section.

Exposure: (Enter Actual ° and circle general category): While facing in the general downhill direction, read degrees of the compass for the aspect or the direction you are standing, using degrees from north, adjusted for declination. Average the reading over the entire stand, even if you are sampling a Relevé plot, since your plot is representative of the stand. If estimating the exposure, write “N/A” for the actual degrees, and circle the general category chosen. “Variable” may be selected if the same, homogenous stand of vegetation occurs across a varied range of slope exposures.

Steepness: (Enter Actual ° and circle general category): Read degree slope from your compass/clinometer by following the manufacturer’s directions for use. If estimating, write “N/A” for

the actual degrees, and circle the general category chosen. Make sure to average the reading across the entire stand even if you are sampling in a Relevé plot.

Topography: First assess the broad (**Macro**) topographic feature or general position of the stand relative to the immediately surrounding landscape. This attribute does not refer to the watershed as a whole, but to a cross section of the topography at the location of your stand. For instance, if your stand is located along a small creek in a narrow, v-shaped canyon, your position would be at the “Bottom,” even if the canyon itself slopes downward. Since stands can occupy more than just a single slope position, **circle all the positions that apply**.

Then assess the local (**Micro**) topographic features or the lay of the area within the stand being sampled (e.g., surface is flat or concave). **Circle only one of the microtopographic descriptors.**

Geology code: Geological parent material of stand. If exact type is unknown, use a more general category (e.g., igneous, metamorphic, sedimentary). *See code list for types.*

Soil Texture code: Record soil texture that is characteristic of the plot (e.g., coarse loamy sand, sandy clay loam). *See soil texture key for types.*

Upland or Wetland/Riparian: Indicate if the stand is in an upland or wetland/riparian setting. (wetland and riparian are one category.) Note that a site need not be officially delineated (as in the Army Corps of Engineer’s wetland delineation protocols) as a wetland to qualify as such in this context (e.g., seasonally wet meadow).

% Surface cover: The abiotic substrates of the plot. The total should sum to 100%. It is helpful to imagine “mowing off” all of the live vegetation at the base of the plants and removing it – you will be estimating what is left covering the surface. Note that non-vascular cover (lichens, mosses, cryptobiotic crusts) is not estimated in this section.

H₂O:	Percent surface cover of running or standing water, ignoring the substrate below the water.
BA Stems:	Percent surface cover of the basal area of stems at the ground surface. For most vegetation types, BA is 1-3% cover.
Litter:	Percent surface cover of litter, duff, or wood on the ground.
Bedrock:	Percent surface cover of bedrock, including outcrops.
Boulder:	Percent surface cover of rocks >60 cm in the longest dimension.
Stone:	Percent surface cover of rocks >25–60 cm in the longest dimension.
Cobble:	Percent surface cover of rocks >7.5–25 cm in the longest dimension.
Gravel:	Percent surface cover of rocks 2 mm–7.5 cm in the longest dimension.
Fines:	Percent surface cover of bare ground and fine sediment <2 mm in the longest dimension (e.g., dirt, sand).

% Current year bioturbation: Estimate the percent of the plot exhibiting soil disturbance by any organism that lives underground. Do not include disturbance by ungulates. Note that this is a separate estimation from surface cover.

Past bioturbation present? Circle Yes if there is evidence of bioturbation from previous years in the plot.

% Hoof punch: Note the percent of the plot surface that has been punched down by hooves (cattle or native grazers) in wet soil. Depressions must be >2 cm deep.

Fire Evidence: Circle Yes if there is visible evidence of fire within the stand, and note the type of evidence in the “Site history, stand age, comments section,” for example, “charred dead stems of *Quercus berberidifolia* extending 2 feet above resprouting shrubs.” If you are certain of the year of the fire, put this in the Site history section. You may also record more general historic information if you lack the precise date of a fire (such as most recent fire appears to be 10-20 years ago).

Site history, stand age, comments: Briefly describe the stand age/seral stage, disturbance history, nature and extent of land use, and other site environmental and vegetation factors, such as distribution of species. Examples of disturbance history: fire, landslides, avalanching, drought,

flood, animal burrowing, or pest outbreak. Also, try to estimate year or frequency of disturbance. Examples of land use: grazing, timber harvest, or mining. Examples of other site factors: exposed rocks, soil with fine-textured sediments, high litter/duff build-up, multi-storied vegetation structure, or other stand dynamics.

Disturbance code / Intensity (L,M,H): List codes for potential or existing impacts on the stability of the plant community. See code list for impacts and definitions of levels of disturbance. Characterize each impact each as **L** (=Light), **M** (=Moderate), or **H** (=Heavy). Disturbance is evaluated on a stand basis.

II. HABITAT AND VEGETATION DESCRIPTION

California Wildlife Habitat Relationships (CWHR)

For CWHR, identify the size/height class of the plot using the following tree, shrub, and/or herbaceous categories. These categories are based on functional life forms.

Tree DBH: Circle one of the tree size classes provided when the tree canopy closure exceeds 10% of the total cover, or if young tree density indicates imminent tree dominance. Size class is based on the average diameter at breast height (dbh) of each trunk (standard breast height is 4.5ft or 137cm). When marking the main size class, make sure to estimate the mean diameter of all trees over the entire stand, and weight the mean toward the larger tree dbh's. The "**T6 multi-layered**" dbh size class signifies a multi-layered tree canopy (with a size class T3 and/or T4 layer growing under a T5 layer and a distinct height separation between the classes) exceeding 60% total cover. Stands in the T6 class need also to contain at least 10% cover of size class 5 (>24" dbh) trees growing over a distinct layer with at least 10% combined cover of trees in size classes 3 (>6-11" dbh) or 4 (>11-24" dbh).

Shrub: Circle one of the shrub size classes provided when shrub canopy closure exceeds 10% (except in desert types) by recording which class is predominant in the survey. Shrub size class is based on the average amount of crown decadence (dead standing vegetation on live shrubs when looking across the crowns of the shrubs).

Herbaceous: Circle one of the herb height classes when herbaceous cover exceeds 2% by recording the predominant class in the survey. Note: *This height class is based on the average plant height at maturity, not necessarily at the time of observation.*

Desert Palm/Joshua Tree: Circle one of the palm or Joshua tree size classes by averaging all the stem-base diameters (i.e., mean diameter of all stem-base sizes). Diameter is measured at the plant's base above the bulge near the ground.

Desert Riparian Tree/Shrub: Circle one of the size classes by measuring mean stem height (whether tree and/or shrub stand).

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Enter the name of the Alliance following the [Manual of California Vegetation Online](#). Please use scientific nomenclature, e.g., *Quercus agrifolia* forest. An Alliance is based on the dominant or diagnostic species of the stand, and usually reflects the uppermost and/or dominant height stratum. A dominant species covers the greatest area. A diagnostic species is consistently found in some vegetation types but not others.

The field-assessed Alliance name may not exist in the present classification, in which case you can provide a new Alliance name in this field. If this is the case, also make sure to state that it is not in the MCV under "Explain" below.

Field-assessed Association name (optional): Enter the name of the species in the Alliance and additional dominant/diagnostic species from any strata. In following naming conventions, species in differing strata are separated with a slash, and species in the uppermost stratum are listed first

(e.g., *Quercus douglasii* / *Toxicodendron diversilobum*). Species in the same stratum are separated with a dash (e.g., *Quercus lobata* – *Quercus douglasii*).

The field-assessed Association name may not exist in the present classification, in which you can provide a new Association name in this field.

Adjacent Alliances/direction: Identify other vegetation types that are directly adjacent to the stand being assessed by noting the dominant species (or known type). Also note the distance in meters from the GPS waypoint and the direction in degrees that the adjacent alliance is found (e.g., *Amsinckia tessellata* / 50m, 360° N or *Eriogonum fasciculatum* / 100m, 110°).

Confidence in Alliance identification: (L, M, H) With respect to the “Field-assessed Alliance name,” note whether you have L (=Low), M (=Moderate), or H (=High) confidence in the interpretation of this Alliance name.

Explain: Please elaborate if your “Confidence in Alliance identification” is low or moderate. Low confidence can occur from such things as a poor view of the stand, an unusual mix of species that does not meet the criteria of any described Alliance, or a low confidence in your ability to identify species that are significant members of the stand.

Phenology: Indicate early (E), peak (P), or late (L) phenology for each of the strata. For herbs, this generally indicates if species are in flower and/or fruit and are therefore identifiable. For shrubs and trees, this attribute generally refers to cover, e.g., a tree that is fully leafed out will be considered peak (P) even if it is not in flower. Phenology is useful for cover estimation and species identification issues, and should be elaborated upon in the next field.

Other identification or mapping information: Discuss any further problems with the identification of the assessment or issues that may be of interest to mappers. Note if this sample represents a type that is likely too small to map.

IV. VEGETATION DESCRIPTION

Database #: Copy the database # from Page 1.

Overall Cover of Vegetation

Provide an estimate of cover for the life-form categories below. Record a specific number for the total aerial cover or “bird’s-eye view” looking from above for each category, estimating cover for the living plants only. Litter/duff should not be included in these estimates.

The *porosity* of the vegetation should be taken into consideration when estimating percent foliar cover for all categories below: consider how much of the sky you can see when you are standing under the canopy of a tree, or how much light passes through the canopy of the shrub layer to help you estimate foliar cover.

% NonVasc cover: The total cover of all lichens, bryophytes (mosses, liverworts, hornworts), and cryptogamic crust on substrate surfaces including downed logs, rocks and soil, but not on standing or inclined trees or vertical rock surfaces.

Total % Vasc Veg cover: The total cover of all vascular vegetation taking into consideration the porosity, or the holes, in the vegetation, and disregarding overlap¹ of the various tree, shrub, and/or herbaceous layers and species.

% Cover by Layer

Conifer Tree /Hardwood Tree: The total foliar cover (considering porosity) of all live tree species, disregarding overlap¹ of individual trees. Estimate conifer and hardwood covers separately. **Please**

¹ Porosity reduces the total cover of the canopy. Overlapping strata should not be included in the total cover percent; for instance, if a shrub is growing under a tree, only the cover of the tree will be added into the total; the cover of the shrub will be disregarded, except for the amount by which it fills in the porosity of the tree canopy.

note: These cover values should not include the coverage of regenerating tree species (i.e., tree seedlings and saplings).

Regenerating Tree: The total foliar cover of seedlings and saplings, disregarding overlap¹ of individual recruits. See seedling and sapling definitions below.

Shrub: The total foliar cover (considering porosity) of all live shrub species disregarding overlap¹ of individual shrubs.

Herbaceous: The total cover (considering porosity) of all herbaceous species, disregarding overlap¹ of individual herbs.

Height Class by Layer

Modal height for conifer tree / hardwood tree, regenerating tree, shrub, and herbaceous categories. Record an average height value for each category by estimating the mean height for each group. Please use the following height intervals to record a height class: 1 = <1/2 m, 2 = 1/2-1 m, 3 = 1-2 m, 4 = 2-5 m, 5 = 5-10 m, 6 = 10-15 m, 7 = 15-20 m, 8 = 20-35 m, 9 = 35-50 m, 10 => 50 m.

Note: For the herbaceous layer height, this height class is based on the average plant height at the time of observation, as opposed to how this is recorded in the CWHR section (at maturity).

Species List and Coverage

For Rapid Assessments: List up to 20 species that are dominant or that are characteristically consistent within the assessment area. These species may or may not be abundant, but they should be constant representatives in the survey. When different layers of vegetation occur, make sure to list species from each stratum. As a general guide, make sure to list at least 1-2 of the most abundant species per stratum. There is a heavy line on the form under the 20th line to limit the RA section of the species list.

Note: If constant, diagnostic, or interesting species occur outside the assessment area but in the stand, list the species and estimated stand cover in the Site History section.

For Relevés: list all species present in the plot, using a second species list page if necessary.

** If using a second species list page, note "Continued" on the bottom of the first page and be sure to note the Database # on the second page.

For both sample types, provide the stratum:

T = Tree. A woody perennial plant that has a single trunk.

A = SApling. 1" - <6" dbh and young in age, OR small trees that are <1" dbh, are clearly of appreciable age, and are kept short by repeated browsing, burning, or other disturbance. Includes trees that are re-sprouting from roots or stumps following fire, logging or other disturbance. These re-sprouts may exhibit a shrubby form, with multiple small trunks, but are species that are generally considered trees. If a majority of the trunks are >6" dbh, then the re-sprouts would be recorded under the "Tree" stratum.

E = SEedling. A tree species clearly of a very young age that is <1" dbh or has not reached breast height. Applies only to trees propagating from seed; resprouts are not recorded here even if they meet the size requirements.

S = Shrub. A perennial, woody plant, that is multi-branched and doesn't die back to the ground every year.

H = Herb. An annual or perennial that dies down to ground level every year.

N = Non-vascular. Includes moss, lichen, liverworts, hornworts, cryptogammic crust, and algae.

Be consistent and don't break up a single species into two separate strata. The only time it would be appropriate to do so is when one or more tree species are regenerating, in which case the SEedling and/or SApling strata should be recorded for that species. These may be noted on the same line, e.g.:

Strata	Species	%Cover	C
T/A/E	<i>Quercus douglasii</i>	40/<1/<1	

In some cases, the stratum of a particular species might not be obvious. Some examples are *Juniperus californica*, which has the size and growth habit of a shrub, but it is considered a tree, and mistletoe, which is considered a shrub. It is useful to have a list of species with ambiguous strata for each project. Consult the MCV or contact VegCAMP if you are unsure.

C. If a species collection is made, it should be indicated in the collection column with a “C” (for collected). If the species is later keyed out, cross out the species name or description and write the keyed species name in pen on the data sheet. Do not erase what was written in the field, because this information can be used if specimens get mixed up later. If the specimen is then thrown out, add a “T” to the “C” in the collection column (CT = thrown out after confirmation) or cross out the “C”. If the specimen is kept but is still not confidently identified, add a “U” to the “C” in the collection column (CU = collected and unconfirmed). In this case the unconfirmed species epithet should be put in parentheses [e.g., *Hordeum (murinum)*]. If the specimen is kept and is confidently identified, add a “C” to the existing “C” in the collection column (CC = collected and confirmed). If the specimen is later deposited in an herbarium, add a “D” to the existing “C” in the collection column (CD = collected and deposited) and note the receiving herbarium.

Use Jepson Manual nomenclature. Write out the genus and species of the plant. Do not abbreviate except for dominant species that do not have ambiguous codes. If you aren’t sure there aren’t duplicate codes, don’t use a code. When uncertain of an identification (which you intend to confirm later) use parentheses to indicate what part of the determination needs to be confirmed. For example, you could write out *Brassica (nigra)* if you are sure it is a *Brassica* but you need further clarification on the specific epithet.

Provide the % absolute foliar cover for each species listed, considering porosity. When estimating, it is often helpful to think of coverage in terms of the following cover intervals at first:

<1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%.

Keeping these classes in mind, refine your estimate to a specific percentage. All species percent covers may total over 100% because of overlap.

Include the percent cover of snags (standing dead) of trees and shrubs. Use the code “SNAG.” Note their species, if known, in the “Species” column (i.e. SNAG – *Quercus wislizeni*).

For Rapid Assessments, make sure that the major non-native species occurring in the stand also are listed in the space provided in the species list with their strata and % cover.

For Relevés, all non-native species should be included in the species list.

Also for Relevés, record the <1% cover in one of two categories: “r” for trace (i.e., rare in plot, or solitary individuals) and “+” for <1% but not rare or solitary individuals.

Unusual species: List species that are locally or regionally rare, endangered, or atypical (e.g., range extension or range limit) within the stand. This field will be useful to the Program for obtaining data on regionally or locally significant populations of plants.

Note: Field forms are generally filled out in pencil, so that changes may be made easily while working in the plot or stand. Once out of the stand, however, entries on the field form should not be erased, but should be crossed out and corrected in a different-colored ink.

CODE LIST

GEOLOGY CODE

IGTU	Igneous (type unknown)
MIIG	Mixed igneous
ULTU	Ultramafic (type unknown)
VOLC	General volcanic extrusives
ANDE	Andesite
ASHT	Ash (of any origin)
BASA	Basalt
DIAB	Diabase
OBSI	Obsidian
PUMI	Pumice
PYFL	Pyroclastic flow
RHYO	Rhyolite
VOFL	Volcanic flow
VOMU	Volcanic mud
INTR	General igneous intrusives
DIOR	Diorite
GABB	Gabbro
GRAN	Granitic (generic)
MONZ	Monzonite
PERI	Peridotite
QUDI	Quartz diorite

METU	Metamorphic (type unknown)
MIME	Mixed metamorphic
GREE	Greenstone
BLUE	Blue schist
FRME	Franciscan melange
GNBG	Gneiss/biotite gneiss
HORN	Hornfels
MARB	Marble
PHYL	Phyllite
SCHI	Schist
SESC	Semi-schist
SLAT	Slate
ULTU	Ultramafic (type unknown)
SERP	Serpentine

SETU	Sedimentary (type unknown)
BREC	Breccia (non-volcanic)
CACO	Calcareous conglomerate
CALU	Calcareous (origin unknown)
CASA	Calcareous sandstone
CASH	Calcareous shale
CASI	Calcareous siltstone
CHER	Chert
CONG	Conglomerate
DOLO	Dolomite
FANG	Fanglomerate
LIME	Limestone
MISE	Mixed sedimentary
SAND	Sandstone
SHAL	Shale
SILT	Siltstone
CLAL	Clayey alluvium
DUNE	Sand dunes
GLTI	Glacial till, mixed origin, moraine
GRAL	Gravelly alluvium
LALA	Large landslide (unconsolidated)

GEOLOGY CODE, continued

LOSS	Loess
MIAL	Mixed alluvium
SAAL	Sandy alluvium
SIAL	Silty alluvium
MIRT	Mix of two or more rock types
OTHE	Other than on list

ROCK SIZE, measurement of longest dimension

Boulder	> 60 cm
Stone	25 cm to 60 cm
Cobble	7.5 cm to 25 cm
Gravel	2 mm to 7.5 cm
Fines	< 2 mm

DISTURBANCE CODES

01	Development
02	ORV activity
03	Agriculture
04	Grazing
05	Competition from exotics
06	Logging
07	Insufficient population/stand size
08	Altered flood/tidal regime
09	Mining
10	Hybridization
11	Groundwater pumping
12	Dam/inundation
13	Other
14	Surface water diversion
15	Road/trail construction/maint.
16	Biocides
17	Pollution
18	Unknown
19	Vandalism/dumping/litter
20	Foot traffic/trampling
21	Improper burning regime
22	Over collecting/poaching
23	Erosion/runoff
24	Altered thermal regime
25	Landfill
26	Degrading water quality
27	Wood cutting
28	Military operations
29	Recreational use (non ORV)
30	Nest parasitism
31	Non-native predators
32	Rip-rap, bank protection
33	Channelization (human caused)
34	Feral pigs
35	Burros
36	Rills
37	Phytogenic mounding
38	Sudden Oak Death

Descriptions of Common Disturbance Codes (Site Impacts)

Site impacts include any anthropogenic disturbance having an effect on vegetation. These are the standard codes for plant, animal, and natural community surveys, used by the Natural Diversity Database of the California Natural Heritage Program. Descriptions are provided for impacts that are common and for which additional clarification seems warranted. Impacts are evaluated as Light, Moderate, or Heavy. Unless otherwise stated, definitions of these values are:

Light: less than 33% of the stand is impacted
Moderate: between 33% and 66% of the stand is impacted
Heavy: more than 66% of the stand is impacted

01 Development: Used to describe any construction or human modifications to the environment that are not otherwise specifically included on the Disturbance Codes list. These can include fencing, informal campsite construction, building sites, etc. (e.g., houses, oil rigging pads, pumping stations, power transmission towers, walls, etc.)

