

Palos Verdes Peninsula **Land Conservancy**



January -- December 2020

PALOS VERDES NATURE PRESERVE ANNUAL REPORT

FOR THE

RANCHO PALOS VERDES NATURAL COMMUNITY CONSERVATION PLAN



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2020 ANNUAL REPORT

TABLE OF CONTENTS

I INTRODUCTION	1
Annual Submittals.....	1
Site Description	2
2 HABITAT RESTORATION	4
Alta Vicente Reserve	5
Portuguese Bend Reserve	9
Abalone Cove Reserve.....	12
3 ADDITIONAL RESTORATION.....	14
Abalone Cove.....	19
Agua Amarga	19
Vicente Bluffs.....	19
Portuguese Bend.....	19
Fuel Load Reduction Project.....	19
4 MONITORING	20
Habitat Restoration Monitoring.....	20
Covered Species	21
Reintroduction Monitoring Results.....	22
Covered Project/Activity Tracking.....	22
5 UTILITY AND CONTRACTOR ACCESS	23
6 TARGETED EXOTIC REMOVAL PROGRAM FOR PLANTS	24
7 FUEL MODIFICATION	24
8 COMMUNITY SCIENCE AND EDUCATION	25
9 TRAIL MANAGEMENT AND MONITORING	25
Preserve Trails Plan	25
Trail Management.....	26
Unauthorized Trail Closures	26
Trail Repair	27
Trail Monitoring.....	27
Summary of Nighttime Use.....	28

Public Use Impacts and Recommendations.....	28
I 0 VOLUNTEER INVOLVEMENT	28
I 1 CONTRIBUTIONS TO PRESERVATION.....	28
I 2 EVALUATION OF MANAGEMENT ACTIVITIES	29
Evaluation of Enforcement Activities.....	30
Evaluation of Funding Needs.....	31
Evaluation of Ability to Accomplish Resource Management Goals.....	31
I 3 SUMMARY OF CLERICAL CHANGES AND CHANGES TO MONITORING/REPORTING.....	32
I 4 PALOS VERDES PENINSULA LAND CONSERVANCY BOARD AND STAFF.....	32
I 5 REPORT CERTIFICATION STATEMENT.....	34

TABLES

1. Reserve Names of the Palos Verdes Nature Preserve	4
2. Restoration Project Schedule for Alta Vicente Reserve Phases 1-4.....	6
3. Restoration Project Schedule for Portuguese Bend Reserve Phases 1-5	10
4. Restoration Project Schedule for Abalone Cove Reserve Phases 1 - 3.....	12
5. Palos Verdes Nature Preserve Restoration Projects through 2020.....	14
6. Habitat Impacts in the PVNP in 2020.....	23

FIGURES

1. Map of the Palos Verdes Nature Preserve with Associated Reserves Locations.....	3
2. Map of Restoration Areas at Alta Vicente Reserve Phases 1-3	7
3. Map of Restoration Areas at Alta Vicente Reserve Phases 3-4.....	8
4. Map of Restoration Areas at Portuguese Bend Reserve Phases 1-5	11
5. Map of Restoration Areas at Abalone Cove Reserve Phases 1-3.....	13
6A-C Maps for All Restoration Projects in the PVNP.....	16-18

APPENDICES

- A. Abalone Cove Restoration Plan
- B. Restoration Monitoring
- C. Habitat Impacts

- D. Targeted Exotic Removal Program for Plants
- E. Research and Monitoring
- F. Trail Management and Monitoring
- G. Volunteer Programs
- H. Quarterly Enforcement Reports and Trail Counter Data
- I. Financial Reporting

1.0 INTRODUCTION

The 2020 Palos Verdes Nature Preserve Annual Report for the Rancho Palos Verdes Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) fulfills annual submittal requirements by the Palos Verdes Peninsula Land Conservancy (PVPLC) and City of Rancho Palos Verdes (City) for the Palos Verdes Nature Preserve (Preserve). It serves the purpose of evaluating the implementation of the NCCP/HCP during the preceding year and the adequacy of the overall progress being made toward reaching the conservation goals of the NCCP/HCP. Annual submittal requirements are:

- Gains/losses to habitat within the Plan Area by project, including a list of all Covered Activities performed, the review process for each Covered Activity, and impacts to Covered Species and vegetation from each project
- Impacts of public uses and recommendations, if necessary, for minimizing impacts to the Preserve
- A summary of night time use of the Preserve
- All contributions toward the preservation of habitat lands
- Description of the management of invasive plant species
- Documentation of the habitat restoration efforts to enhance and restore native plant communities and the results of biological monitoring
- Annual evaluation of management activities, enforcement activities, funding needs, and ability to accomplish resource management goals
- A separate fiscal report prepared jointly by the City and PVPLC
- Summary of clerical changes made to the Plan, including corrections to maps or exhibits, changes made to survey, monitoring, or reporting protocols

Additionally, this report details stewardship activities, research, funding, enforcement reports, trail counter data, and community involvement in the Preserve during the period January 1 through December 31, 2020.

PVPLC is the designated Habitat Manager for the Palos Verdes Nature Preserve for the City of Rancho Palos Verdes. The Preserve encompasses approximately 1,400 acres and is located on the southern side of the Palos Verdes Peninsula in the City of Rancho Palos Verdes, California. The Preserve was formed under the RPV NCCP/HCP (adopted by City Council in October 2019) to “maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the City and region pursuant to the requirements of the NCCP/HCP Act and Section 10(a) of the ESA (URS 2004a).” As a primary component of the NCCP/HCP, a Preserve design was proposed to conserve regionally important habitat areas and provide habitat linkages in order to benefit sensitive plants and wildlife. PVPLC manages the

habitat in the Preserve per the requirements of the NCCP/HCP as well as other Preserve management duties further detailed in a management agreement with the City.

The primary focus of management for the Preserve is to maintain or restore habitat for the covered plant and animal species listed in the NCCP/HCP. A Habitat Management Plan was adopted in 2007 that outlines the restoration of five acres per year for a total of 15 acres over a three-year period. This plan also outlined the methodology for removal of exotic plant species, a predator control plan, and the monitoring of covered plant and animal species. PVPLC seeks additional funding when possible, to perform restoration on more than the minimum five acres per year required in the NCCP/HCP. Several opportunities of this nature occurred during the reporting period that enabled PVPLC to implement additional restoration as detailed below. Additionally, PVPLC executes several trail projects and habitat protection and enhancement measures with the aid of staff, volunteers and additional funding sources.

PVPLC also facilitates scientific research through community science programs and academic research in the Preserve. Volunteers greatly support the implementation of management strategies for the Preserve by assisting in monitoring the properties, wildlife, and habitat as well as helping restore habitat and maintain trails. Collaborating with regional high schools and colleges allows for scientific research that expands our understanding of the Preserve.

Site Description

The Preserve is located on the southern side of the Palos Verdes Peninsula in the City of Rancho Palos Verdes, California (Figure 1). The approximately 1,400-acre Preserve has been divided into twelve subareas referred to as Reserves (Table 1).

The topography of the Preserve is diverse, ranging from relatively flat lowland areas above steep coastal bluffs in the south, to very steep slopes, ridgelines and gullies on the slopes to the north. Elevations range from approximately sea level along the coastal edges of Vicente Bluffs, Abalone Cove, and Ocean Trails Reserves to approximately 1,300 feet above mean sea level at the northern most parcel, Vista Del Norte Reserve. Adjacent land uses include single-family residences on most sides, open space associated with neutral lands on the Peninsula, the Pacific Ocean to the south and west, and the Los Verdes and Trump National golf courses near the western and eastern ends of the Preserve area.

Figure I. Map of the Palos Verdes Nature Preserve with associated Reserves locations.



Table I
Reserve Names of the Palos Verdes Nature Preserve. See Figure I for locations.

Abalone Cove Reserve	Ocean Trails Reserve*
Agua Amarga Reserve	Portuguese Bend Reserve
Alta Vicente Reserve	San Ramon Reserve
Filiorum Reserve	Three Sisters Reserve
Forrestal Reserve	Vicente Bluffs Reserve
Malaga Canyon Reserve**	Vista del Norte Reserve
* Not managed by PVPLC, but managed under Habitat Conservation Plan ** Will be added to the Preserve when NCCP/HCP is adopted	

2.0 HABITAT RESTORATION PLAN

Restoration is the process of re-establishing or enhancing historical biological functions and values to degraded habitats. Section 7.5 of the NCCP/HCP requires that the City restore a minimum of 250 acres of habitat over the Permit Term within the Preserve. A minimum of 5 acres of native habitat shall be restored each year, or a total of 15 acres every three years if exigencies prevent restoration of 5 acres each year.

The initial Preserve Habitat Management Plan (PHMP) for the Draft NCCP/HCP was created in 2007. A component of the PHMP was the Habitat Restoration Plan for five acres per year for a total of 15 acres over the first three-year period. This plan was completed in April 2007 and concluded that Alta Vicente Reserve in the Preserve ranked the highest in terms of site suitability for an immediate restoration project. However, since a fire occurred at Portuguese Bend Reserve in August 2009, plans were adapted to focus immediate habitat restoration at Portuguese Bend, and only Phase 1 and 2 (10 acres) were implemented at Alta Vicente. The Restoration Plan for Portuguese Bend covered habitat restoration and monitoring of 25 acres over five years (2010 to 2015).