Light: less than 2% of the stand is impacted
Moderate: between 2% and 5% of the stand is impacted
Heavy: more than 5% of the stand is impacted

02 ORV activity: "Informal" roads and trails created by off-highway vehicle activity. See 15 Roads/trails for examples

04 Grazing: Refers to the grazing of domesticated animals, and not necessarily to the grazing activities of native wildlife. Exceptions can be made in cases where management practices have resulted in the overpopulation of native herbivores and destruction of native vegetation (may include browsing on woody vegetation as well as herbaceous vegetation). Levels are determined by density of recent livestock droppings, level of distinction of browse lines on shrubs (attributable to livestock), density and extent of livestock trails, cover of livestock hoof-punch, and associated removal of vegetation cover from recent seasons.

05 Competition from exotics: Refers to implied competition for resources between native and introduced non-native plant species. The level of impact is determined by the proportion of the total cover occupied by exotic species compared to total cover of all species. Estimate total vegetation cover and total non-native cover then divide the latter by the former.

Light: less than 33% of total cover is non-native
Moderate: between 33% and 66% of total cover is non-native
Heavy: more than 66% of total cover is non-native

06 Logging: Refers to the large scale removal of tree biomass, usually in commercial operations. This impact should not be used to describe the localized felling of one or a few trees.

15 Road/trail construction/maint.: Includes all established roads and trails (dirt, gravel, paved) and their impact on any part of the sampled vegetation stand.

Light: less than 33% of the vegetation polygon area is affected by any type of road
Moderate: between 33% and 66% of the vegetation polygon is intersected by any type of road
Heavy: more than 66% of the vegetation polygon is affected by roads of any kind



Light



Moderate



Heavy

Descriptions of Common Disturbance Codes (Site Impacts)

19 Vandalism/dumping/litter: Includes temporary degradable as well as more persistent trash and junk (for example, concrete or cement fragments not used as rip-rap, see below)

21 Improper burning regime: Should be used only in cases where repeated burning has caused significant changes to the vegetation OR in cases where the fire interval has been much longer than natural (causing shifts in vegetation or senescence). It does not necessarily apply to a recently burned stand, even if the fire was human-caused.

27 Wood cutting: Refers to the small scale cutting of firewood, or to the limited cutting of wood for other purposes, and not to large-scale commercial logging operations.

32 Rip-rap, bank protection: The treatment of slopes of dikes, banks of streams, lakes and other water bodies by placement of riprap (an engineered layer of graded broken rock pieces) to prevent erosion by surface runoff, stream flows and/or wave action.

36 Rills: Small, intermittent water courses with steep sides usually only a few centimeters deep. They occur most often on recently cultivated soils or on denuded surfaces.

37 Phytogenic mounding: Refers to the build-up of soil and debris at the base of shrubs or trees (normally seen in semi-arid environments), with a concomitant loss of surface material between the shrubs or trees.

38 Sudden Oak Death: A disease of oaks and other woody perennials caused by the plant pathogen *Phytophthora ramorum*. The most useful diagnostic symptom for *P. ramorum* is the development of cankers on the trunk. Cankers have red-brown to black discoloration and seep dark black to red or amber sap. They usually develop 1 to 2 m off of the ground, although they can be at soil level, or as high as 4 m or greater.

Simplified Key to Soil Texture
(Adapted from Brewer and McCann 1982)

Place about three teaspoons of soil in the palm of your hand. Take out any particles ≥ 3 mm in size.

A. Does soil remain in ball when squeezed in your hand palm?

Yes, soil does remain in a ball when squeezed..... **B**

No, soil does not remain in a ball when squeezed..... **sand**

	SAND Sand (class unknown)
Very coarse texture.....	COSA Coarse sand
Moderately coarse texture.....	MESN Medium sand
Moderately fine texture.....	FISN Fine sand

B. Add a small amount of water until the soil feels like putty. Squeeze the ball between your thumb and forefinger, attempting to make a ribbon that you push up over your finger. Does soil make a ribbon?

Yes, soil makes a ribbon; though it may be very short..... **C**

No, soil does not make a ribbon..... **loamy sand**

Very gritty with coarse particles.....	COLS Coarse, loamy sand
Moderately to slightly gritty with medium to fine particles.....	MELS Medium to very fine, loamy sand

C. Does ribbon extend more than one inch?

Yes, soil extends > 1 inch..... **D**

No, soil does not extend > 1 inch..... Add excess water

Soil feels gritty or not smooth..... **sandy loam or loam**

	LOAM Loam (class unknown)
Very gritty with coarse particles.....	MCSL Moderately coarse, sandy loam
Moderately gritty with medium to fine particles.....	MESA Medium to very fine, sandy loam
Slightly gritty	MELO Medium loam

Soil feels very smooth..... **silt loam**

MESIL medium silt loam

D. Does ribbon extend more than 2 inches?

Yes, ribbon extends more than 2 inches, and does not crack if bent into a ring..... **E**

No, soil breaks when 1–2 inches long; cracks if bent into a ring..... Add excess water

Soil feels gritty or not smooth..... **sandy clay loam or clay loam**

Moderately to very gritty.....	MFSA Moderately fine sandy clay loam
Slightly gritty or not smooth.....	MFCL Moderately fine clay loam

Soil feels very smooth..... **silty clay loam or silt**

Moderately fine texture.....	MFSL Moderately fine silty clay loam
Very fine texture.....	MESI Medium silt

E. Soil makes a ribbon 2+ inches long; does not crack when bent into a ring..... Add excess water

Soil feels gritty or not smooth..... **sandy clay or clay**

Moderately to very gritty.....	FISA Fine sandy clay
Slightly gritty or not smooth.....	FICL Fine clay
	CLAY Clay (class unknown)

Soil feels very smooth..... **silty clay**

FISC Fine silty clay

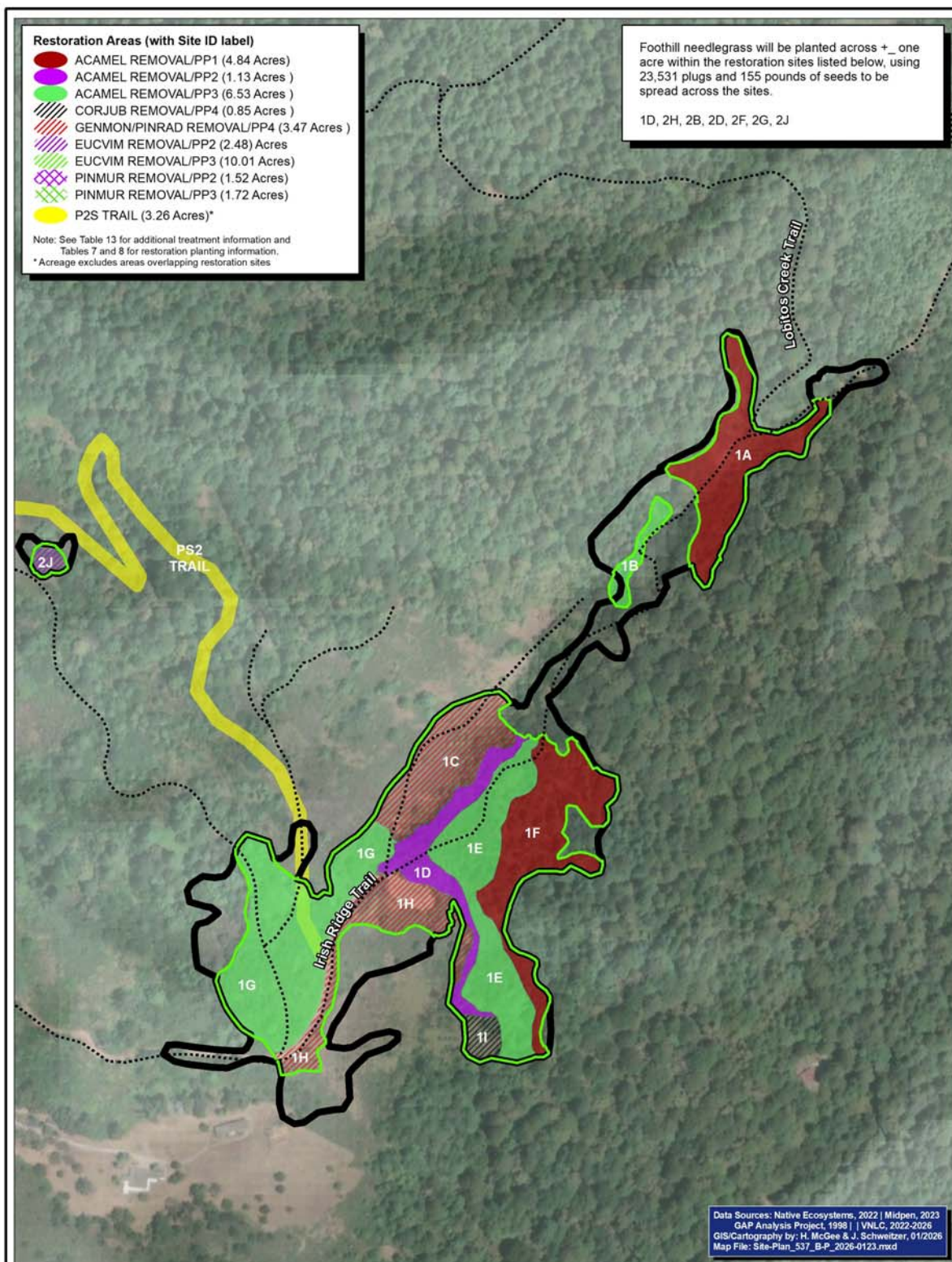
UNKN = UNKNOWN

PEAT = PEAT

MUCK = MUCK

APPENDIX E:

Site Restoration Plan Map

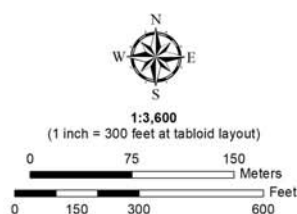


Reference Features

- Trail
- Project Boundary (42.1 ac.)
- Restoration Area (32.56 ac.)

FIGURE E-1 Restoration Site Plan Map, Unit 1

Irish Ridge Restoration Feasibility Study
Purisima Creek Redwoods Open Space Preserve
San Mateo County, California



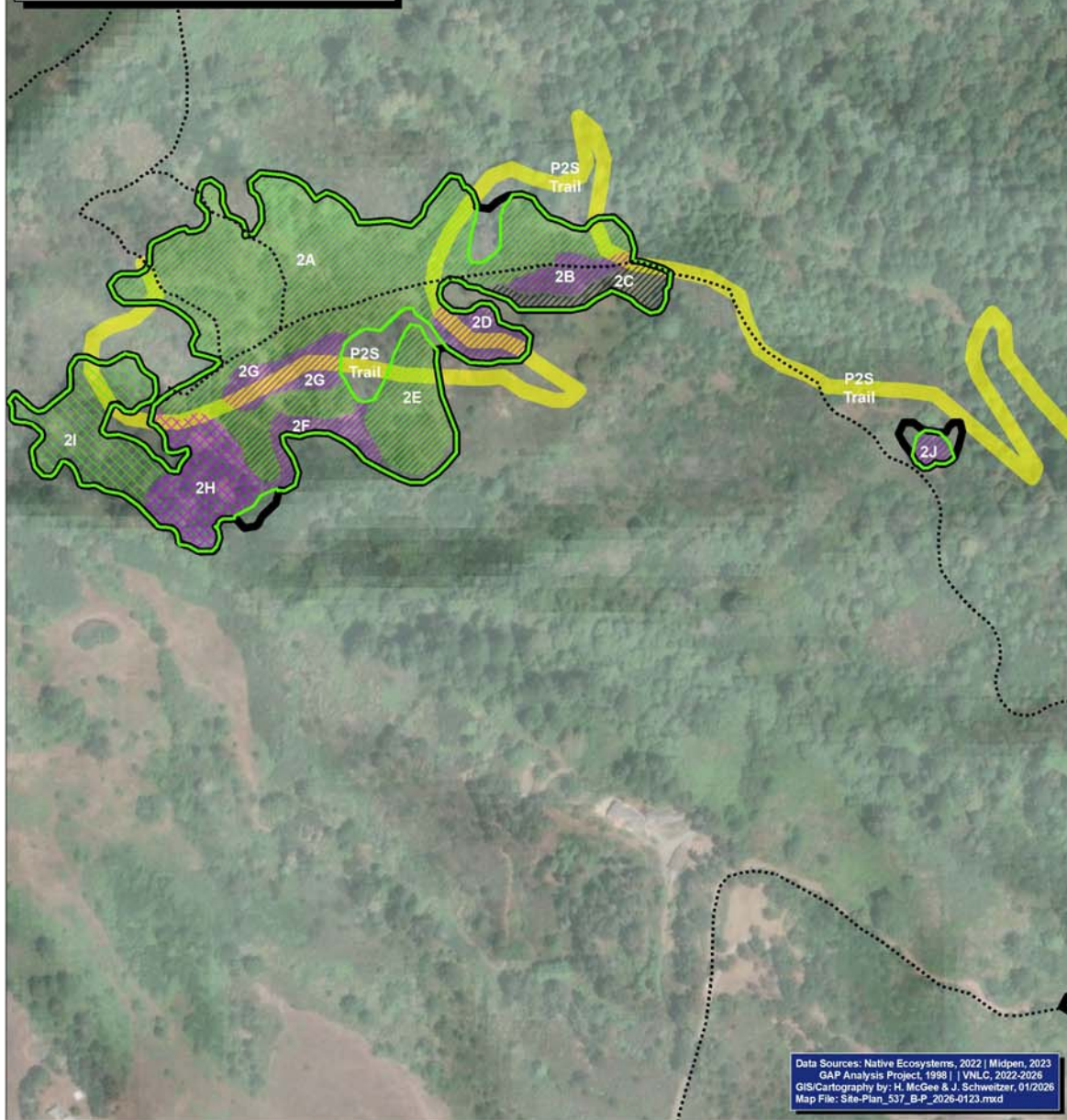
Restoration Areas (with Site ID label)

- ACAMEL REMOVAL/PP1 (4.84 Acres)
- ACAMEL REMOVAL/PP2 (1.13 Acres)
- ACAMEL REMOVAL/PP3 (6.53 Acres)
- CORJUB REMOVAL/PP4 (0.85 Acres)
- GENMON/PINRAD REMOVAL/PP4 (3.47 Acres)
- EUCVIM REMOVAL/PP2 (2.48 Acres)
- EUCVIM REMOVAL/PP3 (10.01 Acres)
- PINMUR REMOVAL/PP2 (1.52 Acres)
- PINMUR REMOVAL/PP3 (1.72 Acres)
- P2S TRAIL (3.26 Acres)*

Note: See Table 13 for additional treatment information and Tables 7 and 8 for restoration planting information.
 * Acreage excludes areas overlapping restoration sites

Foothill needlegrass will be planted across +_ one acre within the restoration sites listed below, using 23,531 plugs and 155 pounds of seeds to be spread across the sites.

1D, 2H, 2B, 2D, 2F, 2G, 2J



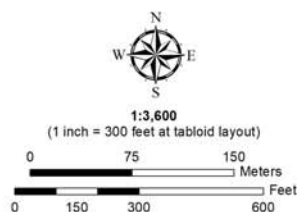
Data Sources: Native Ecosystems, 2022 | Midpen, 2023
 GAP Analysis Project, 1998 | VNLC, 2022-2026
 GIS/ Cartography by: H. McGee & J. Schweitzer, 01/2026
 Map File: Site-Plan_537_B-P_2026-0123.mxd

Reference Features

- Trail
- Project Boundary (42.1 ac.)
- Restoration Area (32.56 ac.)

FIGURE E-2 Restoration Site Plan Map, Unit 2

Irish Ridge Restoration Feasibility Study
 Purisima Creek Redwoods Open Space Preserve
 San Mateo County, California



APPENDIX F:

Planting Palette Tables

Appendix F-1. Planting Palette 1 - North Coast Coniferous Forest

Project Site Area						1A	1F	TOTAL
Acres						2.22	2.62	4.84
Species Code	Plants/acre	Approx. Spacing (ft)	Plant Size	Spacing Specs.	Plant Type	QTY (Plants)	QTY (Plants)	QTY (Plants)
SEQSEM	125	20	D25L	Micro-site 15' minimum	Tree	278	327	605
QUEAGR	150	30	ACORN	Micro-site 30' minimum	Tree	333	393	726
ARBMEN	50	30	TP49	Micro-site 30' minimum	Tree	111	131	242
CEATHY	25	5	D16	Clusters of 3	Shrub	56	65	121
CORCOR	50	5	TP46	Clusters of 3	Shrub	111	131	242
CORSER	50	5	D25L	Clusters of 3	Shrub	111	131	242
DIPAU	50	5	AB34	Clusters of 3	Shrub	111	131	242
FRACAL	50	5	TP46	Clusters of 3	Shrub	111	131	242
GUASHA	100	5	AB34	Clusters of 3	Shrub	222	262	484
HOLDIS	65	5	TP46	Clusters of 3	Shrub	144	170	315
LONHIS	50	5	TP46	Clusters of 3	Shrub	111	131	242
LONINV	50	5	TP46	Clusters of 3	Shrub	111	131	242
MORCAL	100	5	TP46	Clusters of 3	Shrub	222	262	484
RIBMEN	50	5	TP46	Clusters of 3	Shrub	111	131	242
RIBSAN	50	5	TP46	Clusters of 3	Shrub	111	131	242
RUBSPE	20	4	TP46	Clusters of 3	Shrub	44	52	97
ROSGYM	50	5	TP46	Clusters of 3	Shrub	111	131	242
RUBPAR	50	5	TP46	Clusters of 3	Shrub	111	131	242
RUBURS	100	5	TP46	Clusters of 3	Shrub	222	262	484
SAMRAC	50	5	TP46	Clusters of 3	Shrub	111	131	242
SYMMOL	25	5	TP46	Clusters of 3	Shrub	56	65	121
VACOVA	100	5	TP46	Clusters of 3	Shrub	222	262	484
ARTDOU	100	5	AB34	Clusters of 3	Herb	222	262	484
CLIDOU	100	3	AB34	Clusters of 3	Herb	222	262	484
LYSLAT	100	3	AB34	Clusters of 3	Herb	222	262	484
SANCRA	50	3	AB34	Clusters of 3	Herb	111	131	242
SCRCAL	100	3	AB34	Clusters of 3	Herb	222	262	484
POLMUN	100	3	AB34	Clusters of 3	Herb	222	262	484
FESCAL	250	2	AB34	Clusters of 20	Grass	555	655	1,210
MELSUB	250	2	AB34	Clusters of 20	Grass	555	655	1,210
TOTAL	2,460					5,462	6,443	11,905

Appendix F-2. Planting Palette 2 – Coastal Scrub

Project Site Area					1D	2B	2D	2F	2G	2H	2J	TOTAL
Acres					1.13	0.46	0.59	0.51	0.76	1.52	0.16	5.13
Species Code	Approx. Spacing (ft)	Plant Size	Spacing Specs.	Plant Type	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)
ARTCAL	5	AB34	Clusters of 3	Shrub	114	46	60	52	76	152	16	516
CEATHY	5	D16	Clusters of 3	Shrub	142	57	75	65	95	190	20	644
CORCOR	5	TP46	Clusters of 3	Shrub	6	3	3	3	4	8	1	28
CORSER	5	D25L	Clusters of 3	Shrub	6	3	3	3	4	8	1	28
DIPAUT	5	AB34	Clusters of 3	Shrub	114	46	60	52	76	152	16	516
ERISTA	3	AB34	Clusters of 3	Shrub	100	69	89	77	114	100	24	573
FRACAL	5	TP46	Clusters of 3	Shrub	100	69	89	77	114	100	24	573
GUASHA	5	AB34	Clusters of 3	Shrub	29	12	15	13	19	38	4	130
HETARB	5	TP46	Clusters of 3	Shrub	12	5	6	5	8	15	2	53
HOLDIS	5	TP46	Clusters of 3	Shrub	14	6	8	7	10	19	2	66
LONHIS	5	TP46	Clusters of 3	Shrub	12	5	6	5	8	15	2	53
LONINV	5	TP46	Clusters of 3	Shrub	12	5	6	5	8	15	2	53
LUPALB	2	AB34	Clusters of 3	Shrub	114	46	60	52	76	152	16	516
MORCAL	5	TP46	Clusters of 3	Shrub	29	12	15	13	19	38	4	130
RIBMEN	5	TP46	Clusters of 3	Shrub	29	12	15	13	19	38	4	130
RIBSAN	5	TP46	Clusters of 3	Shrub	29	12	15	13	19	38	4	130
RUBPAR	5	TP46	Clusters of 3	Shrub	29	12	15	13	19	38	4	130
RUBURS	5	TP46	Clusters of 3	Shrub	57	23	30	26	38	76	8	258
RUBSPE	5	TP46	Clusters of 3	Shrub	29	12	15	13	19	38	4	130
SAMRAC	5	TP46	Clusters of 3	Shrub	12	5	6	5	8	15	2	53
VACOVA	5	TP46	Clusters of 3	Shrub	14	6	8	7	10	19	2	66
ARTDOU	5	AB34	Clusters of 3	Herb	113	46	59	51	76	152	16	513
CLIDOU	3	AB34	Clusters of 3	Herb	57	23	30	26	38	76	8	258
DANCAL	3	AB34	Clusters of 20	Grass	200	100	100	150	200	200	50	1,000
SCRCAL	3	AB34	Clusters of 3	Herb	57	23	30	26	38	76	8	258
STILEP	1	AB34	As fit between shrubs	Herb	5,977	338	480	298	838	15,549	42	23,522
SYMCHI	3	AB34	Clusters of 3	Herb	57	23	30	26	38	76	8	258
TOTAL					7,464	1,019	1,328	1,096	1,991	17,393	294	30,585

Appendix F-3 Planting Palette 3 – Cismontane Woodland

Project Site Area					1G	1B	1E	2A	2E	2I	TOTAL
Acres					3.69	0.32	2.52	8.80	1.22	1.72	18.28
Species Code	Approx. Spacing (ft)	Plant Size	Spacing Specs.	Plant Type	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)
ACEMAC	30	D25L	Micro-site 20' minimum	Tree	0	0	0	12	0	0	12
QUEAGR	15	ACORN	Micro-site 10' minimum	Tree	2,215	191	1,511	5,282	734	1,033	10,965
ARBMEN	30	TP49	Micro-site 20' minimum	Tree	185	16	126	440	61	86	914
SEQSEM	50	D25L	Micro-site 20' minimum	Tree	74	6	50	176	24	34	366
CEATHY	5	D16	Clusters of 3	Shrub	111	10	76	264	37	52	548
CORCOR	5	TP46	Clusters of 3	Shrub	74	6	50	176	24	34	366
CORSER	5	D25L	Clusters of 3	Shrub	74	6	50	176	24	34	366
DIPAUT	5	AB34	Clusters of 3	Shrub	369	32	252	880	122	172	1,828
ERISTA	3	AB34	Clusters of 3	Shrub	185	16	126	440	61	86	914
FRACAL	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
GUASHA	5	AB34	Clusters of 3	Shrub	185	16	126	440	61	86	914
HETARB	5	TP46	Clusters of 3	Shrub	74	6	50	176	24	34	366
HOLDIS	5	TP46	Clusters of 3	Shrub	74	6	50	176	24	34	366
LONHIS	5	TP46	Clusters of 3	Shrub	92	8	63	220	31	43	457
LONINV	5	TP46	Clusters of 3	Shrub	92	8	63	220	31	43	457
LUPALB	2	AB34	Clusters of 3	Shrub	185	16	126	440	61	86	914
MORCAL	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
RIBMEN	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
RIBSAN	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
ROSGYM	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
RUBPAR	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
RUBURS	5	TP46	Clusters of 3	Shrub	369	32	252	880	122	172	1,828
SAMRAC	5	TP46	Clusters of 3	Shrub	74	6	50	176	24	34	366
SYMMOL	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
VACOVA	5	TP46	Clusters of 3	Shrub	185	16	126	440	61	86	914
ARTDOU	5	AB34	Clusters of 3	Herb	185	16	126	440	61	86	914
CLIDOU	3	AB34	Clusters of 3	Herb	185	16	126	440	61	86	914
LUPBIC	2	AB34	Clusters of 3	Herb	185	16	126	440	61	86	914
GALCAL	3	AB34	Clusters of 3	Herb	369	32	252	880	122	172	1,828
GALTRI	3	AB34	Clusters of 3	Herb	369	32	252	880	122	172	1,828
SCRCAL	3	AB34	Clusters of 3	Herb	185	16	126	440	61	86	914
SYMCHI	3	AB34	Clusters of 3	Herb	369	32	252	880	122	172	1,828
DANCAL	1.5	AB34	Clusters of 20	Grass	1,846	159	1,259	4,402	612	860	9,138
TOTAL					9,605	828	6,548	22,886	3,175	4,471	47,523

Appendix F-4.1 Planting Palette 4.1 – Coastal Scrub for CORJUB/GENMON Areas, Plugs

Acres						0.55	0.30	1.85	1.62	4.32
Species Code	Plants/acre	Approx. Spacing (ft)	Plant Size	Spacing Specs.	Plant Type	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)	QTY (plants)
QUEAGR	30	50	ACORN	Micro-site 30' minimum	Tree	16	9	56	49	130
ARBMEN	100	20	TP49	Micro-site 20' minimum	Tree	55	30	185	162	432
ARTCAL	300	5	AB34	Clusters of 3	Shrub	164	90	556	485	1,295
CEATHY	500	5	D16	Clusters of 3	Shrub	273	151	927	808	2,159
DIPAUT	80	5	AB34	Clusters of 3	Shrub	44	24	148	129	345
ERISTA	300	3	AB34	Clusters of 3	Shrub	164	90	556	485	1,295
FRACAL	300	5	TP46	Clusters of 3	Shrub	164	90	556	485	1,295
GUASHA	10	5	AB34	Clusters of 3	Shrub	5	3	19	16	43
HETARB	10	5	TP46	Clusters of 4	Shrub	5	3	19	16	43
HOLDIS	20	5	TP46	Clusters of 3	Shrub	11	6	37	32	86
LONHIS	40	5	TP46	Clusters of 3	Shrub	22	12	74	65	173
LONINV	40	5	TP46	Clusters of 3	Shrub	22	12	74	65	173
LUPALB	500	2	AB34	Clusters of 3	Shrub	273	151	927	808	2,159
MORCAL	300	5	TP46	Clusters of 3	Shrub	164	90	556	485	1,295
RIBMEN	20	5	TP46	Clusters of 3	Shrub	11	6	37	32	86
RIBSAN	20	5	TP46	Clusters of 3	Shrub	11	6	37	32	86
RUBPAR	20	5	TP46	Clusters of 3	Shrub	11	6	37	32	86
RUBSPE	50	5	TP46	Clusters of 3	Shrub	27	15	93	81	216
RUBURS	300	5	TP46	Clusters of 3	Shrub	164	90	556	485	1,295
SAMRAC	10	5	TP46	Clusters of 3	Shrub	5	3	19	16	43
VACOVA	10	5	TP46	Clusters of 3	Shrub	5	3	19	16	43
ARTDOU	500	5	AB34	Clusters of 3	Herb	273	151	927	808	2,159
CLIDOU	50	3	AB34	Clusters of 3	Herb	27	15	93	81	216
LUPBIC	100	3	AB34	Clusters of 3	Herb	55	30	185	162	432
SCRCAL	50	3	AB34	Clusters of 3	Herb	27	15	93	81	216
SYMCHI	100	3	AB34	Clusters of 3	Herb	55	30	185	162	432
DANCAL	500	1.5	AB34	Clusters of 20	Grass	273	151	927	808	2,159
TOTAL	4,260					2,324	1,284	7,895		18,392

Appendix F-4.2 Planting Palette 4.2 – Coastal Scrub for CORJUB/GENMON Areas, Seeds

Project Site			1C	1H	1I	2C	TOTAL
Acres			0.55	0.30	1.85	1.62	4.32
Species	lbs/acre	Type	QTY (seed)	QTY (seed)	QTY (seed)	QTY (seed)	QTY (seed)
BROSIT	20	Grass	10.9	6.0	37.1	32.3	86.3
ELYGLA	20	Grass	10.9	6.0	37.1	32.3	86.3
DESELO	10	Grass	5.5	3.0	18.5	16.2	43.2
STIPUL	5	Grass	2.7	1.5	9.3	8.1	21.6
ACMAME	2	Herb	1.1	0.6	3.7	3.2	8.6
ARTCAL	2	Herb	1.1	0.6	3.7	3.2	8.6
ESCCAL	3	Herb	1.6	0.9	5.6	4.9	13.0
LUPBIC	3	Herb	1.6	0.9	5.6	4.9	13.0
NEMPAR	2	Herb	1.1	0.6	3.7	3.2	8.6
SYSBEL	1	Herb	0.5	0.3	1.9	1.6	4.3
LUPALB	2	Shrub	1.1	0.6	3.7	3.2	8.6
TOTAL	70		38.2	21.1	129.7	113.2	302.2

APPENDIX G:

Climate-Smart Performance Analysis (from Point Blue Conservation Science)

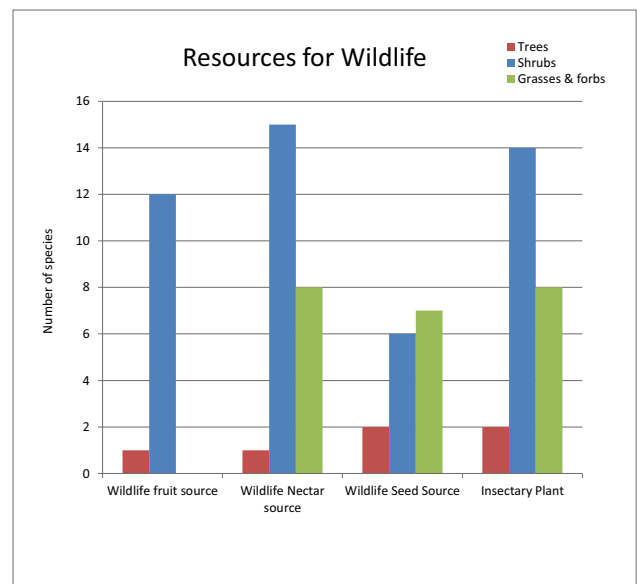
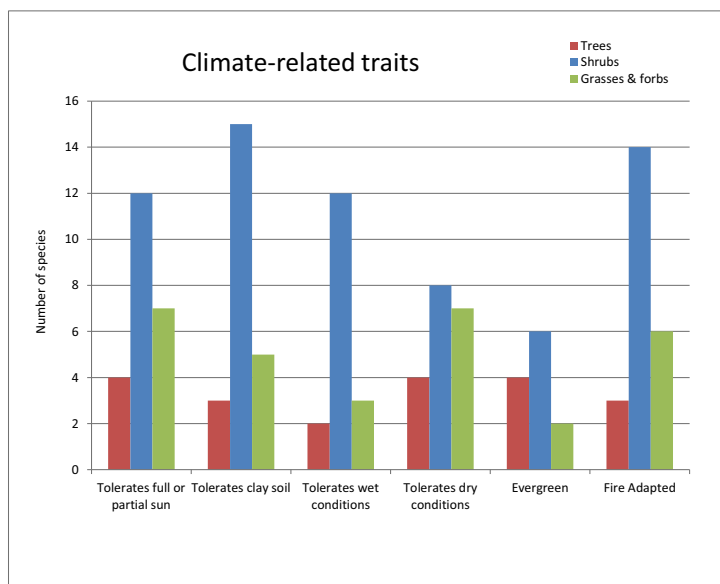


Climate-Smart Performance Analysis

Trees (4 selected)

Shrubs (16 selected)

Grasses & Forbs (8 selected)



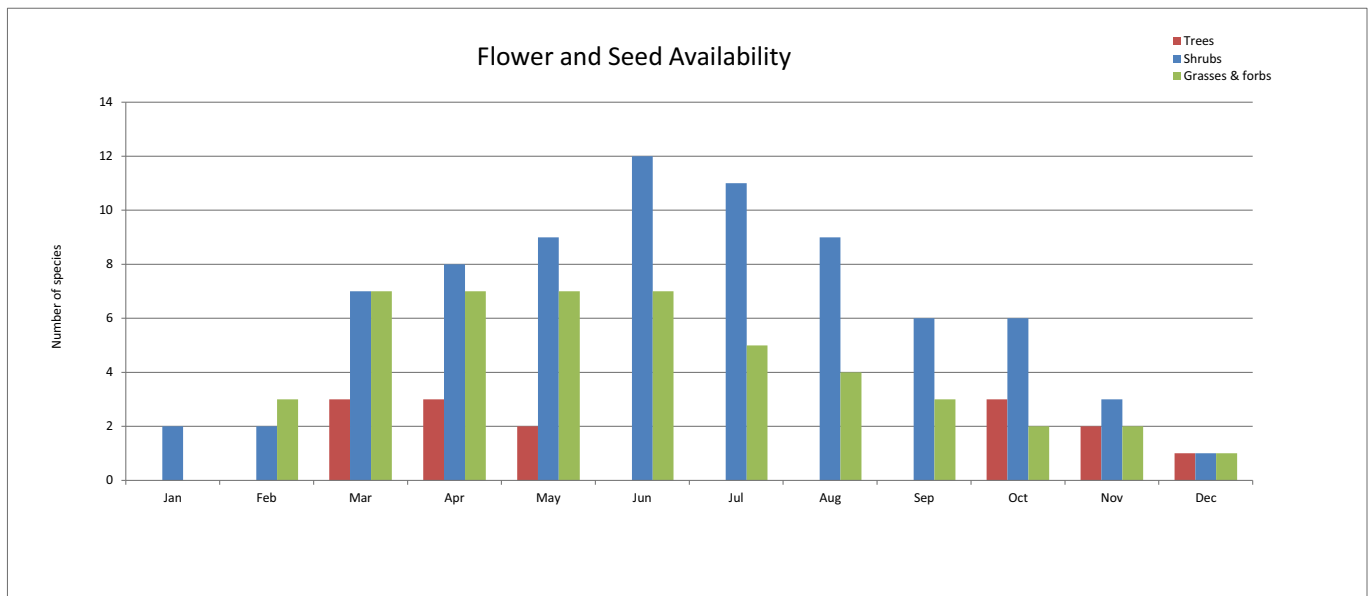


Climate-Smart Performance Analysis

Trees (4 selected)