In 2015, PVPLC developed new habitat restoration plans to execute the final phases of the restoration at Alta Vicente, and these plans were included in the 2015 Comprehensive Report. Phase 3 was initiated in 2016 and Phase 4 initiated in 2017, with the installation of drip irrigation and coastal sage scrub vegetation species. In 2016, the Habitat Restoration Plan for the Abalone Cove Ecological Reserve was developed to continue with restoration at Abalone Cove Reserve. The plan includes three phases with site preparation of the first phase beginning in 2019. A new restoration plan is

expected to be completed in 2021 to continue with the goal of completing 250 acres of restoration within the permit term for the Palos Verdes Nature Preserve.

2.1 ALTA VICENTE RESERVE RESTORATION

The Habitat Restoration Plan for Alta Vicente Reserve outlined appropriate habitat revegetation locations and methodology to adequately comply with the Preserve Management requirements of the Rancho Palos Verdes NCCP/HCP. The Habitat Restoration Plan for Alta Vicente Reserve provided guidelines for the establishment of coastal sage scrub (CSS), coastal cactus scrub (CCS), and PVB butterfly habitat on a total of 15 acres during 3 consecutive years at the Alta Vicente Reserve with an additional 5 acres added to the project.

The habitat restoration conducted at the Alta Vicente Reserve consists of four phases, with one phase initiated each year. The first five-acre phase of restoration, Phase 1 (Figure 2) began with site preparation during the fall of 2007 and 2008 to minimize weeds after planting (as per the timeline in the Alta Vicente Restoration Plan, Table 2). Phase 1 plants were installed and hydroseeded during the winter of 2009/2010. Site preparation for Phase 2 began in fall 2008. In December 2010, staff removed *Acacia cyclops* and completed planting and seeding in the Phase 2 area. Staff weeded and maintained Phase 1 and 2. Additional container plants were installed from 2012 to 2017 to fill in areas with low native plant cover.

Phase 3 (Figure 3) was initiated in fall 2016 with the installation of drip irrigation system and container plants throughout the 5 acre area. Year 1 monitoring began in spring 2018. Preparation for Phase 4 planting began in summer 2017 with site clearing using goats and drip irrigation system installation. Phase 4 planting began in winter 2017 and extended through early 2018, Year 1 monitoring began in spring 2019.

Table 2

Restoration Project Schedule for Alta Vicente Reserve, based on the Alta Vicente Reserve Habitat Restoration Plan.

	Task	Date
PHASE 1	Site clearing and soil preparation	Fall 2007, Fall 2008
	Installation of temporary irrigation system	Fall 2008
	Weed/exotic removal and grow-kill cycles	Fall 2008-Spring 2009
	Planting container stock	Early Winter 2009/2010
	Hydroseed application	Winter 2009/2010 (following planting)
	Completion of installation/assessment of site installation	Following completion of installation and seeding and 120 day maintenance period
	5-year biological monitoring and maintenance	To begin upon successful installation of restoration work
	Phase one completion	2015, end of Year 5
PHASE 2	Site clearing and soil preparation	Fall 2008, Fall 2009
	Installation of temporary irrigation system	Fall 2008, Fall 2009
	Weed/exotic removal and grow-kill cycles	Fall 2008, Fall 2009,-Spring 2010
	Planting container stock	Winter 2010/2011
	Seed application	Winter 2010/2011 (following planting)
	Completion of installation/assessment of site installation	Following completion of installation and seeding and 120 day maintenance period
	5-year biological monitoring and maintenance	To begin upon successful installation of restoration work
	Phase two completion	2016, end of Year 5
PHASE 3	Begin site preparation, weed removal	Fall 2016
	Install irrigation	Fall 2016
	Planting Container Stock	Fall and Early Winter 2016
	Seed application	Fall and Early Winter 2017
	Monitoring and Maintenance	Begin after planting, Winter 2016
	5-year biological monitoring and maintenance	Spring 2018-Spring 2022
	Begin site preparation, weed removal	Summer 2017
PHASE 4	Install irrigation	Fall 2017
	Planting Container Stock	Fall and Early Winter 2017
	Seed application	Fall and Early Winter 2017
	Monitoring and Maintenance	Began after planting, Winter 2017
	5-year biological monitoring and maintenance	Spring 2019-Spring 2023