Shrubs (16 selected)

Grasses & Forbs (8 selected)



APPENDIX F

Purísima Consolidated Use and Management Plan

Consolidated Use and Management Plan: Purisima Creek Redwoods

1 TABLE OF CONTENTS

2	Natural Resources	2
2.1	Vegetation.....	2
2.2	Watershed Resources and Aquatic Habitat	2
2.3	Wildfire Resiliency	2
3	Public Access	3
3.1	Public Use.....	3
3.2	Trails.....	3
3.3	Parking.....	3
3.4	Site Amenities	4
3.5	Signage	5
3.6	Interpretation and Education	7
3.7	Agricultural and Conservation Grazing	7
3.8	Coastal Protection Area	11
4	Operations and Maintenance.....	12
4.1	Staff Residence	12
4.2	Roads and Trails	12
4.3	Safety and Security	14
4.4	Utilities	15
4.5	Legal Arrangements.....	15
4.6	Partnerships.....	18
4.7	Water Rights.....	18
4.8	Open Space Dedication	18
4.9	Conservation Management Units (CMUs)	19

2 NATURAL RESOURCES

2.1 VEGETATION

Staff will encourage a student research project on the site to determine a method by which the invasive undesirable vegetation (Scotch and French broom) can be eliminated. (R-84-04, January 18, 1984) Some library research has been completed which indicated the most practical method of removal is by mechanical means and hand removal on continuing basis. Juvenile Court crews have been used for broom removal on this site, and staff will continue to seek their assistance in the future. (R-85-40, July 18, 1985)

The contractors will be allowed to continue removing already cut hardwood logs, but will not be allowed to cut anymore. Rangers will monitor log removal until completed and make sure the area is left in an acceptable condition. (M-84-52, May 23, 1984) The removal is complete and the area is left in an acceptable condition. (R-85-40, July 18, 1985)

The district has been approached by the former owner's forester about completing a project he undertook under a state grant program. It involved thinning the suckers around existing redwood trees and planting additional redwoods in a 60-acre area where the hardwoods were being removed, with the goal of increasing redwood stocking. Only the planting is left to complete. It is doubtful that the state grant program could be completed because of the District's intent not to harvest any timber. This revegetation proposal will be evaluated. (M-84-52, May 23, 1984) The conditions to qualify for the State Grant program required an intent to continue the harvest of redwoods, which is precluded by the conditions of the District's grant from Save-the-Redwoods League. Therefore, the project was not pursued. (R-85-40, July 18, 1985)

The District will work with the California Division of Forestry in maintaining adequate emergency fire access, identifying other fire management concerns and complete a Preserve wildfire management plan. (R-85-40, July 18, 1985)

2.2 WATERSHED RESOURCES AND AQUATIC HABITAT

Lobitos Creek Conservation and Public Trail Easement (R-17-136, December 13, 2017)

Perform creek restoration and other resource management activities in accordance with the terms of the conservation easement. Resource management activities covered by previously approved programmatic CEQA documents and/or are categorically exempt from CEQA may be conducted. Resource management and restoration activities and do not unreasonably interfere with owner's use and quiet enjoyment of the conservation easement area.

2.3 WILDFIRE RESILIENCY

Lobitos Creek Conservation and Public Trail Easement (R-17-136, December 13, 2017)

Monitor conservation easement to ensure adherence to District fuel management and defensible space practices.

3 PUBLIC ACCESS

3.1 PUBLIC USE

There is a large plat near the intersection of Whittemore and Purisima Creeks, which could be an attractive picnic or camping area as well as a trailhead staging area for hikers and equestrians. This was the area where the previous problems from off-road vehicles and motorcycles occurred, and would have to be patrolled regularly as it would be attractive to site users entering from the west when it becomes public land. There is potential for negotiating a plat management agreement with the State for this section of the property. (R-84-21, February 22, 1984)

Open the former Thysen property to the public following construction of a connecting trail to the preserve and installation of fences, gates, and signs; construct the connecting trail on the south side of Bald Knob to accommodate multi-use. (R-95-104, July 26, 1995)

The Uplands property will be designated as closed to the public. Neighbor permit will be issued to UC Elkus Ranch allowing educational group hikes on the property, accessed from UC's Dean Trail easement. (R-09-91, August 12, 2009)

The Lobitos Ridge property will be designated as closed to the public. Tenant and neighbor permits will be issued on a case-by-case basis allowing hiking and equestrian use consistent with historical use patterns. Docent-led hikes will be allowed after evaluating the compatibility of limited public access in light of existing on-site factors including agriculture, natural resources, neighbor concerns, temporary parking/staging needs, and road and trail conditions. (R-10-32, March 17, 2010)

The Lobitos Creek Conservation and Public Trail Easement will be designated as closed to public use at this time. (R-17-136, December 13, 2017)

3.2 TRAILS

The trail system will be improved to include: a) a connecting trail from Whittemore Gulch to the North Ridge Trail; b) a connecting trail from Sode Gulch to Harkins Ridge trail; c) two physically limited trails; d) minor improvements to existing roads and trails. (R-85-40, July 18, 1985)

Construct multi-use trail from intersection of Bald Knob Trail and the life-estate parcel around the east side of Bald Knob to proposed connecting trail on POST parcel (former Thysen property). (R-95-104, July 26, 1995)

3.3 PARKING

A twelve-vehicle parking lot was completed in December 1983 at the beginning of the main trail near Skyline boulevard. Vehicles with trailers may park on adjacent roadside turnouts or, if additional space is required, may obtain a permit to park on the Preserve near the vehicle parking area. (R-84-04, January 18, 1984)

The new parking area adjacent to Skyline Boulevard is open and ungated. At the present time this poses no problem. However, in the event a nighttime loitering problem arises, a gate should be installed at the entrance and locked at night when necessary. (R-84-04, January 18, 1984)

The western (Higgins-Purisima) entrance has a sturdy metal gate which has been kept locked to prevent off-road vehicle and motorcycle use. Informal parking for 6 to 8 cars is available outside the gate and similar parking space is available for 30 cars inside the property. This entrance has been the main access point for the logging trucks. (R-84-21, February 22, 1984)

Parking for 15 cars is also available at the entrance to Whittemore Gulch Redwoods Open Space Preserve, providing access to Purisima Canyon via Harkins Ridge. (R-84-21, February 22, 1984)

There is parking for approximately 5 cars on Skyline Boulevard at the eastern entrance to Purisima Creek Road. The narrow triangular area adjoining this entrance west of Skyline is part of Huddart County Park. The Huddart Park master plan shows two 20 car parking lots adjacent to Skyline Boulevard in this vicinity which when developed, may also be utilized for the District Site. (R-84-08, April 18, 1984)

The three existing parking areas should be redesigned and reconstructed. The North Ridge parking area will be designed to accommodate equestrian parking. In addition, both the north ridge and lower Purisima Creek parking areas will be designed for increased security (i.e., perimeter fencing and gating). (R-85-40, July 18, 1985)

Fencing, gates, and stiles will be installed at the three parking areas and other appropriate points of access. (R-85-40, July 18, 1985)

Over the past three years, site improvements have been related to parking areas and trails. Approximately 30 parking spaces and 12 miles of trails have been added. The Whittemore Gulch parking lot was enlarged to accommodate more passenger vehicles, as well as horse trailers. Formal parking areas were developed at the upper end of Purisima Creek Road and adjacent to Higgins-Purisima Road. (R-89-20, January 18, 1989)

3.4 SITE AMENITIES

There is a large flat near the intersection of Whittemore and Purisima Creeks, which could be attractive picnic or camping area as well as a trailhead staging area for hikers and equestrians. This was the area where the previous problems from off-road vehicles and motorcycles occurred and would have to be patrolled regularly as it would be attractive to site users entering from the west when it becomes public land. There is potential for negotiation a plot management agreement with the State for this section of the property. (R-84-08, April 18, 1984)

A backpack camp will be developed to accommodate 12-24 visitors. It will be equipped with an emergency water supply and potable water. The first three years of operation, use will be restricted to organized groups of 12-24 individuals in size. Use will be by permit only. During the three-year period, alternative management options will be explored, including a campground host program, to allow for increased and more diverse use. (R-85-40, July 18, 1984)

One or two restrooms will be installed at each of the three parking areas and one at the backpack camp. The style will be similar to restrooms located at the Monte Bello parking area. Restrooms accommodating wheelchairs will be located at the lower Purisima and upper Purisima parking areas.

Restrooms have been installed at the Whittemore Gulch (north Skyline Boulevard) and upper Purisima Creek Road parking areas. Both of these facilities are accessible to the physically limited. A third unit is scheduled to be installed near the Higgins-Purisima Road parking area within the next two years. To discourage roadside use, this restroom will be located away from the parking area and adjacent to the trail leading to Whittemore Gulch. (R-89-20, January 18, 1989)

The Use and Management plan currently provides for the development of a backpack camp near the trail junction of Grabtown Gulch Trail and Purisima Creek Trail. This project was initially to be funded by the grant but was low on the priority list. Grant funds were exhausted on other more critical elements of the plan before the backpack camp plans could be implemented. Because of experience gained in managing the backpack camp at Monte Bello Open Space Preserve and objections expressed by preserve neighbors, staff has reevaluated the proposed location of the backpack camp. The objections center around the potential of fire danger associated with having a backpack camp located in a remote canyon bottom, where a fire could potentially spread up the slope to a residential area. The site was originally chosen for the following reasons: 1) it was halfway between Skyline Boulevard and Higgins-Purisima Road, 2) there was an adequate water supply nearby, and 3) it was on a patrol route. When the camp was proposed, it was recognized that a responsible management plan would have to be developed before proceeding with implementation. Such a management plan appears infeasible. The proposed location in the canyon bottom would require a high level of late-night patrol to enforce campfire regulations. Lack of camp supervision, such as a residence similar to the one near the Monte Bello camp, may encourage illegal campfires. If a campfire were to spread, it would take a long time to reach a telephone to notify authorities. For these reasons, the existing location is no longer proposed and an alternative location is being sought.

An addition improvement suggested for the upper Whittemore Gulch parking area is the provision of an equestrian hitching post. This would provide a place to tie horses other than on the parking area fences. Picnic facilities and benches were not addressed in the initial Comprehensive Use and Management Plan but were incorporated into the design of the Redwood Trail. This was done to accommodate requests from Peninsula Open Space Trust and Committee for Green Foothills. A bench has been installed in recognition of a former member of the San Mateo County Board of Supervisors, and a table has been placed in memory of a young man by his parents. (R-89-20, January 18, 1989)

Peninsula Open Space Trust (POST) memorial program proposes a commemorative sitting area off of Redwood Trail. POST would pay for all improvements and will commit to the upkeep of the sitting area. (R-93-29, February 10, 1993)

3.5 SIGNAGE

Preserve boundary plaques and wildland signs should be placed at visitor entry points where appropriate. (R-84-04, January 18, 1984)

All Private Property and No Trespassing signs have been removed. (R-84-04, January 18, 1984)

Trail directional signs should be placed where necessary to clarify the trail system (R-84-04, January 18, 1984)

Property boundary (Private Property) signs should be placed where trails enter private property. (R-84-04, January 18, 1984)

A map and regulatory sign will be installed at all three parking areas. In addition, a site identification sign will be installed at the north ridge parking area. (R-85-40, July 18, 1985)

A large entry sign has been installed at the Whittemore Gulch parking area, along with a framed regulation and map sign. A regulation and map sign has also been installed at the upper Purisima Creek Road parking area. The same type of sign will be installed at the Higgins-Purisima Road parking area. In addition, an entry sign will be installed at the lower Higgins-Purisima Road parking area to increase the preserve's visibility. Trail directional signs have been installed on most of the trails. Interconnecting trails north of Redwood Trail and trails south of Purisima Creek Road will be signed in the coming year. Temporary "Seasonal Trail Closure" signs that prohibit equestrian and bicycle use are periodically placed on the Soda Gulch and Whittemore Gulch trails when wet conditions exist. (R-89-20, January 18, 1989)

Save the Redwoods League, which contributed to the acquisition of the preserve, has on occasion recognized contributions to their organization by placing signs near specific redwood groves. These groves are located in Purisima Creek canyon. Two locations have been posted to date, and the signs have been prepared by the District. (R-89-20, January 18, 1989)

Potential expansion of parking areas is another issue that will require investigation over the next few years. Physical and political restraints will make this difficult at the upper and lower ends of Purisima Creek Road. Because of the terrain at the upper Purisima Creek Road parking area, expanded parking would have to occur in the CalTrans right-of-way. CalTrans representatives have expressed a reluctance to allow this. They do not want vehicles backing onto the roadway and obstructing traffic. (R-89-20, January 18, 1989)

The lower Higgins-Purisima Road parking area has similar restraints in that the terrain will not allow for expansion of the existing parking area. The only area suitable for additional parking is a short distance inside the preserve, but because this area is within the creek corridor, Coastal Commission regulations prohibit parking. A parking area here will require a variance, which county planners have indicated is difficult to obtain. (R-89-20, January 18, 1989)

The most feasible area to expand parking is at the north parking lot on Skyline Boulevard. The terrain is gentle and the driveway access has already been established. The area between the existing parking lot and the ranger residence has been used for overflow parking on special occasions. Combined with the existing lot, it has a capacity for 100 vehicles. This area is used annually as vendor parking for the Kings Mountain Art Fair. (R-89-20, January 18, 1989)

Investigate expansion of existing parking areas, including design and feasibility studies. (R-89-20, January 18, 1989)

Plan and construct a shorter loop trail connecting Whittemore Gulch Trail to the intersection of Harkins Ridge Trail and Soda Gulch Trail. (R-89-20, January 18, 1989)

Save The Redwoods League Memorial Grove Signage Plan

Implement a centralized grove recognition signboard showing all dedicated and available groves within the Preserve to be located adjacent to two existing signboards at the Gate PC05 west Preserve entrance, near Higgins Canyon Road and Purisima Creek Road. (R-17-20, February 22, 2017)

Lobitos Creek Conservation and Public Trail Easement (R-17-136, December 13, 2017)

Install signs in accordance with terms of the conservation easement indicating that the property is protected by the District, if and when necessary.

3.6 INTERPRETATION AND EDUCATION

A standard, folded 8 1/2 x 11 brochure should be provided on site. (R-84-04, January 18, 1984). This project was dropped in anticipation of providing an interpretive brochure as part of the grant project. (R-85-40, July 18, 1985)

An 11x17 interpretive brochure similar to Los Trancos and Monte Bello Open Space Preserves will be provided on-site. (R-85-40, July 18, 1985)

3.7 AGRICULTURAL AND CONSERVATION GRAZING

The District will continue to lease the Uplands property to Vince Fontana for seasonal grazing to maintain the grasslands and provide fuel management under a month-to-month lease under the General Manager's authority. Under the terms of the current lease, the grazing tenant is obligated to repair and maintain all roads used for the grazing operation and to prevent and control erosion resulting from their use. (R-09-91, August 12, 2009)

Lobitos Ridge/Elkus Ranch Uplands Grazing Unit

(R-10-99, October 27, 2010)

Rangeland Management Plan (10 years)

1. **Maintain uninterrupted grazing on the property following the principles of 'conservation grazing':** Vince Fontana will continue to graze the properties with a maximum estimated 300-350 Animal Unit Months (AUMs) on Elkus and 230-270 AUMs on Lobitos Ridge typically from December to August. Mr. Fontana will have the option of grazing without negatively impacting habitat value or water quality. The District performance standards for residual dry matter (RDM) are the same standards set forth by the US Department of Agriculture Natural Resources Conservation Service (NRCS).
2. **Control non-native, invasive plants species on the properties:** The District will work closely with a certified pest control advisor and the tenant and/or contractor to identify, map, and treat infestations on the property. There are minor infestations of milk thistle, bull thistle, and poison hemlock on the properties. Additionally, coyote brush encroachment

into grasslands is reducing grassland habitat. Specific brush encroachment zones have been identified and will be treated to preserve integrity of the grasslands.

3. **Protect and enhance riparian and aquatic habitat on the properties:** Lobitos Creek borders the Elkus Ranch Uplands to the south and there are six ponds on these properties. Cattle have been fenced out of Lobitos Creek with limited access when the tenant moves livestock from one side of the stream to the other. Five of the stock ponds on the property are seasonal and one pond holds the water year-round. The District plans to maintain these ponds to increase habitat value and maximize water holding capacity for livestock and wildlife water. Pond management tools and associated best management practices will be applied during pond maintenance and an attachment outlining these tools and practices is included in the plan.
4. **Develop or improve ranch infrastructure on the property to enhance the ease and benefit of the livestock operation and improve wildlife habitat value:** The District will work with the current tenant and/or contractor to repair and strengthen the perimeter fencing and possibly add new fencing along the Elkus Ranch Uplands and UC Elkus Camp. The corral facility that services these properties is located on a neighboring property, but the option of developing a corral on the properties will be evaluated. Additionally, drinking water for livestock is limited on the property during summer months and plans for installing additional water troughs and pond maintenance work will be implemented, where feasible.

Grazing Lease

Effective November 1, 2010, the district will enter into a five year grazing lease with the existing tenant, Vince Fontana, with an option to extend for an additional 5 years. Rent will be adjusted annually to reflect changes in grazing season, grazing capacity, and market price of beef cattle from year to year. The District will inform the grazing tenant by July 15th of year the per AUM rent for the subsequent lease year. The grazing tenant has the option to terminate the lease by giving written notice on August 15th if the per AUM rent for the subsequent lease year will not enable the grazing tenant to conduct an economically viable grazing operation. In the event of such termination, the grazing tenant shall be allowed ninety (90) days following receipt of the written notice to vacate the grazing unit.

The tenant is required to manage and operate the grazing unit according to the prescriptions and range management practices set forth in the Rangeland Management Plan.

R-20-95, August 26, 2020

The District purchased the Elkus Uplands and Lobitos Ridge properties in August 2009 and March 2010 respectively. The Lessee (Vince Fontana) held cattle grazing leases on both properties, which were assigned to the District at the time of sale. Desiring to further the conservation grazing principles as a tool for protecting critical grassland habitat and maintaining agricultural viability on the San Mateo Coast, the District approved a five-year lease with one five-year extension with the Lessee. The Lessee, with District approval, exercised the extension in 2015. The lease terminates October 31, 2020.

In May 2020, District staff met with the Lessee to discuss the lease. District staff encouraged the Lessee to take further steps in maintaining and improving the ranch infrastructure and reminded

the Lessee of their responsibility to closely observe District regulations. District staff proposed a new two-year lease with an optional one-year extension. The proposed two-year lease allows the District to work closely with the Lessee over the next two grazing seasons to ensure that District grazing management objectives and requirements are met. Depending on Lessee performance, the District will exercise its sole discretion in determining whether to extend the lease for an additional year.

Lobitos Ridge Farm Ground Management Plan (R-11-91, November 9, 2011)

Farming Grounds Management Plan

The Farming Grounds Management Plan is organized into three primary sections (Farming Techniques, Soil Management, and Sanitation) plus miscellaneous items pertaining to farm management on the property. It provides guidance on best management practices while providing for a sustainable farming operation that supports a local farming family.

1. **Farming Techniques:** It is recommended that the tenant either be a California Certified Organic Farming (CCOF) operation or utilize organic growing techniques if not certified organic. The District and tenant are required to utilize Best Management Practices (BMPs) as defined by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) while work takes place on the farm. Additionally, Integrated Pest Management (IPM) techniques will be utilized in farm management with input from the District's pest control advisor.
2. **Soil Management:** It is recommended that the tenant maintain the vegetative buffer at the south end of the field to reduce the risk of sediment entering Purisima Creek from the farm fields. The tenant also has the option to plant a winter cover crop in the fields to hold soil in place during the wet winter months to reduce the risk of sedimentation. Additionally, cultivation of the fields is restricted during wet periods (primarily December to March) and the use of ditches to channel storm water off the fields is restricted unless pertinent to a habitat enhancement project. There is currently little to no soil loss from the farming operation. The District requires notification by the tenant prior to any soil movement of grading work, excluding tilling and cultivation related directly to the farming operation.
3. **Sanitation:** Compliance with state and federal laws governing the health and sanitary practices for farm workers is required. Additionally, tenant will dispose of animal waste and garbage off-site and has the option to dispose of trimmings and culls from farm product processing off-site or plow them back into the field as compost. All waste water produced by on-site processing of agricultural products will be properly treated, filtered and disposed of and not allowed to run into Purisima Creek. Limited product processing currently occurs on the property.
4. **Other Site-Specific Issues:** Water use for irrigation of agricultural row crops will adhere to the requirements of the Purisima Creek water adjudication. Water adjudications are court procedures for certain watersheds within California in order to establish allowable quantities, timing, and types of water use (for both residential and agricultural purposes) for a watershed. In the case of Purisima Creek, the Superior Court of San Mateo County decreed through the adjudication order that this property can use up to 10,900 gallons per day as a second priority water right when Purisima Creek flows at least 0.75 cubic feet per

second, (cfs or equivalent to 336 gallons per minute, gpm) as measured at the Upper Purisima Creek Road Bridge. All irrigation will be required to be in good repair. Permissible low water use irrigation methods will be implemented to limit water use, and to reduce the risk of run-off and possible soil loss.

Maintenance of non-farming areas on the property such as roads, barns, parking areas, and the riparian corridor will include vegetation management/brushing to improve aesthetics, upkeep of the structures, and limited grading to maintain the integrity of the driveway.

Storage of equipment and storage of petroleum products and agro-chemicals is limited to specific locations on the property and will comply with state and federal regulations as well as Environmental Protection Agency requirements.

Additionally, District staff and the District's Pest Control Advisor will meet annually with the tenant to complete an annual soil analysis, discuss plans and issues on the farm and assess the overall condition of the property to ensure the tenant is in compliance with the lease agreement and Farming Grounds Management Plan.

Agricultural Lease

Staff recommends entering into a five-year agricultural lease, extendable for an additional five years, with the current farming tenant, Mariano Ochoa, for the Lobitos Ridge farming grounds. Staff has chosen a rental market model similar to the California State Parks model. The total rent will be \$275.00 per acre with an additional \$25 per acre Environmental Management/Mitigation Fee (EMMF). This is a reduction in rental revenues annually, but the new rental model improves alignment with the market rates charged by similar agencies. See board report R-11-91 pages 6 and 7 for more information.

October Farm Rangeland Management Plan (R-17-51, April 26, 2017)

Stocking Rate

The Plan recommends seasonal rotational grazing on October Farm during the spring and early summer months with an estimated 186 Animal Unit Months (AUMs) equivalent to 36 cows for six months. Additionally, the Plan identifies that year-round rotational grazing is also acceptable, provided adequate stock water is available. Applying the same annual stocking rate of 186 AUMs, this would be equivalent to 18 cows year-round.

Rangeland Infrastructure

October Farm was historically grazed with well-developed infrastructure in place and the Plan requires no immediate need for improvements. Perimeter fencing is in good repair and requires no replacement or additional sections to be installed. Interior fencing is a combination of natural barriers and wire fencing in good repair. Additional fencing may be constructed to protect natural resources if unacceptable damage is observed per the District's Natural Resource Policies.

Stock water is provided by a ground water well powered by a windmill and stored in a 5,000 gallon tank. Water is distributed to three (3) troughs throughout the upland grassland areas.

Corrals are located adjacent to Lobitos Road and are in good condition.

Natural Resource Management

Grassland resources on the October Farm property are typical of the San Mateo coast, with the grasslands dominated primarily by non-native European grasses. The presence of invasive vegetation is a concern, including thistles and moderate to severe impacts from brush encroachment into the grasslands. Control of invasive vegetation is recommended, including coyote brush, to protect and enhance grassland habitat. The District and the current grazing tenant are working to control noxious vegetation on October Farm through the District's Integrated Pest Management (IPM) program.

October Farm contains two (2) stock ponds, one seasonal pond in the grazing area and one perennial pond located on the other side of Lobitos Road in a portion of the preserve that is not accessible to livestock grazing. Both stock ponds have the potential to support rare aquatic wildlife species. Some rare wildlife species that have been identified within the grassland areas of the Preserve include burrowing owl and American badger, both of which use California ground squirrel burrows throughout the grassland areas. The grasslands provide quality forage for migratory birds.

October Farm Grazing Lease at Purisima Creek Redwoods Open Space Preserve (R-18-79, July 11, 2018)

For the past six years, Midpeninsula Regional Open Space District (District) has licensed, in holdover, the October Farm at Purisima Creek Redwoods Open Space Preserve (Preserve) to Mr. Doug Edwards for cattle grazing to support the District's conservation grazing program. Consistent with District Resource Management and Property Management Policies, the General Manager recommends adoption of a resolution by the Board of Directors (Board) to execute a new long-term grazing lease with Mr. Edwards to continue grazing activities at the Preserve. The District's conservation grazing program serves as a tool to manage native grasslands and reduce wildland fuel loads, while furthering the goals of the Coastal Service Plan by supporting sustainable agriculture on the San Mateo County coast.

Lobitos Ridge/Elkus Ranch Uplands Grazing Lease in Purisima Creek Redwoods Open Space Preserve (R-20-95, August 26, 2020)

3.8 COASTAL PROTECTION AREA

Lobitos Ridge Farm Ground Management Plan (R-11-91, November 9, 2011)

The Lobitos Ridge farming grounds are located within the Coastsides Protection Area. The San Mateo County coastal annexation process, the District's Service Plan for the Coastsides Protection Area, and subsequent conditions approved by the San Mateo County Local Area Formation Commission (LAFCo) established a number of policies and procedures for implementing the District's Coastsides Protection Program. The Program now guides the District's purchase, use, and management of open space land within the Coastsides Protection Area. The Program requires consultation with interested public agencies, officials, organizations and community interest groups to solicit input into the decision-making and planning process prior to the Board's consideration of significant decisions regarding use or improvements on District-owned lands within the Coastsides Protection Area.

To comply with the District's Service Plan for the Coastside Protection Area, the Farming Grounds Management Plan for the Lobitos Ridge farming grounds has been considered and discussed with representatives of the San Mateo County Farm Bureau and Agricultural Advisory Committee at their April 11th meeting. Both organizations support the Farming Grounds Management Plan.

Additionally, the San Mateo Coastal Annexation Final Environmental Impact Report (FEIR) developed mitigation measures to address potential impacts to agricultural use. These, as well as the other mitigation measures in the FEIR, have been adhered to in the development of the Farming Grounds Management Plan and throughout the planning process for the Lobitos Ridge Property. Because this project represents the first property on the coastside with row crop production subject to an agricultural production plan and lease, the agricultural mitigation measures are attached to board report R-11-91.

4 OPERATIONS AND MAINTENANCE

4.1 STAFF RESIDENCE

A single-family dwelling is located on the preserve adjacent to Skyline Boulevard. The San Mateo County Building Department requires the unit be brought up to code, which entails the construction of a carport. The house has been rented as an enterprise project. Plans are currently being prepared for construction of the carport. This structure will become a ranger residence when public use of the Preserve requires the presence of a resident Ranger. (R-84-04, January 18, 1984) A carport was constructed complying with County building codes and requirements. A Ranger residence was established in the fall of 1984. (R-85-40, July 18, 1985).

4.2 ROADS AND TRAILS

The Pacific Telephone Company repaired the initial one-quarter mile of the main road and trail descending from the parking area and connecting southwardly to the Harkins fire trail. The remaining portion connecting to the Harkins fire trail is in need of extensive grading and drainage work to make it passable by patrol vehicles. (R-84-04, January 18, 1984)

The Harkins fire trail will be improved and maintained for patrol purposes. (R-84-04, January 18, 1984)

The Bridge over Purisima Creek will be repaired in summer 1984 and the road extending northward into Whittemore Gulch will be improved to trail standards. (R-84-04, January 18, 1984)

The Jeep trail accessing the property from Skyline Boulevard has been gated with a stile as part of the parking development project. The Harkins fire trail access from Comstock Road will be gated when this road is improved. Currently a post and cable gate is blocking this entrance. The gates and stiles at the west end of the Preserve are being deferred as the main gate at Higgins-Purisima Road is being properly managed by the neighboring property owner and because there is no immediate plan for developing parking in this area (roadside parking is available near the main

gate). The gate and stile originally proposed at the bridge will be installed if the Higgins-Purisima gate is left unattended. (R-84-04, January 18, 1984)

The present owner improved Purisima Creek Road through the property to make it suitable for logging trucks, putting in substantial culverts, clearing several slides, and laying several tons of rock on the first mile of the road. This road will create a potential patrol loop, together with Harkins Ridge fire road, facilitation ranger patrol of this large preserve. It is also an extremely attractive hiking and equestrian route. (R-84-21, February 22, 1984)

The purchase of Purisima Canyon would provide a natural route for a critical link in a "City to the Sea" trail in San Mateo County through a magnificent redwood forest and creek setting. This trail could begin at Edgewood Park just east of Interstate Highway 280. The route would follow the Crystal Springs Trail to Huddart Park along San Mateo County's North-South Trail corridor and ascend approximately 1400 feet through Huddart Park along the Richards Road and Summit Springs trails. After crossing Skyline Boulevard, the trail would follow Purisima Road through Purisima Canyon emerging at Higgins-Purisima Road five miles east of Half Moon Bay. There are ample areas for trailhead staging, picnicking and camping. Overnight camping would also be possible one mile to the west at Murray Ranch State Park, where environmental walk-in campsites have been proposed along Mills Creek. (R-84-08, April 18, 1984)

The existing network of logging roads on the property could provide a large internal trail system, with connection to Soda Gulch, Grabtown Gulch, and Bald Know, as well as to the trails of Whittemore Gulch Redwoods Open Space Preserve. The potential exists for trail connections to Huddart County Park, Rancho Raymundo and the proposed Murray Ranch State Park to the north and west, and the State Game Refuge to the east. (R-84-08, April 18, 1984)

Trail system improvements have consisted of the construction of the Whittemore Gulch Trail, Soda Gulch Trail, Redwood Trail, and North Ridge trailhead. In addition, various overgrown and damaged trails and roads have been reopened, including Grabtown Gulch Road, Bald Knob Trail, and the connecting trail between the north ridge and Harkins Ridge. Significant improvements have also been made to Purisima Creek Road to ensure year-round use. Three major bridge reconstruction projects have been completed and two more are anticipated in the coming year. (R-89-20, January 18, 1989)

Public reaction to the new access facilities has been predominantly favorable. Visitors are pleased with the visible parking areas and trailheads. The 15 miles of trails throughout the preserve offer a wide range of environments and recreational challenges. However, some visitors find the length of the trails too strenuous and have requested shorter loop trails. The two existing loop trails are approximately 8 miles. Several shorter loop trail routes have been investigated. The most feasible alternative is to shorten the loop that extends into Whittemore Gulch by climbing directly up the watershed to the intersection of Harkins Ridge and Soda Gulch trails. This would create a 4.5-mile loop trail. (R-89-20, January 18, 1989)

Two remote trail segments in Purisima Creek Open Space Preserve, which total 1.25 miles, have become impassable or difficult to access safely. These two trail segments will be closed and removed from Preserve maps and brochures. The trail segments include the majority of the Lobitos

Creek Trail except for the first ¼ mile, and the last ¼ mile of North Ridge Trail. (R-15-40, February 24, 2015)

Lobitos Creek Conservation and Public Trail Easement (R-17-136, December 13, 2017)

Monitor the conservation easement to ensure that the maintenance of existing trails are compatible with the terms of the conservation easement. Construction of new roads or trails is subject to District approval.

4.3 SAFETY AND SECURITY

A gate and necessary fencing have been placed along Skyline Boulevard, and fencing has been placed along the northerly property boundary to eliminate vehicle use from the adjacent properties and Skyline Boulevard. (R-84-04, January 18, 1984)

The area will be patrolled regularly, with special attention to the Higgins-Purisima entrance to make sure illegal vehicles are not gaining access to the site. Due to the preserve's more remote location, frequent patrol is difficult. The easterly portion is patrolled once per week while the westerly portion is patrolled twice a month. Negotiations are underway with the State Department of Parks and Recreation to aid in patrolling this portion of the site in conjunction with protecting their Burleigh-Murray site to the north. (R-84-04, January 18, 1984) Staff reached an agreement with the California Department of Parks and Recreation in Spring 1985 whereby State Rangers patrol the Higgins-Purisima area of the Preserve in exchange for District staff patrolling the State-owned Rancho Raymundo property. (R-85-40, July 18, 1985)

A pipe gate and a hiking-equestrian stile will be installed at the Tunitas Creek Road entrance to the preserve. (M-84-52, May 23, 1984)

A motorcycle barrier will be installed across the now motorcycle path that has been pioneered from Skyline Boulevard. (M-84-52, May 23, 1984)

The site will be regularly patrolled via Purisima Road, the Harkins fire trail, and North Ridge trail. (R-85-40, July 18, 1985)

Due to the anticipated increase in use of the site once the grant project is complete, Ranger patrol will need to increase. It is estimated Ranger patrol will be doubled upon completion of the parking areas and first year improvements. (R-85-40, July 18, 1985)

Staff will research the dumping problem along Tunitas Creek Road. Solutions, including constructing a berm alongside the road, will be investigated. In addition, a comment was made concerning a problem with trespass on a trail believed to lead off the Preserve in the northerly direction. If the trail originates on the Preserve, it will be appropriately signed to indicate boundaries and private property. (M-85-117, August 6, 1985)

Another proposed improvement is the provision for emergency helicopter access to the upper Whittemore Gulch trailhead. A site near the parking area has been identified as a possible landing pad if the location is desirable because of the lack of open areas along this section of Skyline Boulevard. Preliminary investigations regarding the feasibility of relocating the power lines have been conducted. PG&E has indicated that relocating or placing the lines underground is feasible,

but costly. New federal legislation requires a 28% tax on any realignment of existing lines. Therefore, staff is looking into the possibility of grant assistance programs and the option of using existing power poles on adjacent properties. (R-89-20, January 18, 1989)

A number of site clean-up projects have been conducted. Vehicles and debris have been removed from the Upper Whittemore Gulch Trail over the past few years. The District received a generous donation for the removal of some of the vehicles. The only abandoned object remaining along the trail is a tractor blade, which will be hauled out this spring. (R-89-20, January 18, 1989)

All entry points to the preserve have been secured and illegal vehicle access has been eliminated. Because of the ranger residence adjacent to the Upper Whittemore Gulch parking area, late night and illegal activities in this area have been significantly reduced. The ranger staff patrols the preserve regularly. The cooperative agreement with the State provides for additional patrol coverage of the Higgins-Purisima Road parking area. There have been no reports of major problems at this location. As the use of the preserve increases, the amount of patrol should be increased. Since many of the new trails are narrow backcountry trails, more foot patrols will be necessary. (R-89-20, January 18, 1989)

Under management agreement with POST, routinely patrol the former Thysen property; seek agreement with adjacent developed community to provide for a more direct patrol route. (R-95-104, July 26, 1995)

Maintain existing roads within the former Thysen property to meet vehicular patrol standards. (R-95-104, July 26, 1995)

Lobitos Creek Conservation and Public Trail Easement (R-17-136, December 13, 2017)

Conduct visual inspection of the conservation easement from access along Lucy Lane and vantage points within the surrounding Preserve as a part of routine patrol.

Conduct regular inspections of the conservation easement area to monitor the easement and ensure compliance with the conservation easement terms and conditions. At minimum, easement monitoring shall occur annually, Provide owner reasonable prior notice of such visits and do not unreasonably interfere with the use of the easement area by the owner or its lessees.