Figure 2. Map of Phase I-3 Restoration Areas at Alta Vicente Reserve

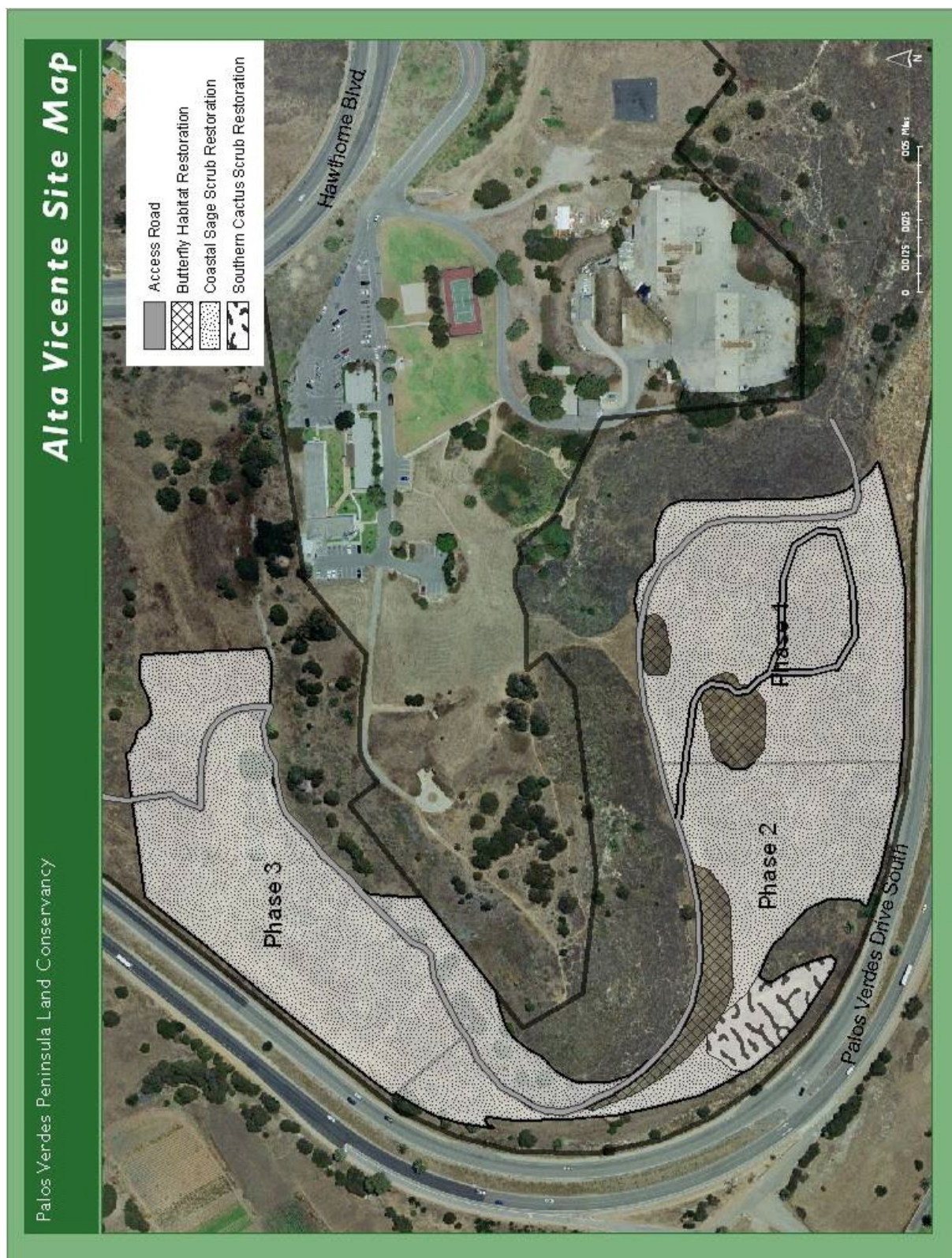


Figure 3. Map of Phase 3 and 4 Restoration Areas at Alta Vicente Reserve



2.2 PORTUGUESE BEND RESERVE RESTORATION

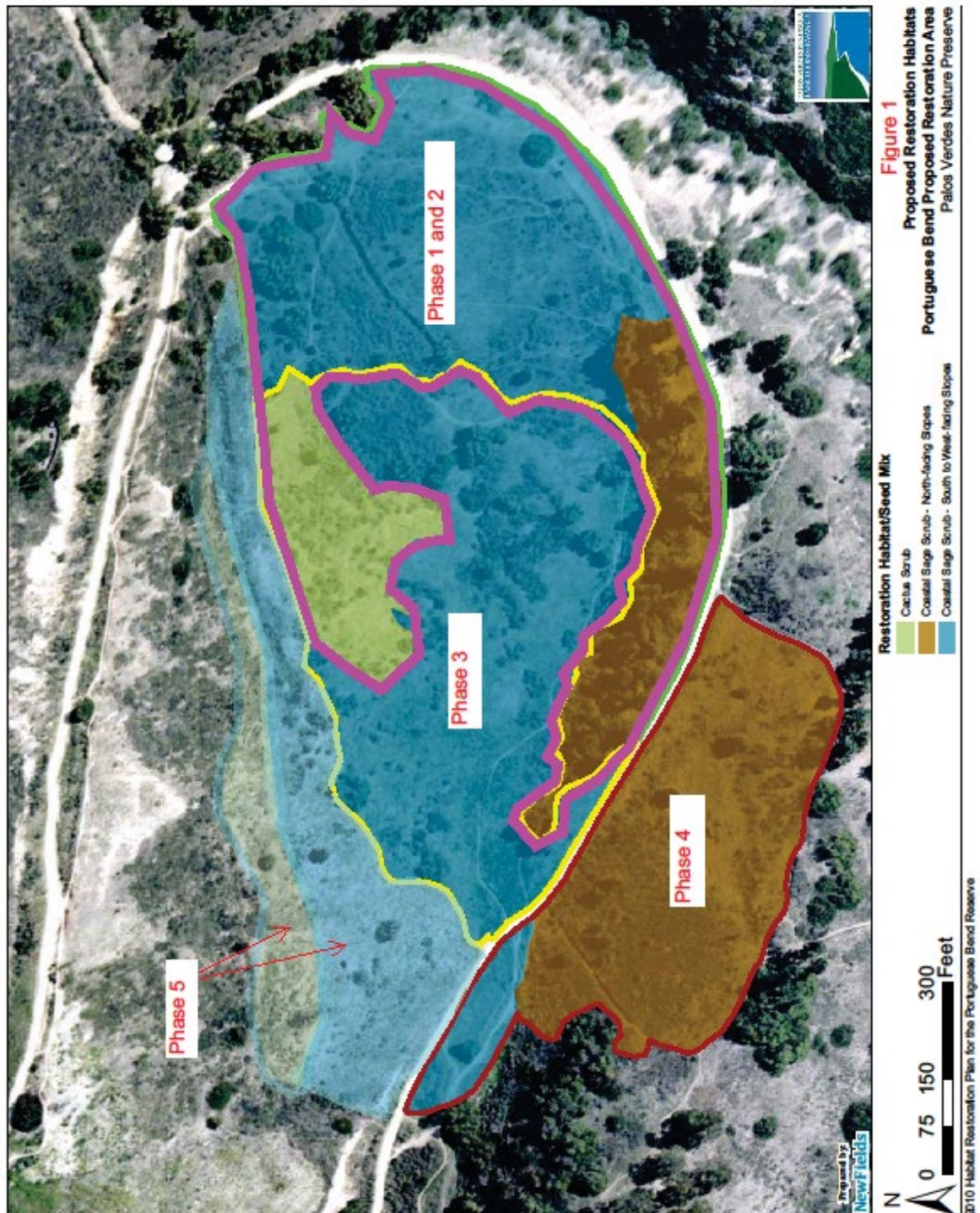
The habitat restoration plan for Portuguese Bend was to complete 25 acres in five phases (Table 3, Figure 4). Site preparation at Portuguese Bend began in February 2010. Field staff weeded (hand/herbicide) the burn area in 2010. In February 2011, goats were deployed to clear vegetation. Due to the high density of weeds, an additional year of weeding was implemented, and plants were installed on ten acres in fall 2012 (Phase 1 and Phase 2).

PVPLC implemented “grow and kill” prior to plant installation, and improve seed and plant survival after planting. Phases 1, 2 and 3 were irrigated with overhead sprinklers. Drip irrigation was installed for Phases 4 in fall 2014 and for Phase 5 in fall 2015, coinciding with the plant installation for those phases. Weed control is implemented in all phases for five years minimum after they are initiated. Table 3 provides the implementation schedule for Phase 1 through 5 at Portuguese Bend.

Table 3
Restoration Project Schedule for Portuguese Bend Reserve Phases 1, 2, 3, 4 and 5, based on the Portuguese Bend Reserve Habitat Restoration Plan

	Task	Date
PHASE 1 and PHASE 2	Begin site preparation, weed removal	Fall 2010
	Install irrigation	Winter 2012
	Final site preparation: weed and thatch removal	Fall 2012
	Installation: Seeding and planting	Fall 2012-Early Winter 2013
	Maintenance weeding	Winter 2013-Spring 2014
	Fill-in planting, as needed	Fall 2013-Fall 2014
	5-year biological monitoring and maintenance	Spring 2013-Spring 2017
	Phase one and two completion	2017, end of Year 5
PHASE 3	Site preparation, weed removal	Fall 2012-Fall 2013
	Final site preparation: weed and thatch removal	Fall 2013
	Installation: Seeding and planting	Fall 2013-Early Winter 2014
	Maintenance weeding	Winter 2014-Spring 2015
	Remedial seeding, as needed	Fall 2014-Fall 2015
	5-year biological monitoring and maintenance	Spring 2014-Spring 2018
	Phase three completion	2018, end of Year 5
PHASE 4	Site preparation, weed removal	Fall 2013-Fall 2014
	Final site preparation: weed and thatch removal	Fall 2014
	Installation: Seeding and planting	Fall 2014-Early Winter 2015
	Maintenance weeding	Winter 2015-Spring 2016
	Remedial seeding, as needed	Fall 2015-Fall 2016
	5-year biological monitoring and maintenance	Spring 2015-Spring 2019
	Phase 4 completion	2019, end of Year 5
PHASE 5	Site preparation, weed removal	Fall 2014-Fall 2015
	Final site preparation: weed and thatch removal	Fall 2015
	Installation: Seeding and planting	Fall 2015-Early Winter 2016
	Maintenance weeding	Winter 2016-Spring 2017
	Remedial seeding, as needed	Fall 2016-Fall 2017
	5-year biological monitoring and maintenance	Spring 2016-Spring 2020
	Phase 5 completion	2020, end of Year 5

Figure 4. Map of Phase I – 5 Restoration Areas at Portuguese Bend Reserve



2.3 ABALONE COVE RESTORATION

The habitat restoration project at Abalone Cove Reserve will restore 15.3 total acres of mixed coastal scrub (Table 4, Figure 5). The project began in 2019, by introducing goats to graze the Phase I area to reduce the cover of invasive plants and prepare the site for the upcoming habitat planting effort set to occur in 2020. At the end of 2019 and through the end of 2020, PVPLC crews removed non-native woody shrubs such as acacia and peppertree. Planting in phase I began in winter of 2019 following irrigation installation. Phase 2 planting began in fall of 2020 following site preparation and irrigation installation for that phase. The full restoration plan can be found in Appendix A.

Table 4
Restoration Project Schedule for Abalone Cove Reserve, based on the Abalone Cove Reserve Habitat Restoration Plan

	Task	Date
PHASE I	Site clearing	Fall 2019
	Installation of supplemental watering system	Spring 2020
	Invasive weed species control and grow-kill cycles	Fall 2019 – Summer 2020
	Planting container stock	Spring 2020
	Seed application	Fall 2020
	Monitoring and maintenance	To begin upon successful installation of plants
PHASE 2	Site clearing	Spring 2020
	Installation of supplemental watering system	Summer 2020
	Invasive weed species control and grow-kill cycles	Spring 2020 – Fall 2020
	Planting container stock	Fall 2020
	Seed application	Fall 2020
	Monitoring and maintenance	To begin upon successful installation of plants
PHASE 3	Site clearing	Spring 2021
	Installation of supplemental watering system	Summer 2021
	Invasive weed species control and grow-kill cycles	Spring 2021 – Fall 2021
	Planting container stock	Fall 2021
	Seed application	Fall 2021
	Monitoring and maintenance	To begin upon successful installation of plants

Figure 5. Map of Phase I – 3 Restoration Areas at Abalone Cove Reserve



3.0 ADDITIONAL RESTORATION ACTIVITIES IN 2020

PVPLC seeks additional funding, to perform restoration on more than the minimum five acres per year required in the NCCP/HCP. Several funding opportunities were pursued during the reporting period but no awards were received in 2020. Figure 6A-6C provides a site map for all restoration projects active in 2020, including the restoration at Alta Vicente, Portuguese Bend and Abalone Cove Reserves that fulfills the requirements of the NCCP/HCP Habitat Restoration Plan. A complete summary of all restoration work completed in the Preserve, along with maps of restoration sites, can be found in Table 5.