4.4 UTILITIES

Staff will explore possibility of providing drinking water from nearby Skyline Water District service lines. (R-85-40, July 18, 1984)

4.5 LEGAL ARRANGEMENTS

Rancho Raymundo – Purisima Creek Redwoods Open Space Preserve Management Agreement

The District shall assist in the patrol of Rancho Raymundo along Skyline Boulevard in exchange for the State Department of Parks and Recreation's assistance in the patrol of lower Purisima Creek

Redwoods Preserve adjacent to Purisima Road. Both agencies will provide at least daily patrol of its area. Each agency will enforce the regulations of the other. Minor maintenance will be carried out by the patrolling agency, but any new construction or major problems will be handled by the agency that holds fee title. (M-84-85, October 10, 1984)

Agreement Correcting Easement and Grant of License for Fencing at Purisima Creek Redwoods and El Corte de Madera Creek Open Space Preserves

The Kings Grove, Inc. is a privately held corporation that owns approximately 1,150 acres of land lying between El Corte de Madera and Purisima Creek Redwoods Open Space Preserves. It provides rural, wooded homesites to its shareholder members. Access to the westerly portion of the property is provided by Tunitas Creek Road; this road also serves the District's Purisima Creek Redwoods Open Space Preserve. Access to the easterly and southerly property is via Star Hill Road and a private easement within and along the boundary of adjoining land owned by the District. The easement was originally established by a 1969 agreement between The Kings Grove, Inc. and a predecessor property owner. Included in the easement were rights for a roadway, public utilities, and a water pipeline, all of which were constructed several years before the District acquired the property from The Alan Hosking Ranch, Inc.

A 1985 survey of the easement indicated that while most of the road and waterline lie within the easement described in the 1969 agreement, some portions are outside the described easement. At the time, staff felt that the established use patterns and their negligible effects on District interests made formal redocumentation of the easement superfluous.

Subsequently, a post and rail fence was constructed by the District at an access point to Purisima Creek Redwoods Open Space Preserve along Tunitas Creek Road. Because no fencing or other physical boundary markers existed, the fence was inadvertently located on adjoining lands of The Kings Grove, Inc. After the error was discovered, discussions with The Kings Grove, Inc. representatives resulted in a proposal to confirm formally the location of the corporation's easement facilities in exchange for a license permitting the District to maintain its fencing on The Kings Grove, Inc. Property. (R-89-98, June 22, 1989)

Property Management Agreement Former Phleger Property

Management: District shall be responsible for management of the entire approximately 1,224-acre Subject Property for that period of time from the date of ownership of the Subject Property from SRL

Patrol: District will routinely patrol and manage the Property in a manner consistent with nearby District holdings to ensure that the property is kept in a safe and sanitary condition, that the land is free from public trespass, and that off-road vehicles or other deleterious uses of the Property are prohibited. Should any trespass or other unauthorized use of the Property occur, District will be responsible for correcting these matters including, where necessary, enforcing District ordinances on the Subject Property. The Property shall be deemed to be property under the control of District for purposes of Public Resource Code Section 5558.

Uses: District and SRL shall specify uses permitted on the property in other documents as necessary

Legal Responsibility and Indemnification: District shall have full legal responsibility for management and operation of the Subject Property and the condition thereof and for all activities conducted thereon, and in the respect District shall hold SRL harmless from and defend SRL against any and all claim of liability for injury or damage to any persons or property whatsoever occurring in, on or about the Subject Property arising out of any condition of the Subject Property or of any act, neglect, fault, or omission of District, its agents, employees, or invitees.

Termination: Either party, upon 30 days written notice, may for any cause withdraw from the terms and obligations of the agreement.

Permitted Uses: 1) The Woodside Trails Club may continue to use and maintain the existing trails on the property for equestrian use, 2) Peninsula Open Space Trust and Save-the-Redwoods League may use the property for any purpose, 3) The National Park Service may use the property for ranger led tours 4) Gordon and Betty Moore including their family and guests, may use the Property for equestrian and pedestrian purposes, 5) Jean Phleger including her family and guests, may use the Property for equestrian and pedestrian purposes.

The property is currently closed to the public. Under the management agreement with POST and SRL, the District would be obligated to routinely patrol the property and to prohibit unauthorized use. Gates, fencing, and signs, if necessary, will be placed where appropriate. District staff has reviewed the management needs of the property with POST. Staff does not anticipate that management of this property will significantly impact the workload of the field staff.

Trails on this property are used and maintained by the Woodside Trails Club. Under the management agreement, the club's historic involvement with the trails would continue. (R-93-62)

Property Management Agreement with Peninsula Open Space Trust for Thyssen (Bald Knob) Property

Management: District shall be responsible for the entire 480.73-acre Subject Property for that period of time from the date of final execution of this Agreement until District or other public agency acquires fee title ownership of the Subject Property from POST. District may install gate(s), appropriate signing, and fencing as necessary in the sole opinion of District and may undertake such other steps as District deems necessary or appropriate for the proper and safe management of the Property. The Subject Property shall be open for public access and use in a manner consistent with District policies and regulations applicable to District owned property.

Patrol: District will patrol and manage the Property in a manner consistent with adjacent District holdings to ensure that the Property is kept in a safe and sanitary condition and that deleterious or incompatible uses of the Property are prohibited. Should any trespass or other unauthorized use or activities occur upon the Property, District may exercise its authority to correct these matters including, where necessary, enforcing District regulations and ordinances on the Subject Property. The property shall be deemed to be property under the control of District for purposes of Public Resource Code Section 5558 and shall be deemed to be "District Lands" as defined in the District ordinance No. 93-1.

Legal Responsibility and Indemnification: During the life of this Agreement, District shall have full legal responsibility for management, control, and operation of the Subject Property and the

condition thereof and for all activities conducted thereon, and in this respect, except as otherwise set forth herein, District shall hold POST harmless from and defend POST against any and all claim or liability for injury or damage to any persons or property whatsoever occurring during the life of this Agreement in or on about the Subject Property arising out of any condition of the Subject Property or of any act, neglect, fault, or omission by the District with respect to District responsibilities as set out in this Agreement. POST likewise agrees to indemnify, defend and hold harmless District and its agents, officers, officials, and employees against any and all claims or liability for injury or damage to persons or property arising out of or resulting from the negligent acts or fault of POST, or its agents, employees, officers or servants, in connection with the Subject Property. In the event of concurrent negligence, each party will bear responsibility for its act in proportion to its fault under doctrine of comparative negligence.

Termination: Either party, upon 30 days written notice, may terminate this Agreement without cause. (R-95-104, July 26, 1995)

4.6 PARTNERSHIPS

A consultant interested in developing a resource management plan for the preserve has contacted the District. Since staff is in the process of completing District-wide resource management plan and policies, it is yet not the appropriate time to develop a separate plan for this preserve. When the overall plan and policies are presented to you this spring, a list of priorities will be attached. After that, staff can proceed with soliciting proposals such as the one that has been made for this preserve. (R-89-20, January 18, 1989)

4.7 WATER RIGHTS

The 1985 Purisima Creek Adjudication Decree No. 278007 and subsequent modifications (the Decree) authorizes University of California Regents (UC) to use the waters of Purisima Creek and its tributaries, though the water must be used in accordance with the restrictions in the Decree. As part of this transaction, UC is retaining their adjudicated water rights to Purissima Creek (both domestic and stock watering). However, the District, as owner of the Uplands property is authorized to continue to use, repair, and maintain two small stock watering ponds in the Purisima Creek watershed for continued grazing on the Uplands property. The District will receive 100% of UC's water rights associated with Lobitos Creek. (R-09-91, August 12, 2009)

Lobitos Creek Conservation and Public Trail Easement (R-17-136, December 13, 2017)

Monitor the conservation easement to ensure protection of water rights and resources.

4.8 OPEN SPACE DEDICATION

The entire site is dedicated public open space. (R-84-04, January 18, 1984)

The 2,519-acre preserve is dedicated open space with the exception of the 10-acre parcel of land that is leased from the County of San Mateo. (R-89-20, January 18, 1989)

Grinsfelder and O'Hair Property Additions to Purisima Creek Redwoods Open Space Preserve (San Mateo County APNs 067-152-060, 067-118-050, 067-118-060, and 067-118-070) will be dedicated as public open space. Closed to public access at this time. (R-06-08, January 25, 2006)

Grinsfelder Property Addition to Purisima Creek Redwoods Open Space Preserve (Lot 29 of the Redwood Park Subdivision, San Mateo County APN 060-118-080) will be dedicated as public open space. Closed to public access at this time. (R-06-83, July 12, 2006)

Withhold dedication of the Lobitos Ridge property as public open space at this time. Study timing of dedication and potential disposition of prime agricultural lands to promote continuance of agricultural use as part of subsequent planning process. (R-10-32, March 17, 2010)

Lobitos Creek Conservation and Public Trail Easement (R-17-136, December 13, 2017)

Indicate the Board's intention to withhold dedication of the conservation easement for public open space and park purposes at this time

4.9 CONSERVATION MANAGEMENT UNITS (CMUs)

Peninsula Open Space Trust (POST) Redwood Park Gift Parcels (San Mateo County Assessor's Parcel Numbers 067-094-100, 067-139-090, 067-139-180, 067-153-072, and 067-184-060) and McKay Redwood Park Gift Parcels (San Mateo County Assessor's Parcel Numbers 067-136-080, and 067-136-090) as an addition to Purisima Creek Redwoods Open Space Preserve will be designated Conservation Management Units (CMUs). Limited public access at this time. (R-04-126, December 15, 2004)

Proposed Exchange of Real Property in the Redwood Park Subdivision Area of Purisima Creek Redwoods Open Space Preserve (San Mateo County Assessor's Parcel Numbers 067-186-180, 067-175-060, 067-175-010, 067-174-120, 067-174-010, 067-172-020, 067-172-010, and 067-122-130, Lands of Stienstra et al.) will be designated Conservation Management Units (CMUs). Limited public access at this time. (R-04-131, December 15, 2004)

APPENDIX G

CEQA Coverage for the Implementation Action Table

The following is a supplemental table to the Implementation Action Table identifying applicable California Environmental Quality Act (CEQA) documents that provide environmental review for the actions included in the table. A list of the applicable CEQA documents and their annotations can be found at the bottom of each page and a full list of acronyms can be found on the last page of this document.

1. Natural Resources Management

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
Vegetation	NR-1	Purpose: Protect ecosystem function by promoting native plant species. Actions: Identify, monitor and consider enhancement or reintroduction of special status native plant species. Work with neighbors and partners on coordinated land management actions to promote landscape level ecosystem benefits⁽⁸⁾.	• Identification and monitoring actions are not projects under CEQA • Special status plant enhancement or reintroduction would be a future project that could be covered under IPM EIR or could require board action/separate CEQA if details are outside of IPM EIR
	NR-2	Purpose: Manage grasslands consistent with the District's Grazing Management Policy to support both biological resources and agricultural heritage of the area. Actions: Manage and conserve grassland habitat with adequate amounts of residual dry matter at the start of each growing season and a diverse range of vegetation heights and species composition and complexity⁽⁶⁾. Control encroachment of problematic invasive and woody vegetation⁽⁴⁾.	• IPM EIR – invasive plant species and brush management • RMP NOE/NDs'
	NR-3	Purpose: Enhance and protect pollinator habitat. Actions: Develop a pollinator habitat enhancement plan to conduct seed collection and seed amplification of pollinator host and nectaring plants appropriate for the local ecology. Identify, prioritize and implement plan actions in appropriate areas⁽⁸⁾.	• Plan development is not a project under CEQA • Future implementation would require separate review by the District (and may be covered under OSMRP or IPM)

CEQA Document/Coverage Reference

- (1) Purisima Comprehensive Use and Management Plan (CUMP) IS/MND
- (2) Open Space Maintenance and Restoration Plan (OSMRP) IS/MND
- (3) Wildland Fire Resiliency Plan (WFRP) EIR
- (4) Integrated Pest Management (IPM) Program EIR

- (5) Coastal Service Plan (CSP) EIR

- (6) Rangeland Management Plan (RMP) NOE or IS/ND
- (7) Project-specific CEQA document (see CEQA coverage column)
- (8) Action as stated is not considered a project under CEQA (any future related actions would be subject to separate review by the District)

Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
	NR-4	Purpose: Restore native forest ecosystems in areas with disturbance from past land use. Actions: Implement the Irish Ridge Restoration Plan⁽¹⁾, manage invasive species per the Integrated Pest Management Program⁽⁴⁾, and implement vegetation management according to the Wildland Fire Resiliency Program⁽³⁾.	• CUMP IS/MND – includes Irish Ridge Restoration as a near-term project • IPM EIR – manage invasive species • WFRP EIR – vegetation management
Wildlife	NR-5	Purpose: Protect wildlife by reducing barriers to movement and dispersal. Actions: Use wildlife-friendly fencing and infrastructure when replacing existing⁽²⁾ or installing new infrastructure^(2,6,8), establish and maintain safe wildlife crossings, including wildlife compatible culverts and regular maintenance to allow passage, and install signage to increase public awareness of local wildlife species⁽²⁾. Conduct habitat assessments to refine objectives and prioritize barrier removals. Reference best available data sources when planning project areas to select most appropriate tool to inform the identification and protection of wildlife corridors (e.g., District American badger studies and linkage analysis, regional wildlife connectivity data, vehicular mortality hotspots)⁽⁸⁾.	• OSMRP IS/MND – replacement/maintenance of fence, culverts, signage, wildlife crossings • IPM or WFRP EIR – managing habitat connectivity by removing or modifying vegetation • Prioritizing wildlife friendly fencing type is not a project under CEQA. New infrastructure may fall under OSMRP IS/MND, RMPs, or would require separate review by the District • Conducting habitat assessments are not projects under CEQA (future implementation of priority barrier removals would require separate review by the District) • Data collection during planning is not a CEQA action
	NR-6	Purpose: Protect ecosystem function by promoting native wildlife populations.	• Consideration for CMUs is not a project under CEQA. Future related actions would require separate review by the District.

CEQA Document/Coverage Reference

- (1) Purisima Comprehensive Use and Management Plan (CUMP) IS/MND
- (2) Open Space Maintenance and Restoration Plan (OSMRP) IS/MND
- (3) Wildland Fire Resiliency Plan (WFRP) EIR
- (4) Integrated Pest Management (IPM) Program EIR

- (5) Coastal Service Plan (CSP) EIR
- (6) Rangeland Management Plan (RMP) NOE or IS/ND
- (7) Project-specific CEQA document (see CEQA coverage column)
- (8) Action as stated is not considered a project under CEQA (any future related actions would be subject to separate review by the District)

Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
		Actions: Consider designation of conservation management units, consider recreational access type and timing mindful of sensitive wildlife species, restore or enhance degraded habitats for native wildlife, support species reintroduction and/or projects that enhance the genetic diversity and health of wildlife species ⁽⁸⁾ . Continue efforts of the District's wildlife programs for birds, bats, amphibians, invertebrates and mammals such as conducting marbled murrelet monitoring ⁽⁸⁾ , grassland bird and habitat management ⁽⁴⁾ , bat species research ⁽⁸⁾ , frog monitoring ⁽⁸⁾ and early detection rapid response ⁽⁴⁾ , invertebrate monitoring, grassland management ⁽⁴⁾ , badger management ⁽⁸⁾ , and maintaining wildlife habitat connectivity ⁽⁸⁾ . Explore and implement shared benefits of wildlife conservation with Conservation Grazing management actions and landscape regimes ⁽⁶⁾ .	• RMP NOE/NDs – continued conservation grazing activities • IPM – early detection rapid response, grassland bird and habitat management • Monitoring studies are not projects under CEQA. Future related actions would require separate review by the District.
	NR-7	Purpose: Enhance habitats for rare and special status species. Actions: Protect, monitor, ⁽⁸⁾ and conduct adaptive management actions to sustain viable habitat for special status species, including the San Francisco dusky footed woodrat, mountain lion, marbled murrelet, California giant salamander, California red-legged frog, golden eagle, American badger, steelhead trout, grasshopper sparrow, ferruginous hawk, long eared myotis, and Bryant's Savannah sparrow. ⁽⁴⁾ Conduct monitoring studies to identify priority habitat and conservation management areas for special status wildlife. ⁽⁸⁾	• Monitoring studies are not projects under CEQA. Future related actions for implementation would require separate review by the District. • IPM – covers adaptive management actions for habitats of special status species
Watershed Resources and Aquatic Habitat	NR-8	Purpose: Enhance the quality of riparian habitat along Purisima, Whittemore Gulch, and Lobitos Creeks to promote healthy water quality and anadromy, sequester additional carbon, and protect riparian ecosystem function. Actions: Where feasible, enhance and/or expand the width and extent of the vegetated riparian corridor along major creeks within the Preserve ⁽²⁾ . Monitor Lobitos Creek to assess conditions for water quality and	• OSMRP – enhance/expand riparian corridor • Monitoring for future enhancement opportunities would require separate review by the District

CEQA Document/Coverage Reference

- (1) Purisima Comprehensive Use and Management Plan (CUMP) IS/MND
- (2) Open Space Maintenance and Restoration Plan (OSMRP) IS/MND
- (3) Wildland Fire Resiliency Plan (WFRP) EIR
- (4) Integrated Pest Management (IPM) Program EIR

(5) Coastal Service Plan (CSP) EIR

(6) Rangeland Management Plan (RMP) NOE or IS/ND

(7) Project-specific CEQA document (see CEQA coverage column)

(8) Action as stated is not considered a project under CEQA (any future related actions would be subject to separate review by the District)

Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
		anadromy and identify restoration and habitat enhancement opportunities ⁽⁸⁾ .	
	NR-9	Purpose: Protect and monitor water quality to support long-term preservation, restoration, and enhancement of natural resources within Purisima. Actions: Provide appropriate setbacks/buffers to water resources during public access planning in accordance with the Coastal Service Plan guidelines and the District's Resource Management Policies⁽⁸⁾. Restrict direct human and livestock access to Lobitos Creek to minimize sedimentation and other impacts to the creek^(1, 6). Fence riparian areas, as needed, to exclude cattle⁽⁶⁾. Continue to implement the Water Quality Monitoring Program priorities for the Preserve, including regular monitoring of creeks, ponds, springs, and wells to guide adaptive management efforts and any appropriate response actions⁽⁸⁾.	• Compliance with CSP and RMP isn't a project under CEQA (it is a requirement regardless of CEQA status). Water quality monitoring is not a project under CEQA. • CUMP ISMND – addresses the restricted public access established through on-trail use only • RMP NOE/ND – prevent livestock access to Lobitos creek, fencing areas to exclude cattle
	NR-10	Purpose: Prevent erosion impacts to riparian habitats and water resources. Actions: Monitor stream bank stability at Purisima and Lobitos Creeks, particularly in areas near trails and cattle access⁽⁸⁾ and implement stabilization actions and/or restrict access as needed⁽²⁾.	• OSMRP – stabilization actions • Monitoring is not a project under CEQA
Conservation Grazing	NR-11	Purpose: Continue conservation grazing as a land management tool to preserve grasslands, reduce fire fuels, and support local agriculture. Actions: Manage grazing in accordance with the Board-approved Rangeland Management Plan (RMP) and Agricultural Policy⁽⁶⁾. Update the RMP as needed⁽⁸⁾. Continue existing monitoring program⁽⁶⁾ and evaluate introducing new monitoring frameworks (e.g. Audubon Conservation Grazing, Pt. Blue Rangeland Monitoring Network) as needed⁽⁸⁾.	• RMP NOE/ND – continued grazing operations • RMP updates and introducing new monitoring frameworks would require separate review by the District.