Table 5. PALOS VERDES NATURE PRESERVE RESTORATION PROJECTS THROUGH 2020

	Funding source	Location	Habitat Type	Acres	Status	Start Date	End Date
NCCP/HCP							
Alta Vicente	NCCP	Phase 1	CSS	4.5	completed	2007	2014
Alta Vicente	NCCP	Phase 1	PVB habitat	0.5	completed	2007	2014
Alta Vicente	NCCP	Phase 2	CSS	4	completed	2008	2015
Alta Vicente	NCCP	Phase 2	cactus scrub	0.5	completed	2008	2015
Alta Vicente	NCCP	Phase 2	PVB habitat	0.5	active	2008	2015
Alta Vicente	NCCP/LA County Grant	Phase 3	CSS	4.5	active	2016	2022
Alta Vicente	NCCP/LA County Grant	Phase 3	wildflowers	0.5	active	2016	2022
Alta Vicente	NCCP/LA County Grant	Phase 4	cactus scrub	1	active	2017	2023
Alta Vicente	NCCP/LA County Grant	Phase 4	PVB habitat	1	active	2017	2023
Alta Vicente	NCCP/LA County Grant	Phase 4	CSS	5	active	2017	2023
Portuguese Bend	NCCP	Phase 1 and 2	CSS	8	completed	2010	2017
Portuguese Bend	NCCP	Phase 1 and 2	cactus scrub	2	completed	2010	2017
Portuguese Bend	NCCP	Phase 3	CSS	5	completed	2012	2018
Portuguese Bend	NCCP	Phase 4	CSS	5	completed	2013	2019
Portuguese Bend	NCCP	Phase 5	CSS	4	completed	2014	2020
Portuguese Bend	NCCP	Phase 5	cactus scrub	1	active	2014	2020
Abalone Cove	NCCP	Phase 1	CSS	4.8	active	2019	2025
Abalone Cove	NCCP	Phase 2	Mixed CSS	4	active	2020	2026
Abalone Cove	NCCP	Phase 3	Mixed CSS	4.3	active	2021	2027
Additional Projects							
Abalone Cove	Coastal Conservancy, NFWF, SMBRC, USFWS		CSS	5	completed	2013	2016
Abalone Cove	Heritage Castle		CSS, Cactus Scrub,	1.5	Active	2020	2025

			Butterfly habitat				
Agua Amarga	USFWS		CSS	2	completed	2001	2003
Agua Amarga	USFWS		riparian	0.5	completed	2004	2005
Agua Amarga	LACSD		riparian	0.25	completed	2011	2016
Agua Amarga	D&M		riparian	0.2	completed	2012	2017
Alta Vicente	PVPLC	Alta Vicente Trail	Cactus Scrub	0.82	Completed	2018	ongoing
Filiorum	PVPLC	Pony	Cactus Scrub	3.08	Completed	2018	ongoing
Portuguese Bend	El Segundo Mitigation	Ishibashi	CSS and grassland	9.5	completed	2010	2015
Portuguese Bend	HCF grant	Ishibashi	CSS	0.25	completed	2012	2015
Portuguese Bend	HCF grant	Peppertree	CSS	0.5	completed	2012	2015
Portuguese Bend	Local Assistance Grant		cactus scrub	3	completed	2010	2011
Portuguese Bend	PVPLC	Peacock Flats	cactus scrub	0.86	Active	2018	
Three Sisters	LAWA		CSS	13.3	completed	2007	2013
Three Sisters	LAWA		grassland	7.7	completed	2007	2013
Three Sisters/McCarrell's Canyon	Coastal Conservancy		riparian	0.5	completed	2009	2012
Three Sisters/McCarrell's Canyon	Coastal Conservancy		CSS	2	completed	2009	2012
Three Sisters	PVPLC	McCarrell Canyon Trail	Cactus Scrub	2.3	completed	2018	ongoing
Vicente Bluffs	Coastal Conservancy		coastal scrub	2	completed	2009	2014
Vicente Bluffs	PVPLC	Adopt-a-Plot	ESB habitat	0.1	active	2016	ongoing

TOTAL	115.50
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* NCCP Funding Sources include a combination of sources including the City of Rancho Palos Verdes Management Agreement, community contributions, and grants to name a few.

FIGURE 6A. PALOS VERDES NATURE PRESERVE RESTORATION THROUGH 2020

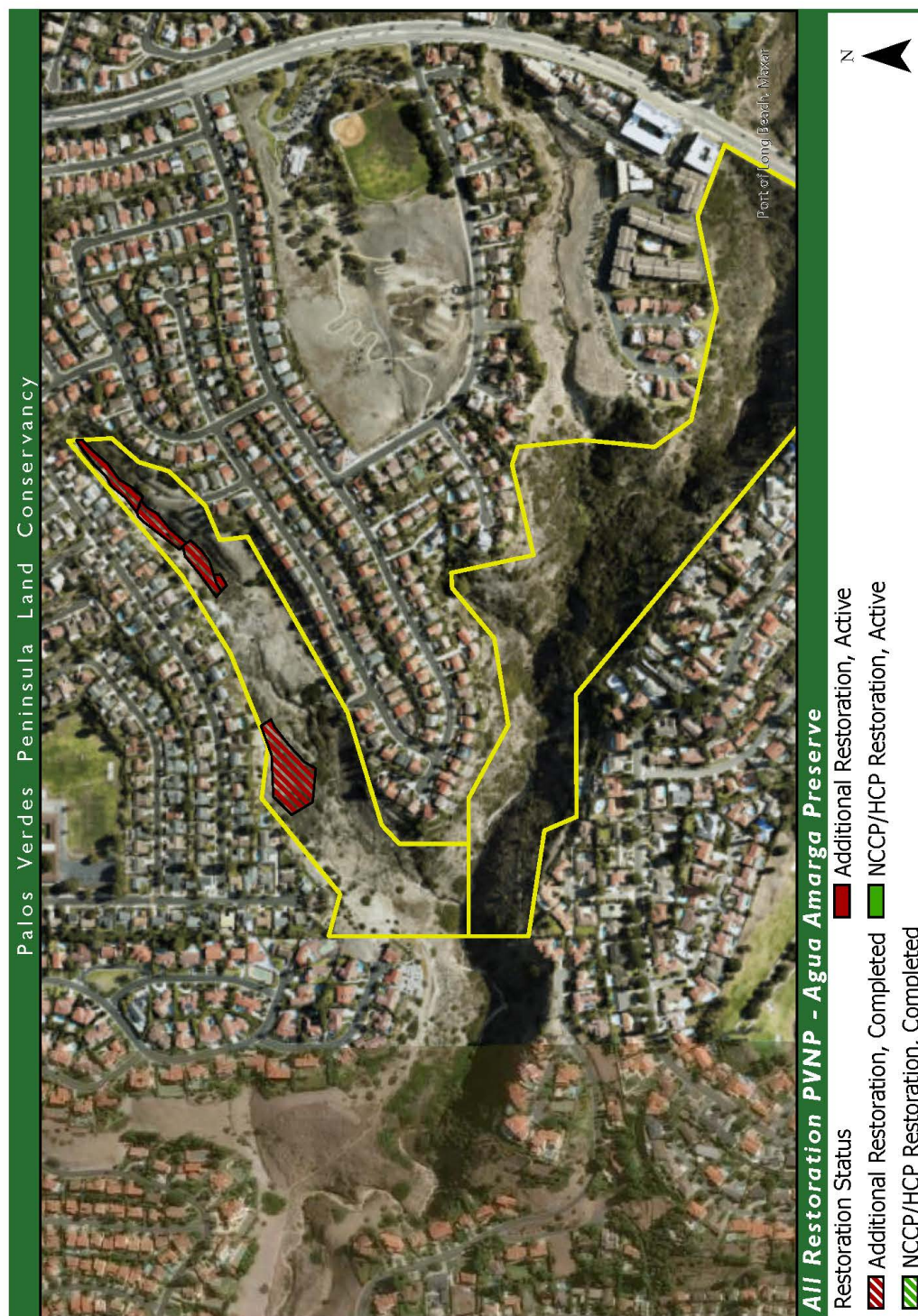
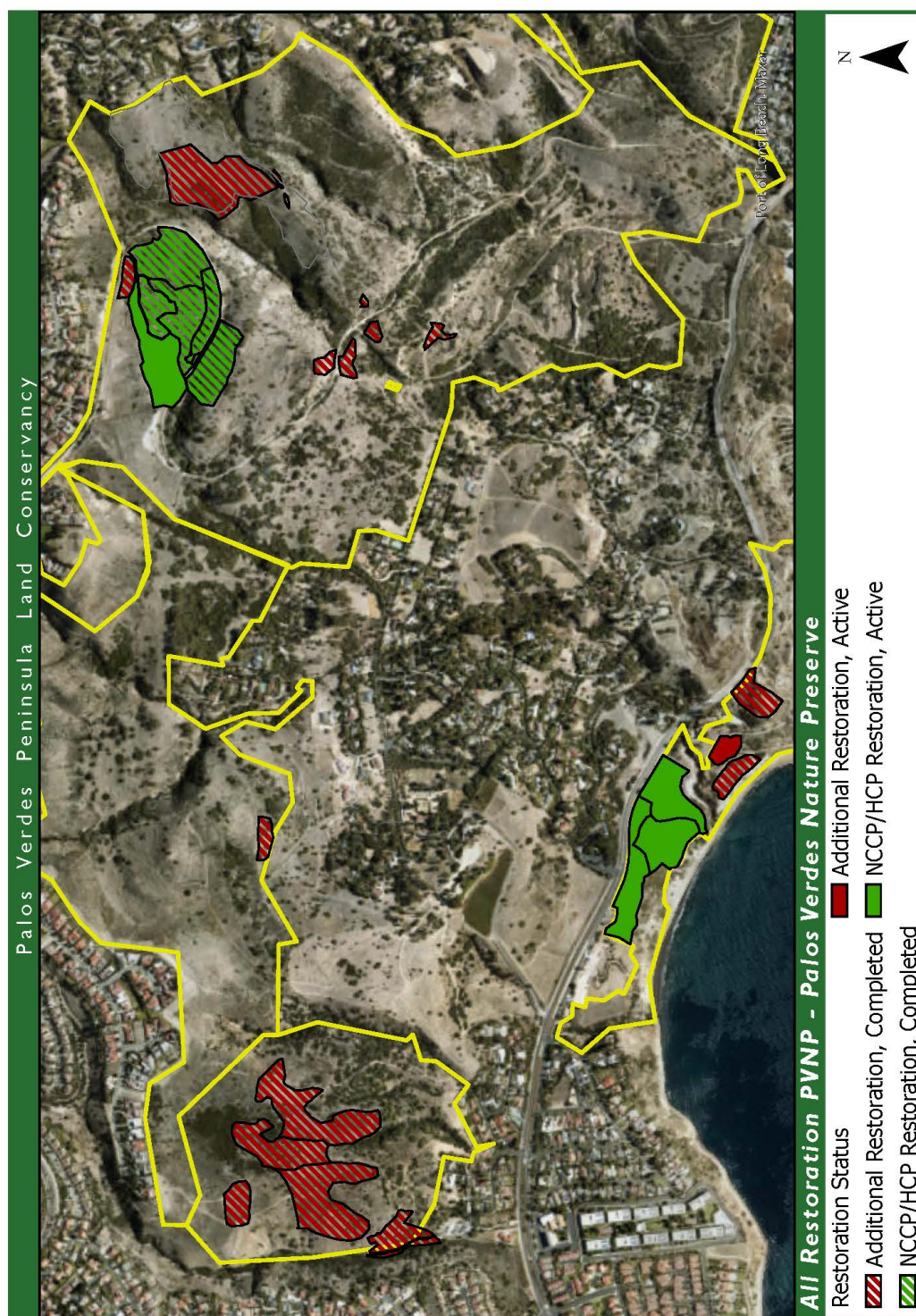