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
	NR-12	Purpose: Update conservation grazing infrastructure to support existing and future operations. Actions: Install and replace grazing infrastructure (e.g. new and/or repairs to pasture fences, new gates, stock water systems) to achieve grazing management objectives set forth in the RMP^(2, 6); explore emerging infrastructure technologies that improve general range management (e.g. stock water monitoring systems, electric fence, virtual fence)⁽⁸⁾.	• RMP NOE/ND - Grazing infrastructure (also covered under OSMRP) • Additional fencing replacement for Bluebrush Canyon fence: Conservation Grazing Wildlife-friendly Fencing and Corral Replacement Project • Exploration of new technological infrastructure is not a project under CEQA – future implementation would require separate review by the District
	NR-13	Purpose: Consider expanding conservation grazing operations to further support natural resource management goals. Actions: Evaluate potential to expand conservation grazing in the western areas of the Preserve to address fuel reduction, control invasive plants, control brush encroachment, and conserve native plant and animal diversity⁽⁸⁾.	Evaluation of future expansion areas is not a project under CEQA. Future actions associated with the grazing expansion plan would require separate review by the District or could be covered under IPM or OSMRP when details are determined.
Wildfire Resiliency	NR-14	Purpose: Reduce wildland fire risk and improve ease of accessibility by emergency personnel in the Preserve. Actions: Implement the Wildland Fire Resiliency Program's vegetation management plan, which includes ecosystem resiliency/healthy forest initiatives, enhanced fire management (i.e., fuel breaks and legally required defensible spaces around critical infrastructure), targeted removal of eucalyptus and acacia, and updating fire response resource maps. Conduct outreach to neighbors to promote the District's defensible space permits and encourage ecologically sensitive vegetation management related to wildfire resiliency and natural resource enhancement consistent with the Wildland Fire Resiliency programs⁽³⁾. Close trail access points within the coastal service area	• WFRP EIR – program implementation and outreach • CSP EIR – restricted access in the coastal service area

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
		during red flag days and post notice of closures on the District's website ⁽⁵⁾ .	
Habitat Integrity	NR-15	Purpose: Preserve habitat integrity when siting new preserve infrastructure to support ecosystem resilience and health. Actions: Properly design and site new preserve infrastructure (i.e., trails, parking areas, fencing, corrals, etc.) to avoid habitat segmentation, maintain wildlife movement, and reduce the need for compensatory mitigation. Focus on siting new physical elements in the outer edges of preserves and close to areas of existing development where possible as recommended in the District's Parking Area and Trailhead/Staging Area Design guidelines. Identify and implement proper buffers to critical habitats and wetlands, both within and near the Preserve⁽⁸⁾.	• Compliance with policies/design is not a project under CEQA (just applicable parameters for future projects)
Sensitive Area Management	NR-16	Purpose: Protect highly sensitive areas of conservation priority. Actions: Identify and designate highly sensitive natural resource areas and/or highly disturbed areas that require extensive restoration effort as areas restricted to on-trail use only⁽¹⁾ and/or as Conservation Management Units (CMUs)⁽⁸⁾.	• CUMP ISMND – designates on-trail use only in western portion of preserve (new public access areas) • Future CMU designation would require separate review by the District
Climate Resiliency	NR-17	Purpose: Reduce and manage greenhouse gas emissions where possible. Actions: Promote resilience of long-term vegetation carbon sequestration by implementing the Wildland Fire Resiliency Program actions⁽³⁾. Support rangeland carbon sequestration and storage by implementing actions under the Bluebrush Carbon Farming Plan. Protect soil carbon storage by managing erosion. Promote old-growth structure in redwood forest through active forest management practices for long-	• WFRP – program action implementation • OSMRP/IPM – cover actions proposed in the Bluebrush Carbon Farming Plan • CUMP ISMND – pilot shuttle, real-time parking, and multimodal features incorporated into parking areas as part of design and construction

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
		term carbon sequestration and storage potential ^(2, 4) . Reduce visitor greenhouse gas emissions by promoting use of multimodal and green travel alternatives and the associated support infrastructure ^(1, 7) .	Other multimodal features installed earlier have separate NOEs for earlier implementation
	NR-18	Purpose: Promote habitat resilience to the effects of extreme weather conditions and climate change. Actions: Implement priorities under the Wildland fire Resiliency Program⁽³⁾ and Integrated Pest Management Program⁽⁴⁾. Maintain and enhance habitat corridors to support species redistribution or migration needs as climate changes. Remove barriers to species as they may need to adapt to changing conditions⁽²⁾ and consider nature-based solutions. Consider best-available models of future climate conditions when designing restoration or mitigation projects⁽⁸⁾. Identify and protect a mosaic of habitat refugia with consideration given to changing temperatures and moisture levels⁽²⁾. Implement Early Detection and Rapid Response methods to address invasive species and protect native and imperiled species that are negatively affected by shifting climate conditions⁽⁴⁾. Make water available for livestock, while sufficiently preserving natural sources of water resources for wildlife and riparian habitat health, consistent with District policies⁽²⁾.	- WFRP – implementation of program actions at Purisima - IPM – implementation of program actions at Purisima, including EDRR - OSMRP – Wildlife barrier removal, maintenance actions to support habitats and wildlife corridors, and maintenance of water resources for livestock and natural aquatic resources - Consideration of new methods/models is not a project under CEQA. Future related actions would require separate review by the District.
	NR-19	Purpose: Inform the public about the effects of climate change and the District’s resilience efforts in the preserve. Actions: Provide interpretive opportunities regarding climate change impacts to the preserve and the San Mateo Coast, and the District’s resiliency work⁽²⁾. Anticipate increased coast side visitation during heatwaves and alert the public ahead of these conditions about heat risks and safety measures via the District website and/or social media. Provide clear messaging when weather conditions (e.g. storm damage, red flag days on the coastside) lead to trail closures⁽⁸⁾.	- OSMRP – covers new small-scale interpretive signage (other interpretive opportunities may be wrapped under existing outreach programs) - Alerts/messaging would follow current district processes and policy compliance

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage
Conservation Management Unit (CMU)	NR-20	Purpose: Manage public access in CMUs to be consistent with site specific management goals. Action: Designate CMUs at the Preserve, when needed, for sensitive areas requiring limited or no public access, restricted infrastructure or facilities planning, and/or special management considerations⁽⁸⁾.	As stated, this is not considered a project under CEQA and no CMUs are identified at the preserve at this time. However, if future CMUs are designated that incorporate other management actions, this would require separate review by the District.

2. Historic, Cultural, and Tribal Cultural Resources

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
Tribal Cultural Resources	CR-1	Purpose: Engage with Native American tribes to plan for and address tribal cultural resources within the Preserve. Action: Begin tribal consultations as early as possible in the project planning process, as appropriate. Conduct cultural resource studies and analyses where appropriate and needed, including areas with proposed ground disturbance⁽⁸⁾.	- No CEQA required for these studies/ tribal engagement and consultation. As part of early outreach during the planning and technical studies phase, the District will continue to fulfill AB52 requirement under CEQA project review for specific actions/projects - Tribal consultation conducted for CUMP near-term projects, studies themselves are not projects under CEQA
	CR-2	Purpose: Appropriately address Tribal Cultural Resources that could be affected by a proposed project. Action: In areas where there are known tribal cultural resources, implement avoidance measures to the greatest extent possible. When avoidance is not possible, work with the tribe(s) on implementing cultural resource protection measures and monitoring for known Tribal Cultural Resources. In the event that previously undiscovered Tribal Cultural Resources are discovered, work with the appropriate tribes to	CUMP ISMND – addresses TCRs/mitigation where needed

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		develop and implement recommendations for the protection and treatment of the cultural resources in accordance with tribal cultural values, District's Resource Management Policies, and Coastal Service Plan protocols ⁽¹⁾ .	
	CR-3	Purpose: Incorporate tribal knowledge and history into the visitor experience. Action: Engage tribes in development of ongoing education opportunities regarding archeology, anthropology, and Native American cultural history⁽⁸⁾. Develop interpretation signage that includes Indigenous voices^(1,2).	- Engagement is not a project under CEQA - OSMRP – covers small-scale interpretive signage - CUMP – covers trail and trailhead amenities like signage
	CR-4	Purpose: Support tribal relationships and access to their ancestral homelands. Action: Consider formalizing access for tribal members to practice traditional lifeways, such as cultural burns/prescribed fires, ethnobotanical collection, and land stewardship actions that connect tribal members to their ancestral homeland and support ecosystem land management goals⁽⁸⁾.	Coordination/early planning with tribal members is not a project under CEQA. Any future implementation actions such as tribal agreements would require separate review by the District (and may be covered under IPM, WFRP)
Historic and Cultural Resources	CR-5	Purpose: Appropriately address significant cultural and historical resources that could be affected by a proposed project. Action: Conduct records searches and surveys with qualified archaeologists and consult the District's historic and cultural resource inventories to identify significant resources prior to project implementation, in accordance with the District's Resource Management Policies for cultural resources. For projects that may trigger environmental (CEQA) review and may negatively impact historic resources, hire a qualified architectural historian to verify historic significance eligibility and inform treatment⁽⁸⁾. Provide a qualified	- Records search, studies, and hiring consultants are not projects under CEQA - Future projects not yet identified will follow this guidance as part of environmental review - CUMP ISMND – will address cultural monitors, if required

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		historic/cultural resource monitor when ground-disturbing work is occurring within areas of concern to protect resources from damage ⁽¹⁾ .	
	CR-6	Purpose: Manage historic and cultural resources consistent with the Basic Policy and Resource Management Policies. Action: With guidance from qualified architectural and cultural historians and informed by cost projections, identify financially and operationally sustainable options consistent with the Basic Policy and Resource Management Policies for the long-term management of cultural and historical resources, such as interpretation and documentation⁽⁸⁾.	• This planning process is not a project under CEQA. Implementation would require separate review by the District.

3. Aesthetic Resources

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
Viewshed	AR-1	Purpose: Protect important Preserve viewsheds, including views and elements that depict the rural character of San Mateo County. Action: Site proposed infrastructure and amenities in accordance with the District's Coastal Service Plan, Resource Management Policies, and the Parking and Staging Area Design Guidelines. Where feasible, use materials complementary of the Preserve's natural landscape and the rural character of San Mateo County⁽⁸⁾. Design new parking areas in a way that utilizes existing topography to screen them from view and site them naturalistically in the landscape to limit the need for earthwork and retaining walls. Include locally appropriate native seeding to provide additional screening only when necessary⁽¹⁾.	• Design/compliance are not projects under CEQA • CUMP ISMND – addresses any grading/earthwork and retaining walls for new projects, and future plantings with native seeding

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
	AR-2	Purpose: Showcase the Preserve's natural beauty, unique characteristics and landscape features for public enjoyment. Action: Site proposed amenities, including benches, overlooks and interpretive signage, in accordance with the District's Resource Management Policies and Parking and Staging Area Design Guidelines to highlight key vistas, including coastal views^(8,1).	Design/siting work is not a project under CEQA until implemented and subject to separate review by the District (although CUMP ISMND near term projects comply with these policies/guidelines)
Scenic Corridor	AR-3	Purpose: Protect designated State and County Scenic Corridors. Action: Site proposed infrastructure and amenities to minimize effects on the Highway 1 and Skyline Boulevard (Highway 35) Scenic Corridors in alignment with the County of San Mateo, Coastal Service Plan, and Resource Management policies^(8,1). Retain existing berms and native trees where possible that provide screening of new public access facilities⁽¹⁾.	- Design/siting work is not a project under CEQA until implemented - CUMP ISMND – will address retaining existing berms, trees for screening from scenic corridors and permitting through Caltrans and County will require compliance with required standards

4. Public Access

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
Public Use	PA-1	Purpose: Locate trails and designate trail uses (hiking, mountain biking, equestrian uses, dog use) appropriately based on site suitability to remain protective of the natural resources, agricultural uses, and public safety. Action: Consider natural and cultural resource sensitivities, trail features, including slope and line of sight, the presence of agricultural uses, and other elements when determining the allowable uses for each trail (which do not include e-bikes unless as an ADA other powered mobility device) to protect natural and cultural resources, reduce the potential for conflicts, and maintain visitor safety⁽⁸⁾.	- Design/siting work and conducting evaluations are not projects under CEQA until implemented (would require separate review by the District) - CUMP ISMND – designates on-trail use only, including Purisima Uplands area and grazing - Conducting an evaluation for dog access is not a project under CEQA. Any future implementation would require separate review by the District

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		Designate public access as on-trail use only within conservation grazing areas, restoration areas, and other sensitive areas within the preserve. Designate the Purisima Uplands area as a closed area until site remediation work is completed and designated trails are established ⁽¹⁾ . Evaluate appropriate trail segments for options to incorporate dog access, such as the Purisima-to-the-Sea trail loop, that avoids impacts to sensitive natural and cultural resources and grazing operations, and that meet the 1995 Board-adopted dog access site suitability criteria. Consider seasonal closures or changes to recreational access based on new information about impacts to sensitive resources ⁽⁸⁾ .	
	PA-2	Purpose: Remain consistent with the Board-adopted Trail Use Policies for regional trails. Action: Designate the regional Purisima-to-the-Sea Trail as multi-use (hiking, biking and equestrian use, not including e-bikes unless as an ADA other powered mobility device); includes redesignating existing segments that are hiking-only as multi-use⁽¹⁾.	• CUMP ISMND –trail designations for P2S and portions of Irish Ridge trail
Trails	PA-3	Purpose: Site and design trails to be protective of the natural and cultural resources, minimize impacts to surrounding uses, and for long-term durability. Action: Consider topography, vegetation, native habitats, habitat connectivity, species sensitivities, cultural resources, and other natural features when planning new trail alignments. Evaluate the suitability of existing roads and trails for public use to minimize new cuts on the landscape⁽⁸⁾. Design and construct trails in accordance with the District's Trail Use Policy, Coastal Service Plan policies and guidelines, and Details and Specifications Guidelines. Site and design trails to avoid or minimize impacts to sensitive habitats, rare plants, wildlife corridors, and cultural resources wherever feasible. Build trails to an	• Design/siting is a best practice in constructing ecologically-sensitive trails and not considered a project under CEQA • CUMP ISMND – construction and implementation of near-term projects to minimize impacts, incorporate sustainable trail features

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		average grade of eight percent, where practicable, for long-term durability. Incorporate sustainable trail design features to reduce erosion and encourage proper drainage that directs runoff to vegetated areas away from creeks. Avoid siting trails near private property boundaries, cattle grazing infrastructure and sensitive resource areas whenever possible ⁽¹⁾ . Consider seasonal closures or changes to recreational access based on new information about impacts to sensitive resources ⁽⁸⁾ .	
	PA-4	Purpose: Provide a variety of trail opportunities to offer a diversity of trail experiences. Action: Consider trail loop opportunities of varying distances, including shorter loops (e.g. 1-4 miles) from main trailheads. Consider new internal trail connections to improve trail connectivity within the preserve (e.g. a western North Ridge Trail connector to lower Whittemore Trail) while considering impacts to wildlife movement and habitat fragmentation⁽⁸⁾.	• Evaluation is not considered a project under CEQA (any future implementation would require separate review by the District)
	PA-5	Purpose: Explore opportunities for local and regional trail connections to the Preserve. Action: Coordinate with the San Francisco Public Utilities Commission (SFPUC) to implement the Highway 35 trail crossing on Highway 35 and a spur trail from the North Ridge parking area to connect existing segments of the Bay Area Ridge Trail within Purisima to the new SFPUC Skyline Watershed Ridge Trail. Implement the Purisima-to-the-Sea regional trail within the preserve and coordinate with POST, San Mateo County Parks, Coastal Conservancy and Caltrans to connect the Purisima-to-the-Sea trail to the California Coastal Trail at the Cowell-Purisima trailhead via an existing trail easement held by POST on private property⁽¹⁾. Collaborate with agencies and partners implementing the regional trails that connect to Purisima (i.e. Bay to	• CUMP ISMND – implementation of these public access projects in collaboration with partner agencies • Collaboration and outreach with regional partners to explore trail connections is not a project under CEQA. Any future recommendation for trail connections will be evaluated separately once those proposed trail connections are confirmed and proposed to the Board for approval.