FIGURE 6B. PALOS VERDES NATURE PRESERVE RESTORATION THROUGH 2020



FIGURE 6C. PALOS VERDES NATURE PRESERVE RESTORATION THROUGH 2020



3.1 ABALONE COVE

In 2015, illegal grading took place in the Abalone Cove Reserve. The city took action working closely with the US Fish and Wildlife Service to create a mitigation plan for the area. Project planning and design began and in 2019, site preparation started with the removal of non-native species. Irrigation installation and planting occurred in 2020 followed by site maintenance. Site maintenance is set to occur for 5 years along with monitoring.

3.2 AGUA AMARGA

In 2012, an additional mitigation project (D&M Eight LTD) funded the planting of 147 riparian plants at Lunada Canyon. The plants were installed in January 2014 and irrigated with a drip irrigation system. Severe rains in 2014 caused torrential stream flows that removed some of the installed plants. PVPLC installed replacement plants and monitored the site's recovery in 2015, 2016, 2017, and 2018. The final report was submitted in 2019. Continued maintenance occurred at the site in 2020 with light weeding and trash cleanup in the riparian zone.

3.3 VICENTE BLUFFS

In June 2008, a grant agreement was signed with the State Coastal Conservancy to provide habitat restoration at Vicente Bluffs Reserve. PVPLC restored three acres of coastal bluff scrub and El Segundo blue butterfly habitat by removing acacia, pampas grass and ice plant, and installing container plants with coastal bluff scrub and El Segundo blue butterfly host plants. PVPLC added plants to this site in 2013, 2014 and 2015 to fulfill the grant goals. Since then, volunteers have continued the effort to plant host plants and remove weeds through 2020 in order to expand habitat area for the El Segundo blue butterfly.

3.4 PORTUGUESE BEND

In 2012, PVPLC received funding from the Habitat Conservation Fund to create trail-side habitat consisting of coastal sage scrub and cactus scrub to close unauthorized trails. The closeout of this grant occurred in 2018. PVPLC continues to monitor the successful completed work and maintain closures on unauthorized trails.

3.5 FUEL LOAD REDUCTION PROJECT

In the summer of 2019, PVPLC proposed a fuel load reduction project to the city of RPV which consisted of the removal of 23 acres of Acacia (*Acacia cyclops*) shrubs and 15 acres of non-native mustard. This approved project occurred in three locations in the Portuguese Bend Reserve near Portuguese Canyon and in the southern area of the preserve near Narcissa drive.

Large Acacia shrubs were cut, chipped and taken offsite where possible. PVPLC is monitoring the areas of Acacia removal to treat any regrowth and to remove any seedlings. Goats were used in the San Ramon Reserve to reduce the large stands of non-native brush along the San Ramon Trail. In the winter of 2019, a second project was proposed to continue with the removal of Acacia and the mowing of mustard. A proposed 31 acres of high density Acacia stand removal and 16 acres of mowing was planned for Portuguese Bend, Forrestal, Vicente Bluffs, Filiorum, Three Sisters, and San Ramon for 2020. Locations were chosen based on surrounding vegetation types and native plant observations below the invasive species canopies. Due to access issues, stand density and native plant cover, only 14 acres of the Acacia were removed and 10.8 acres of mustard were mowed throughout 2020. Large stands of native plants were uncovered below the invasive species. PVPLC is monitoring these locations for Acacia regrowth and treating as needed.

The full details of the Acacia removal and fuel load reduction project can be found in the Targeted Exotic Removal Program for Plants, Appendix D.

4.0 MONITORING

4.1 HABITAT RESTORATION MONITORING

PVPLC's stewardship staff conducted surveys at the restoration sites throughout the Preserve including quantitative vegetation transects, qualitative vegetation assessments and photo point monitoring. Vegetation transect surveys were conducted using standardized methods (line intercept and CNPS Rapid Vegetation Assessment) that provide data on the cover of native and non-native plants in the habitat in order to evaluate success against criteria as determined in the habitat restoration plans. Quantitative point-intercept transect surveys are conducted in Year 3 and Year 5 after planting, whereas qualitative rapid vegetation assessments are conducted in Years 1, 2 and 4. In 2020, restoration monitoring was conducted at Alta Vicente and Portuguese Bend Reserves. Detailed monitoring reports are in Appendix B.

At Alta Vicente, the plants in all phases of the restoration area are healthy and growing. The cactus scrub has met success criteria. The coastal sage scrub in Phase 1 and 2 has achieved success criteria of 50% native plant cover. Over the years, PVPLC has adapted its approach to restoration and resulting low percent cover by increasing plant density and utilizing drip irrigation instead of overhead sprinklers in subsequent restoration projects. The Palos Verdes blue butterfly habitat has not met the success criteria (>10%), due to low numbers of host plants along either of the transects (2% and 6% qualitatively). In 2021 staff will continue to focus on controlling weeds on a regular basis to decrease competition and increase bare ground for seed germination. Targeted soil disturbance will also occur to stimulate early successional host plant species germination. PVPLC will continue to observe and control weeds in Phase 1 and Phase 2 to observe the rate of restoration and monitor butterfly habitat transects, but will stop monitoring CSS habitat transects

since they are beyond Year 9 of restoration and are meeting qualitative measurements. Phase 3 was monitored for its Year 3 analysis in 2020. Using quantitative methods (CNPS Rapid Vegetation Assessment Method) coastal sage scrub and wildflower habitats were found to be at or just below Year 3 goals with native cover. Two new Coastal Sage Scrub monitoring transects were established in Phase 3 and were found to be 38% (AV7) and 42% (AV8). Phase 3 is believed to be on track to meet year 5 success criteria. The wildflower restored areas (Year 3) and Phase 4 (Year 2) were monitored qualitatively and are believed to be approaching success criteria in CSS habitat areas (40%).

At Portuguese Bend, Phase 1 and 2 were installed the same year (2012), to allow for an additional year of weed control at the site prior to planting. Therefore, they both represent Year 8 after plant installation for the 2020 monitoring. Plants were healthy, and recruitment from seed was observed at the site, however several transects within coastal sage scrub habitat (north and south facing) of Phase 1 and 2 continued to struggle to meet success criteria. This is likely due to now-discontinued restoration methods of overhead irrigation and sparse planting arrays. After meeting success criteria after the qualitative monitoring, transects PBI, PB2 and PB3 will not be monitored again in the future. The cactus scrub restoration in Phase 1 and 2 had already met success criteria in 2018. In Phase 3, native plant cover achieved quantitative success criteria achieving Year 5 standards in 2018. In Phase 4 (Year 5) quantitative and qualitative measurements describe this transect as meeting criteria for both native and non-native plant cover in 2018 and transect PB7 (Phase 4) will be removed from future monitoring activities. In Phase 5 CSS habitat (PB8) both quantitative and qualitative methods were used to monitor the habitat. PB8 was found to have a native plant cover of 81% quantitatively and 58.5% qualitatively. Phase 5 transect PB8 has met success criteria and will not be surveyed in 2021 or beyond. The cactus scrub habitat transect, PB9 (Phase 5) restoration was evaluated against success criteria in 2020 and was surveyed using both quantitative (point intercept) and qualitative (CNPS Rapid Vegetation Assessment) methods. Quantitative measurements describe this transect as meeting criteria for both native and non-native plant cover in Year 4 monitoring, however qualitative measurements describe this transect as not passing due to cactus species (5%) not meeting success criteria due to its slow growth. The transect PB9 will be monitored in 2021 (Year 6) using quantitative and qualitative methods. PVPLC conducted infill planting in cactus scrub areas in 2019 in order to meet year 5 success criteria in 2020 (Year 5).

4.2 COVERED SPECIES MONITORING

The NCCP/HCP requires surveys for covered species on the Preserve every three years. The next report on the status of covered plant species, California gnatcatcher, and cactus wren will be completed in 2021 for the 2019-2021 reporting period. The surveys for El Segundo blue butterfly have been completed for this reporting period and will be conducted next in the 2022-2024 comprehensive report period.

The draft NCCP/HCP includes a total of six covered plant species. They are aphanisma (*Aphanisma blitoides*), south coast saltscale (*Atriplex pacifica*), Catalina crossosoma (*Crossosoma californicum*), island green dudleya (*Dudleya virens* ssp. *insularis*), Santa Catalina Island desert thorn (*Lycium brevipes* var. *hassei*) and woolly seablite (*Suaeda taxifolia*). Surveys for covered plant species will be triggered by precipitation that totals at least 9.75 inches (75% of the annual average), or the last year of the comprehensive reporting period. The survey for covered plants was conducted in 2019 due to the adequate precipitation levels. The Covered Plant species report will be available in the 2019-2021 cumulative report.

4.3 REINTRODUCTION MONITORING RESULTS

Reintroduction monitoring will take place in 2021 for the two areas in the PVNP that Palos Verdes Blue Butterfly (PVB) were released in 2020. The PVB coalition decided that the habitat at Alta Vicente Reserve and Filiorum Reserve exhibited adequate habitat for releases in April of 2020, after site visits to various historical PVB locations.

4.4 COVERED PROJECT/ACTIVITY TRACKING

PVPLC provided monitoring and consultation for 14 projects in 2020. Three of those 14 projects were expected to have impacts to the habitat and only 1 of those projects was completed in the reporting period for this report. City staff and PVPLC continued to work on updating a Preserve Project Form for any projects occurring within the preserve. The form includes a comprehensive summary of the NCCP/HCP covered species regulations and minimization measures for covered projects and activities that serves as a guide for anyone completing projects in the preserve. PVPLC and RPV staff coordinated site visits with all parties proposing projects in the preserve and assisted in filling out the form where needed. Minimization of biological resource impacts were discussed at every meeting and most projects were able to avoid any impacts. Continued communication and coordination is essential for impact minimization for projects.

In the summer of 2020, the PVIC trail coastal bluff fence replacement was scheduled to start. The project consisted of the removal of old metal and wooden fencing on the coastal side of the trail and replacement with concrete precast ranch railing. The project was completed by the fall and PVPLC staff met on site before, during and after the project to document any impacts to the surrounding habitat. Those impacts are documented in Table 6 and in the RPV NCCP Habitat Loss Tracking table containing information through 2020 in Appendix C.

In November of 2020, a water main belonging to Cal Water broke and drained onto Vanderlip Trail. The trail was heavily eroded and closed for repair. Various site visits worked out the best solution to the project with minimal impacts to the preserve. The impacts were documented pre and post work and PVPLC coordinated closely with the contractor during the project duration. Since the project was finished in 2021, any impacts will be reported in the 2019 – 2021 Comprehensive Annual Report.

In December of 2020, Bellfree Contractors was contracted to work on water diversion features along Burma Road and Water Tank Trail. Areas of concern were flagged by PVPLC staff and the locations of water diversion swales were adapted to minimize any impacts to the preserve. Since the project was finished in 2021, any impacts will be reported in the 2019 – 2021 Comprehensive Annual Report.

Section 9.3.1 of the NCCP/HCP requires that habitat annual tracking take place accounting for acreage, type, and location of habitat and species conserved or lost within the Plan Area.

Table 6. Habitat Impacts in the PVNP in 2020

Date	Project	Impact	Location and Vegetation Type	Size
July – September	PVIC Trail Coastal Bluffs fence replacement	Native plants were removed or trimmed. No host plant was impacted	Vicente Bluffs along Seascapes Trail; Coastal Sage Scrub	.001
December	Burma Road Erosion Project	Will be reported in 2021 Annual Report		-
December	Vanderlip Water Main Break Repairs	Will be reported in 2021 Annual Report		-

5.0 UTILITY AND CONTRACTOR ACCESS

Protocols are currently in place to ensure that utilities and contractors accessing the Preserve follow guidelines to implement minimization measures and remain on permitted trails to avoid damaging the habitat. PVPLC is collaborating with the City to create more effective protocols and outreach techniques. For example, a Preserve Project Form helps communicate all aspects of contractor, City, and PVPLC projects that are planned to take place in the preserve. Additionally, a Preserve Access Protocol will be developed after adoption of the NCCP/HCP to address where authorized vehicles may travel in the Preserve. The City also hosts an annual Utility Meeting to receive updates on upcoming projects throughout the City and provide reminders for protocols to follow while conducting work in the Preserve. The Preserve Project Form was presented at the Utility Meeting and sent out to the participating agencies.

6.0 TARGETED EXOTIC REMOVAL PROGRAM FOR PLANTS

The Targeted Exotic Removal Program for Plants (TERPP) is an element of the Preserve Habitat Management Plan for the NCCP/HCP that requires the annual removal of exotic plant species of twenty individual populations or five acres in the Preserve. The TERPP provides a protocol for ranking the degree of threat to native vegetation, the feasibility of eradication, and the invasiveness of each exotic species found in the Preserve. Populations of exotic plant species are then targeted for removal based on the results of the ranking outcome.

In 2020, PVPLC met the objectives for the TERPP program by treating approximately 14 acres of *Acacia cyclops* (Coastal Wattle) throughout the Palos Verdes Nature Preserve. Mowing of the highly invasive *Brassica nigra* (Black Mustard) also took place at three locations totaling 10.8 acres. *Acacia* seeds can persist in the soil for an indefinite amount of years, and treatment needs to be repeated for several years to successfully control these species on the Preserve. *Acacia* are very serious invasive species, and their expansion in the Preserve must be controlled. Therefore, many of the TERPP sites will be treated for many years under the same site name.

All of the populations previously targeted by TERPP continue to be monitored yearly for new germination or regrowth. The species targeted by TERPP tend to have long lived seedbanks and also tend to regrow without stump treatments. In 2020, due to the immense workload, previously treated sites were not visited. Continued monitoring of all known populations will continue in 2021 to minimize the return of targeted exotic species those locations and to achieve eradication.

The full details of the TERPP accomplishments for 2020 can be found in Appendix D.

7.0 FUEL MODIFICATION

Fuel modification is the clearing or thinning of vegetation in areas that occur immediately adjacent to residential structures and roads as mandated by County Department of Agriculture Weights and Measures. As land owner, the City is responsible for brush clearance within the Preserve (with the exception of Lunada Canyon owned by PVPLC), to provide an appropriate level of fire protection, emphasizing the protection of public safety in the urban-wildlife interface areas while minimizing environmental impacts of fire suppression and control. PVPLC has collaborated with RPV to develop clear protocols to ensure that fuel modification takes place in compliance with the NCCP/HCP.

In 2020, RPV staff continued to successfully collaborate with PVPLC to ensure that bird surveys were completed prior to fuel modification activities and sensitive habitat areas were minimized. Stewardship Associate Biologist, Austin Parker, worked with RPV to establish clear nesting bird survey and reporting protocols. All sites that had observed nesting birds within the Fuel Modification Zone or within an NCCP/HCP determined buffer area (300ft for nesting birds and

500ft for nesting California gnatcatchers and cactus wrens), were postponed until after the bird breeding season (February 15th – August 31st). During the bird surveys, any natural resource concerns, including animal dens or rare plants, were flagged and the city was notified in each report. Maps of each site with GPS coordinates of any concerns were provided in each report.

The 20-acre Lunada Canyon property located within the larger Agua Amarga Reserve is owned by PVPLC, which maintains brush clearance requirements. All of these requirements were met throughout 2020. No other fuel modification areas within the Preserve fall under the responsibility of PVPLC.

As of the writing of this report, expanded fuel modification as mandated by the County Department of Agriculture Weights and Measures is being determined for the city owned properties. Any new fuel modification zones and/or impacts will be assessed and reported in the Comprehensive Management and Monitoring Report for 2019 – 2021.

8.0 COMMUNITY SCIENCE AND EDUCATION

The Preserve is an ideal setting for an outdoor laboratory because it provides scientists and students with access to a variety of habitat types and wildlife. Student research topics are often chosen to answer questions informing improved restoration practices and to better understand the local ecology. Community Science volunteer programs assist the PVPLC with annual monitoring of the presence and abundance of cactus wren and mesopredators (coyote, grey fox and red fox) as part of the NCCP/HCP Predator Control program. A report of 2020 research projects and Community Science monitoring programs is located in Appendix E.

9.0 TRAIL MANAGEMENT AND MONITORING

9.1 PRESERVE TRAILS PLAN

The Preserve Trails Plan is a part of the City's Public Use Master Plan (PUMP), which is a NCCP/HCP-covered activity, and must follow certain avoidance measures and guidelines to protect covered species. The City Council approved the latest updates to the PUMP in March 2013 after the designation of trails in Filiorum Reserve. A revision to the PUMP is required in order to adopt trail alignment and user designations for Malaga Reserve, and incorporate other changes including the Preserve Access Protocol and other minor trail amendments. The PUMP will be revised in 2022 with public input and City Council approval is required.