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		Sea, Bay Area Ridge, and California Coastal trails) about how to disseminate information and updates to the public about the regional trails, including trail maps, amenities, and operating hours ⁽⁸⁾ .	
	PA-6	Purpose: Expand Easy Access trail opportunities. Action: Explore opportunities to extend the existing 0.3-mile Easy Access Redwood Trail. Evaluate new locations for Easy Access trails that connect to ADA facilities and other amenities (e.g. restrooms, benches, vista points)⁽⁸⁾.	• Evaluation is not considered a project under CEQA (any future implementation would require separate review by the District) •
	PA-7	Purpose: Ensure new trails remain consistent with Board-approved policies, including the Coastal Service Plan for trails within the Coastsides Protection Area, and the Trail Use Policies. Action: Follow the applicable Board-approved Resource Management Policies and trail design and specification guidelines when identifying new trail alignments and designing/constructing new trails⁽⁸⁾.	• Compliance with policies is not a project under CEQA (incorporated as part of any project implementation, including CUMP near-term projects)
Parking and Trailheads	PA-8	Purpose: Develop safe driveways connecting public roadways to Preserve parking areas. Action: Develop new driveways in accordance with the Board approved Parking/Staging Areas and Trailhead design guidelines, including confirming adequate lines of sight⁽⁸⁾. Implement no parking areas along public roadway frontages near driveway entrances, as appropriate, to maintain lines of sight and orderly site circulation⁽¹⁾.	• CUMP ISMND – no parking areas identified in new near-term projects • Compliance with policies is not a project under CEQA (incorporated as part of any project implementation, including CUMP near-term projects)
	PA-9	Purpose: Design and develop new parking areas that are functional, safe, and reflect a sense of place appropriate for the parking/trailhead location. Action: Develop the new Verde parking area and North Ridge parking area expansion in alignment with the Board-approved Coastal Service	• CUMP ISMND – implements new parking area projects

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(5) Coastal Service Plan (CSP) EIR

(6) Rangeland Management Plan (RMP) NOE or IS/ND

(7) Project-specific CEQA document (see CEQA coverage column)

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		Plan and Parking/Staging Areas and Trailhead design guidelines, including proper siting/design of new parking areas and selection of construction materials that are durable and reflect the open space character of the surrounding area. Coordinate with the County of San Mateo to designate no-parking zones on roadways adjacent to parking areas, where necessary, to reduce congestion and improve visitor safety and emergency access near Preserve parking areas and trailheads ⁽¹⁾ .	
Multimodal Access	PA-10	Purpose: Improve parking management at the Purisima Creek Road trailhead. Action: Implement a three-year pilot shuttle program that provides a point-to-point shuttle service between the new Verde Road Parking Area and Purisima Creek Road Trailhead consistent with the Purisima Multimodal Implementation Project Report. Close roadside and trailhead parking at the Purisima Creek Road Trailhead when the shuttle is in service⁽¹⁾.	• CUMP ISMND – implements shuttle and parking restrictions
	PA-11	Purpose: Consider additional transportation demand management (TDM) strategies, as needed, for the lower area of the Preserve. Action: After evaluating the level of success of the pilot shuttle program for the Purisima Creek Road Trailhead, consider either expanding the shuttle program with stops in Half Moon Bay and/or Pescadero, or pursuing other TDM strategies to further manage parking and visitation. Seek partnerships and funding sources for implementation and long-term operation⁽⁸⁾.	• Evaluation is not considered a project under CEQA (any future implementation would require separate review by the District)
	PA-12	Purpose: Provide visitors with real-time parking availability information at the North Ridge and Verde Road parking areas as an effective parking management tool.	• CUMP ISMND – incorporates real-time parking system

CEQA Document/Coverage Reference

- (1) Purisima Comprehensive Use and Management Plan (CUMP) IS/MND
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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		Action: Establish an online real-time parking information system, using sensors to track available parking spaces at the North Ridge and Verde parking areas, providing information online to assist the public in scheduling their visit and better distribute parking use ⁽¹⁾ .	
	PA-13	Purpose: Take incremental actions to further manage parking, as needed, at the North Ridge and/or Verde Road parking area. Action: When parking demand meets established capacity thresholds, consider the following: - Designating parking spaces for carpool, vanpool or high-occupancy vehicles as an incremental, additional step to better manage parking use and encourage carpooling to the Preserve; and/or - Establishing a reservation parking system⁽⁸⁾.	Requires board decision for future implementation
	PA-14	Purpose: Pursue additional strategies to reduce parking congestion at specific sites. Action: Advertise other District trailheads and nearby preserves for visitors to find alternative destinations when specific parking areas are at capacity⁽¹⁾.	- CUMP ISMND – includes potential wayfinding signage at Hwy35 - Potential future wayfinding signage on district lands could be covered under OSMRP
Site Amenities	PA-15	Purpose: Explore new interior trail amenities that support long distance travel within the preserve (i.e., travel between Skyline Boulevard and Verde Road). Action: Inventory the various rest stop amenities, including restrooms and rest areas that currently exist within the preserve. Identify potential suitable interior sites for new amenities to support long distance travel within the preserve⁽⁸⁾. Ensure existing and new amenities are wildlife friendly^(2,1).	- OSMRP – maintaining/replacing amenities - CUMP ISMND – new projects incorporate these features and general trail amenities - Inventory/evaluation don't require CEQA coverage (future board action for implementation) - More significant elements would require separate review by the District for implementation (e.g. new restroom)

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
	PA-16	Purpose: Explore new interior trail amenities that support long distance, regional trail use. Action: Inventory the various rest stop amenities, including restrooms, rest areas with bench(es), potable water, hitching post, and/or backpack camps that currently exist along the regional Bay to Sea Trail corridor. Conduct a feasibility study to identify critical gaps where similar amenities can be offered within the preserve to support this regional trail use. In addition, coordinate with regional partners to explore how trail amenities would be implemented to support the Purisima-to-the-Sea Trail and overall Bay to Sea Trail corridor⁽⁸⁾.	• Evaluation is not considered a project under CEQA (any future implementation would require separate review by the District)
	PA-17	Purpose: Provide visitor serving amenities at new parking areas and trailheads. Action: Incorporate visitor serving amenities in accordance with the Board approved Parking/Staging Areas and Trailhead design guidelines, including proper signage. Provide a vault toilet at the future Verde Road parking area⁽¹⁾.	• CUMP ISMND – new trailhead amenities and vault toilet
	PA-18	Purpose: Provide amenities at trailheads that promote multimodal travel to the preserve. Action: Include bicycle racks, a bicycle repair station, bicycle wheel brush, hitching posts, and/or water troughs, as would be suitable, at preserve trailheads⁽¹⁾. Include notices or educational material to the public about pathogen or weed transfer⁽⁸⁾.	• CUMP ISMND – near-term projects incorporate these amenities
Signage	PA-19	Purpose: Install proper signage at new trails, parking areas and other public access features per District standards. Action: Develop a signage plan in alignment with the District's Sign Manual to provide trail directional signs, relevant regulation signs, and	• CUMP ISMND – installation of Verde Rd Parking typical Preserve sign boards • Developing a sign plan is not a project under CEQA

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		appropriate resource management signs ⁽⁸⁾ . Install standard District signboards at the future Verde Road trailhead, including a partner signboard that recognizes the support from partners and Measure AA public funding support ⁽¹⁾ .	• OSMRP allows for sign maintenance
Interpretation and Education	PA-20	Purpose: Incorporate interpretive signage at the Preserve, as appropriate, to highlight important resources and site history, including the land's agricultural heritage. Action: Identify appropriate locations for new interpretive signage at trailheads or on trails where mid-trail facilities may be located⁽⁸⁾ and at the Verde Road trailhead/parking area⁽¹⁾. Potential interpretive topics include themes that highlight the local ecology, sensitive species, agricultural heritage, tribal cultural resources, climate change impacts and sustainability measures, historic oil refinery and logging operations in Purisima Canyon, and land management practices that protect biodiversity and support the preservation of local agriculture on the San Mateo County coast. Include language translations on interpretive signage on the coastside based on changing demographics and census-related data when the number of residents with limited English proficiency (LEP) reach San Mateo County/Santa Clara County thresholds⁽⁸⁾.	• CUMP ISMND – trailhead and trail amenities covered • Evaluating new signage location/content does is not considered a project under CEQA (any future implementation would require separate review by the District and could be covered under OSMRP)
	PA-21	Purpose: Enrich the visitor experience through outdoor guided activities that highlight the importance of open space, conservation, and agricultural preservation. Action: Provide docent naturalist guided activities to the public. When effective and as capacity allows, generate digital media content (e.g., StoryMaps, OuterSpatial, podcasts, mobile apps, audio tours, etc.) to enhance storytelling. Provide language translations for online resources⁽⁸⁾.	• Does not constitute a project under CEQA

CEQA Document/Coverage Reference

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Purísima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
	PA-22	Purpose: Expand reach of educational and interpretation programs to new and underserved communities. Action: Explore opportunities and interest in offering cultural and/or natural resource docent-led programming for local schools. Incorporate Spanish language translations and other language translations to signage and educational programs, as needed, to expand reach to non-English speaking communities on the coastside⁽⁸⁾.	• Covered under existing docent program • Not a project under CEQA at this stage

5. Operations and Maintenance

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
Road and Trail Maintenance	OM-1	Purpose: Provide and maintain adequate emergency access to the Preserve Action: Maintain existing operational roadways consistent with the District's best management practices⁽²⁾.	• OSMRP
	OM-2	Purpose: Reduce erosion and sedimentation originating from legacy roads. Action: Properly decommission unnecessary internal roadways. Implement erosion control measures and drainage improvements, including maintenance of existing culverts, as needed for the remaining roads⁽²⁾.	• OSMRP
	OM-3	Purpose: Maintain trails to promote an enjoyable trail experience. Action: Maintain vegetation along trails in compliance with the District's Wildland Fire Resiliency Program⁽³⁾ and Integrated Pest Management program⁽⁴⁾. Maintain trail surfaces and associated drainage	• OSMRP – maintenance of trails and drainage infrastructure and minor trail reroutes • WFRP – vegetation maintenance • IPM – vegetation maintenance

CEQA Document/Coverage Reference

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- (2) Open Space Maintenance and Restoration Plan (OSMRP) IS/MND
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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		infrastructure in compliance with the Open Space Maintenance and Restoration Program ⁽²⁾ . Identify trail segments that require additional hardening, particularly for new trail segments in grazing areas, and install and replace aggregate material as needed to maintain trail function ^(1,2) . Evaluate and implement minor trail reroutes to avoid problematic trail conditions or trail failures ⁽²⁾ .	• CUMP ISMND – trail hardening in grazing areas for Purisima-to-the-Sea trail (also covered under OSMRP)
Safety and Security	OM-4	Purpose: Ensure compliance with District rules and regulations for public safety and resource protection. Action: Provide signage and education to promote compliance with District regulations^(1,2). As needed, conduct enforcement actions to address violations for the protection and safety of the resources and public⁽⁸⁾.	• CUMP ISMND – new trail and trailhead signage related to near-term projects • Replacement/ updates of existing signage covered under OSMRP
	OM-5	Purpose: Ensure security of Preserve lands. Action: Conduct ongoing patrol to monitor safe, appropriate, and permissible public uses. Patrol closed areas for unauthorized access⁽⁸⁾. Utilize gates, wildlife-friendly fencing, and signage on District property where appropriate to maintain site security and meet public safety objectives in alignment with the District's Good Neighbor Policy^(5,2).	• CSP EIR • Actions also covered under OSMRP
	OM-6	Purpose: Manage Preserve lands to minimize wildland fire risk Action: Maintain vegetation along roads and trails, where appropriate⁽²⁾. Educate visitors about regulations to maximize compliance, conduct regular patrols⁽⁸⁾, and conduct maintenance activities according to best managements practices for fire safety. Implement actions specified for the Preserve in the Wildland Fire Resiliency Program⁽³⁾.	• OSMRP – vegetation management • WFRP – implementation of program actions for Purisima • Education/patrols are not projects under CEQA
	OM-7	Purpose: Minimize impacts to private properties and avoid public/private use conflicts and trespassing.	• CSP EIR – installation of fencing and signage as well as trail setbacks in

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		Action: In areas within the coastside protection area where trail routes are adjacent to private property, wildlife-friendly fencing shall be employed as necessary to deter users from leaving the trail and private property signs will be installed to inform visitors of private property rights ⁽⁵⁾ . Consider wildlife-appropriate directional fencing to guide wildlife away from unsafe or unwanted property areas ⁽⁸⁾ . Specific fence, gate, and crossing designs will be determined in consultations with adjacent affected property owner(s) at the Use and Management Plan stage, in accordance with the Coastal Service Plan. In the coastside protection area, trails should be sited 300 feet from any occupied dwellings on neighboring properties, where feasible, with a minimum 50-foot setback if greater separation from dwellings is not feasible ⁽⁵⁾ . Consider impacts from District operations in the vicinity of private properties such as noise, maintenance activities, and siting of new trails and facilities in accordance with the District's Good Neighbor Policy and Coastal Service Plan ⁽⁸⁾ .	areas near private property in the coastside protection area Considerations for fencing types, siting amenities are part of early planning and are not considered projects under CEQA (any future implementation would require separate review by the District)
Utilities and Infrastructure	OM-8	Purpose: Remove obsolete infrastructure. Action: Identify and document utilities and infrastructure ⁽⁸⁾ and remove unnecessary facilities and infrastructure, such as obsolete water systems and fencing ⁽²⁾ . Remove the old county park restroom near the Redwood Trailhead, approved for demolition by the Board in 2000 ⁽⁷⁾ .	- OSMRP – removal of infrastructure - NOE – project-specific CEQA prepared for restroom removal
	OM-9	Purpose: Maintain reliable domestic and agricultural water sources essential to implement management objectives. Action: Inventory and maintain existing water infrastructure ^(2,6) . Measure domestic and agricultural consumptive water use and evaluate opportunities to use municipal water supply where feasible. Evaluate opportunities to expand and/or replace existing water infrastructure to	- OSMRP – maintenance of water infrastructure - Measurements and evaluations not projects under CEQA (any future implementation would require separate review by the District)

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		support conservation grazing operations while maintaining water requirements of wildlife ⁽⁸⁾ . Ensure all water infrastructure is wildlife friendly and does not create entrapment risk (e.g. escape ramps, secured closures) ^(2,6) .	• Rangeland Management Plan NOEs cover improvements to water infrastructure
	OM-10	Purpose: Promote resilience of infrastructure to impacts of extreme weather conditions and climate change. Actions: Assess roads, trails, crossings, and water conveyance infrastructure for vulnerability to impacts from severe storms, fire, and extreme heat⁽⁸⁾. Upgrade or decommission infrastructure as appropriate⁽²⁾. Design new infrastructure and repairs in consideration of more severe weather conditions than historic levels⁽⁸⁾.	• OSMRP – covers infrastructure repairs/decommissions • Assessments/ design are not projects under CEQA until decision made about future implementation
Environmental Hazards	OM-11 OM-11-1 OM-11-2	Purpose: Address environmental hazards Action: Remove barbed wire, nails, debris, and other materials that no longer have a functional purpose or that pose public safety hazards and do not contain significant cultural or historic value⁽²⁾. Support the long-term stewardship of the property and meet public safety objectives in alignment with the District's Good Neighbor Policy⁽⁸⁾. Action: Identify hazardous areas and develop any necessary plans for containment, removal, and/or remediation appropriate in alignment with natural and historic resource management objectives and procedures⁽⁸⁾. Remove and remediate hazards where already identified within Purisima Uplands⁽²⁾ and designate Purisima Uplands as a closed area until the site has been remediated⁽¹⁾. Following remediation, re-evaluate the area for potential public access in consideration of long-term natural and cultural resource protection⁽⁸⁾.	• OSMRP – maintenance, including Purisima Uplands clean-up • Inventory/ evaluations aren't projects under CEQA until decision made to implement (depending on future actions, may also be covered under OSMRP)
Legal Agreements	OM-12	Purpose: Ensure conditions of easements and other agreements are met.	• CUMP ISMND – implementation of North Trail and Hwy 1 crossing

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
	OM-12-1	Action: Where required, develop public access in alignment with stipulations set forth by the conservation and trail easements held by the Peninsula Open Space Trust and California Coastal Conservancy ⁽¹⁾ .	• Compliance with policies, agreements is not a project under CEQA (just applies to appropriate implemented actions) and near term trail projects have been developed for consistency with easements • Updates to Lobitos Farming Grounds would require separate review by the District
	OM-12-2	Action: Comply with access easements with applicable neighbors ⁽⁸⁾ . Action: Comply with the Purisima Creek Water Adjudication ⁽⁸⁾ .	
	OM-12-3	Action: Review the existing Lobitos Farming Grounds Management Plan for consistency with District's Agricultural Policy. If needed, update the plan to align with relevant District policies and practices ⁽⁸⁾ .	
	OM-12-4		
Partnerships	OM-13	Purpose: Seek and maintain partnerships to support management of the Preserve in alignment with the District's mission and policies	• Partnerships are not projects under CEQA (although CUMP near-term projects do include partnerships for implementation)
	OM-13-1	Action: Explore potential partnerships for implementation and long-term use and/or management of trail crossings and connectors to Cowell Purisima Coastal Trail ⁽⁸⁾ . Action: Partner with tribes, non-profits, governmental entities, and/or other interested communities in regional resource and land management efforts pertaining to the preserve in accordance with the District's Good Neighbor Policy ⁽⁸⁾ .	
	OM-13-2		
	OM-13-3	Action: Explore local and regional partnership opportunities that encourage multimodal access to the preserve as well as connections to the California Coastal Trail, Bay to Sea Trail, Bay Area Ridge Trail, Ohlone-Portolá Heritage Trail, etc. Support the implementation of San	

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

Focus Areas	Ref.	Purpose and Actions	CEQA Coverage*
		Mateo County's planned bike routes and planned Connect the Coastside projects ⁽⁸⁾ .	
	OM-14	Purpose: Seek funding partnerships to leverage and magnify District resources. Action: Explore grant and external funding opportunities to support public access improvements, resource management actions, and long-term use and management of the preserve⁽⁸⁾.	Exploring funding options is not a project under CEQA

CEQA Document/Coverage Reference

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Purisima Comprehensive Use & Management Plan
Implementation Action Table CEQA Coverage

List of Acronyms

ADA	Americans with Disabilities Act
CalTrans	California Department of Transportation
EDRR	Early Detection Rapid Response
EIR	Environmental Impact Report
IPM	Integrated Pest Management
IS	Initial Study
MND	Mitigated Negative Declaration
ND	Negative Declaration
NOE	Notice of Exemption
POST	Peninsula Open Space Trust
SFPUC	San Francisco Public Utilities Commission
WFRP	Wildland Fire Resiliency Program

CEQA Document/Coverage Reference

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