9.2 TRAIL MANAGEMENT

PVPLC continues to update trail maps, print and place map brochures at major trailheads, and post them on PVPLC's website. Recently, QR codes were installed at brochure boxes to provide a quick link to the maps on a personal device. PVPLC regularly refreshes carsonite signs and

decals in the Preserve to better delineate trails. A full-time PVPLC field operations technician focuses on unauthorized trail closures, trail delineation and graffiti removal. With the help of the Volunteer Trail Watch, a weekly report is submitted to PVPLC and City staff, where tasks are prioritized and addressed on the preserve. The following represent the PVPLC's accomplishments in 2020 for trail management:

Area Closed Signs Installed	2 signs
Decals Replaced	88 decals
Graffiti Removed	14 locations
New/Repaired Carsonite Markers	8 markers
Trail Maintenance Projects(Brush/Weed Clearance)	434 projects
Spur Trail Closures (New/Old)	71 closures
Trail Crew Events (Maintenance Projects and Classes)	9 events
Rapid Response Volunteer Days	16 events

With support of grants from Habitat Conservation Fund, PVPLC worked with the City of Rancho Palos Verdes to design a master plan for Preserve signage to include designs for primary trailhead markers, interpretive panels and regulatory signage (Appendix F). The signage plan was approved by City Council in July 2016. In 2017, the Los Angeles County Regional Parks and Open Space District provided funds to implement the new Preserve signs at Alta Vicente Reserve and HCF funded signs at Portuguese Bend Reserve and Agua Amarga Reserve. In 2018, signage was installed at Vicente Bluffs, Vista del Norte and San Ramon Reserves and in 2019, signage was installed at Filiorum, Forrestal and Three Sisters Reserves. In 2020, partial signage was installed at Malaga Reserve and Ocean Trails Reserve. The remaining Reserve signs are planned to be installed in 2021-2022.



9.3 UNAUTHORIZED TRAIL CLOSURES

Implementing the Preserve Trails Plan involves closing many social trails that were previously in use and are no longer authorized in the PUMP. PVPLC's priorities are to close newly created unauthorized trails before they become established and damage habitat. PVPLC has also developed techniques to reduce trail widening, particularly at trail intersections. Maintaining closures of unauthorized trails is intensive work, which requires continuously reinforcing and replacing trail closures when signage, branches, and plants are removed. Rapid Response Team volunteers assist in maintaining closures by reclosing sections on a regular basis. Additionally, the Volunteer Trail Watch assists with some of these tasks when they encounter them.

In 2020, focal areas were Forrestal Reserve (Flying Mane Trail and Pirate Trail); Portuguese Bend Reserve (Rim and Burma Rd Trail); Alta Vicente Reserve (Alta Vicente Trail and Prickly Pear Trail); Abalone Cove Reserve (Abalone Cove Trail and Sea Dahlia Trail); Three Sisters Reserve (Barkentine Trail and Three Sisters Trail) San Ramon Reserve (Wanderer Trail and Switchback Trail) and Filiorum Reserve (Gary's Gulch Trail and Kelvin Canyon Trail). (Appendix F).

9.4 TRAIL REPAIR

The PVPLC volunteer Trail Crew assists in much of the trail work on the Preserve. A complete summary of the PVPLC Volunteer Trail Crew Program's accomplishments can be found in the Volunteer Involvement section of the report (Appendix G). PVPLC staff or RPV staff including Open Space Management, Recreation and Parks, and Public Works personnel were also involved in trail enhancements. Trail projects that may be completed in the future, based on funding, are listed in Appendix F.

9.5 TRAIL MONITORING

PVPLC stewardship staff and volunteers from the Volunteer Trail Watch (VTW) Program conducted trail monitoring to educate trail users and to report maintenance and safety issues to City and PVPLC staff during the reporting period. The mission of the Palos Verdes Nature Preserve Volunteer Trail Watch Program is to serve as eyes and ears of the City and the Palos Verdes Peninsula Land Conservancy with a view to 1) protect the natural resources of the Palos Verdes Nature Preserve, including the flora and fauna as well as the geology, topography and scenic landscape, and 2) enhance the safety of, and promote an enjoyable experience for all Preserve visitors. Volunteers educate the public about Preserve rules and etiquette; and enter observations of infractions into a web portal (i.e. dogs off leash, off-trail activity, user on non-designated trail, etc.) to allow enforcement personnel and Preserve managers to track time and location of these activities. In 2020, volunteers dedicated 3895 hours to the program through training and field implementation activities, and reporting observations through the web portal for record keeping. The VTW usually meets every quarter to provide additional training and information to share with Preserve visitors, but did not meet in 2020 due to Covid-19 restrictions. Additional details of the VTW program are described in detail in the Volunteer Annual Report section of the report (Appendix G).

In 2018, PVPLC was awarded a California Department of Fish and Wildlife Local Assistance (LAG) Grant. The grant supports the implementation of the Trail Baseline Monitoring Program required by the NCCP/HCP to monitor and manage trail widening impacts to habitat. The initial tasks of the grant were started in 2019 and were completed by the end of 2020 with a report being submitted in 2021. The report will be available in the Comprehensive Management and Monitoring Report for 2019 – 2021.

9.6 SUMMARY OF NIGHTTIME USE

The City of RPV implements a permitting process for night hikes in the Preserve. In 2020, no night hikes were permitted due to the Covid-19 restrictions.

9.7 PUBLIC USE IMPACTS AND RECOMMENDATIONS

Continued spur trail creation is a major concern especially during bird breeding season and when they occur in high quality habitat areas or near documented NCCP/HCP covered species. The PVPLC Field Operations Specialist (FOPS) is a full time position that addresses many of the reported issues in a timely manner alongside with the Rapid Response program and RPV's Open Space Management department. Continued support for these positions and programs is essential in addressing issues before they become long term and irreversible problems. The FOPS position is 80% reactive to problems while the Volunteer Trail Watch, being proactive, attempts to educate users about preserve rules before issues occur. The RPV Park Rangers enforce the rules with warnings and citations as needed. It is recommended that these groups continue to be fully staffed and provided the resources needed to minimize public use impacts with their combined efforts. Continued coordination and planning in the City-VTW bimonthly meetings is essential so that target areas are addressed and impacts are minimized. It is also recommended that regulatory signage continue to be maintained and repaired of any vandalism. New locations for regulatory signage should also be identified where needed.

10.0 VOLUNTEER INVOLVEMENT

PVPLC is a non-profit organization that relies heavily on the support of community involvement to perform many of the tasks necessary to manage the Preserve. In 2020, volunteers contributed over 12,391 hours of service totaling \$337,035.20 of in-kind service in support of conservation, restoration, education and management of the Palos Verdes Nature Preserve. The 2020 Volunteer Annual Report detailing the volunteer programs is located in Appendix G.

11.0 CONTRIBUTIONS TO PRESERVATION

In 2020, no new acquisitions or donations to the preserve towards the preservation of habitat lands was received.

12.0 EVALUATION OF MANAGEMENT ACTIVITIES

In the 2006 initial Management and Monitoring Report for the NCCP/HCP, potential threats and disturbance factors were identified for each NCCP/HCP covered species occurrence. This section gives recommendations for any improvements needed to be made to current management or enforcement activities in order to ensure long-term sustainability of Covered Species and their habitats.

Threats/disturbance factors that were identified in the 2006 initial Management and Monitoring Report for the NCCP/HCP-covered plants species include trails/trampling, invasive plants, erosion (coastal bluff and canyon), and herbivory. NCCP/HCP-covered wildlife species threats/disturbance factors include trails, invasive plants, proximity to houses, parks, or other developed areas, potential for predation from feral cats and red fox, potential nest parasitism from brown headed cowbirds, and agricultural or disking activities. A summary of management recommendations that have been implemented and improvements that can be made are listed below:

Trails: The initial plan recommends that trails not appropriate for the preserve (e.g., redundant trails, unauthorized trails, etc.) be closed following recommendations set in the Public Use Master Plan (PUMP). Following the PUMP document, redundant and unauthorized trails have been closed and continue to be monitored for use. Appropriate signage and trail restorations has been implemented and assessment and monitoring for future unauthorized closure projects. Continued education of the public on authorized trail use is recommended as well as continued enforcement from rangers.

Invasive Plants: The initial plan recommends the removal of invasive plant species in accordance with the TERPP and Habitat Restoration Plan since invasive plants pose a substantial threat to the integrity of the vegetation communities of the PVNP. The TERPP program continues to be implemented yearly, controlling and eradicating invasive plant populations, while invasive species control occurs within all restoration project sites. PVPLC continues to pursue funding opportunities to go above and beyond in invasive species removal. Staff continues to monitor and document new occurrences of invasive species within the PVNP and surrounding areas.

Erosion: The initial plan documented coastal bluff erosion throughout the PVNP as it pertains to habitat and conservation. While the majority of coastal bluff erosion was naturally occurring, some of the erosion problems were a consequence of unauthorized unstable coastal bluff trails. Recommendations were to establish replacement trails, removing invasive species on coastal bluffs, installing check dam or weirs and revegetating eroded slopes. PVPLC has worked on a variety of projects to address all recommendations and continues to monitor for erosion issues throughout the PVNP. In addition, trail delineation has been implemented in targeted areas to keep trail users away from erosive trails.

Herbivory: The initial plan recommends continued monitoring of this potential threat. As part of the Wildlife Tracking program and the Wildlife Camera Remote Monitoring project, rabbits and other mammals are documented. No rabbit population increases have been observed in the PVNP. PVPLC will continue to document rabbits and monitor covered plant species for impacts due to herbivory. In addition caging around new plantings has been implemented in certain areas to limit herbivory until plants reach maturity. This tactic can be implemented for covered plant species if impacts are observed.

Proximity to Houses, Parks, and other Developed Areas: The 2006 report recommends that edge effects due to proximity to houses, parks and other developed areas be monitored over the long term to determine if they are problematic and if so, to document where the problems are occurring. As part of PVPLC's annual Easement Monitoring, these edge effects are documented, and reported to the appropriate city department for follow up. PVPLC will continue to monitor for edge effects.

Potential Predation from Feral Cats and Red Fox: A Predator Control Plan was developed in accordance with the NCCP/HCP. Monitoring for red fox and feral cats continues and those occurrences are documented and reported in Triennial Comprehensive Report along with recommendations for predator control.

Potential Nest Parasitism by Brown-Headed Cowbird: Ongoing monitoring for cowbirds has continued throughout the preserve as part of the Predator Control Plan. No cowbirds have been observed within this reporting period.

Agricultural Land and Disking: Only one location of permitted agricultural land continues to operate within the PVNP. PVPLC coordinates throughout the year with the operator to minimize disturbance to covered species and to determine whether or not they are a source of non-native, invasive plant species. They have not been determined to be a source and work cooperatively with PVPLC. Land Disking has been phased out as a fuel modification tool within the preserve. Current weeding techniques include grazing or mechanical removal and are monitored to minimize disturbance and invasive species spreading into the preserve.

12.1 EVALUATION OF ENFORCEMENT ACTIVITIES

In 2019, the City of RPV created a Park Ranger program which replaced the Lomita Sheriffs contract for patrolling the preserve. Through this action, the City doubled its enforcement presence in the Preserve, while reducing costs. Park Rangers patrol the Preserve approximately 140 hours per week and provide public education, enforcement, and public safety services. In

2020, there were 18,900 user contacts, 1,465 parking citations, 118 notices to appear, and 153 calls to the Preserve Information and Reporting Line. Rangers also coordinated continuously with the LA County Sheriff's Department and LA County Fire Department on enforcement and public safety issues. Detailed Quarterly Preserve Enforcement Reports and Trail Counter Data can be found in Appendix H. PVPLC recommends that Park Rangers continue to work with PVPLC to target areas of concern where covered species have the greatest threats of impact. PVPLC proposed specialized training for Park Rangers on covered species, nesting areas and especially sensitive habitat areas. Continued communication is key in limiting any irreversible impacts.

12.2 EVALUATION OF FUNDING NEEDS

PVPLC would benefit from continued funding to control highly invasive species on the Preserve and continually battle back against unauthorized trails that damage habitat. PVPLC continues to apply for funding from federal, state and private sources to increase the amount of acreage restored for NCCP/HCP covered species.

12.3 EVALUATION OF ABILITY TO ACCOMPLISH RESOURCE MANAGEMENT GOALS

PVPLC, City staff and Wildlife Agency representatives successfully achieved the adoption of the final Draft NCCP/HCP in 2019. Wildlife agencies have issued federal permits while the state permit is pending. State and Federal wildlife agency permits are needed in order to give take authorization to the City to conduct projects in the NCCP/HCP area and Preserve.

PVPLC has been successful at completing restoration under the NCCP/HCP, monitoring NCCP/HCP covered species, and meeting the goals for targeted invasive plant removal. With the start of the Abalone Cove Restoration project at the end of 2019 and the continued maintenance of the previous restoration projects, more contiguous high quality habitat will be available throughout the Preserve. PVPLC recommends the continued assessment of a new restoration project site in 2021 so that planning and funding can begin. PVPLC also recommends the evaluation of areas where more Acacia can be removed and where dry mustard and non-native grasses can be mowed to enhance native habitats in order to support the natural recovery of covered species.

Concerns about habitat management in the future continue to include the ability to successfully close unauthorized trails and to prevent new trails from being created. Closing unauthorized trails is time consuming and expensive because of continuous vandalism, drought conditions and accessibility of impacted areas. PVPLC is taking information collected by staff and the VTW to coordinate with City of RPV staff, including City Park Rangers to help determine which areas need more enforcement and maintenance attention.

13.0 SUMMARY OF CLERICAL CHANGES AND CHANGES TO MONITORING/REPORTING

No clerical changes or changes to monitoring/reporting have been made to the NCCP/HCP. Additional sections added to this annual report and subsequent annual reports include Public Use Impacts and Recommendations; Contributions to Preservation; Report Certification Statement; Reintroduction Monitoring Results; Evaluation of Management Activities, Evaluation of Enforcement Activities; and a Summary of Clerical Changes and Changes to Monitoring/Reporting.

14.0 PALOS VERDES PENINSULA LAND CONSERVANCY BOARD AND STAFF

2020 Board Officers

Carolynn Petru, President
Rob Kautz, Vice President
Diana Bailey, Secretary
Rick Wallace, Treasurer

2020 Board of Directors

Bill Ailor
Lew Enstedt
Bob Ford
Allen Franz
Bill Glantz
Randy Harwood
Amy Morris
Dave Pilon
David Snow

2020 Staff (as of December 2020)

Executive Director

Adrienne Mohan

Office Administration

Jill Wittman, Administrative Assistant

Land Stewardship

Cris Sarabia, Conservation Director

Johnny Perez, Stewardship Manager

Austin Parker, Stewardship Associate

Eric Wolterding, Field Operations Specialist

Hugo Morales, Stewardship Technician Lead

Humberto Calderon, Stewardship Technician

Michael Heine, Stewardship Technician

David Olsen, Stewardship Technician

Neli Gonzalez, Nursery Technician Lead

Volunteer Program

Brittany Goldsmith, Volunteer Program Manager

Megan Wolff, Volunteer Coordinator

Education Program

Connie Smith, Education Director

Holly Gray, Education Program Manager

Alexandra Kovary-Turnsek, Nature Center Manager

Neil Uelman, Naturalist

Development

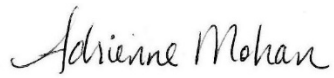
Susan Wilcox, Director of Development

Louise Olfarnes, Manager of Marketing Communications

Laura Lohnes, Development Associate

15.0 REPORT CERTIFICATION STATEMENT

I certify under penalty of law that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

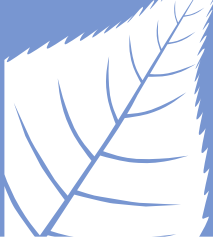


Adrienne Mohan
Executive Director

City Official
City of Rancho Palos Verdes

APPENDIX A

ABALONE COVE RESTORATION PLAN



Habitat Restoration Plan for the

Abalone Cove Ecological Reserve in the Palos Verdes Nature Preserve



FEBRUARY 2016

PREPARED BY:



**Palos Verdes Peninsula
Land Conservancy**
916 Silver Spur Road, Suite 207
Rolling Hills Estates, CA 90274

and



Dudek
605 Third Street
Encinitas, CA 92024

HABITAT RESTORATION PLAN
for the
Abalone Cove Reserve
in the
Palos Verdes Nature Preserve

Prepared for:

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FEBRUARY 2016

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
1 INTRODUCTION.....	1
2 EXISTING CONDITIONS	7
2.1 Site Description.....	7
2.2 Vegetation Communities	7
2.2.1 Coastal Sage Scrub	7
2.2.2 Mixed Coastal Scrub.....	8
2.2.3 Non-native Grassland.....	8
2.3 Geology and Soils.....	8
2.4 Special-Status Species	9
2.5 Non-Native Invasive Species.....	10
2.6 Additional Considerations	11
3 RESTORATION PROGRAM.....	15
3.1 Restoration Site Goals and Objectives.....	15
3.2 Habitats to be Established or Enhanced.....	16
3.2.1 Coastal Sage Scrub	19
3.2.2 Cactus Scrub	20
3.2.3 Mulefat Scrub.....	21
3.3 Habitat to be Enhanced	22
3.4 Revegetation Materials	23
3.5 Target Functions and Values	24
3.6 Time Lapse.....	24
4 IMPLEMENTATION PLAN	25
4.1 Rationale for Expecting Success.....	25
4.2 Preliminary Schedule	25
4.2.1 Site Preparation.....	26
4.2.2 Supplemental Watering System.....	27
4.2.3 Erosion Control.....	28
4.2.4 Plant Installation	28
4.2.5 Seed Application.....	28
5 MAINTENANCE PLAN.....	31
5.1 Maintenance Activities	31
5.2 General Habitat Maintenance Guidelines	32
5.2.1 Weed Control.....	32

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

TABLE OF CONTENTS (CONTINUED)

<u>Section</u>	<u>Page No.</u>
5.2.2 Supplemental Watering System	33
5.2.3 Clearing and Trash Removal	33
5.3 Schedule of Maintenance Inspections	34
6 MONITORING PLAN	35
6.1 Performance Standards	35
6.2 Monitoring Methods and Schedule	36
6.3 Monitoring Reports	37
6.4 Project Conclusion	37
7 REFERENCES.....	39

FIGURES

1 Regional Map	3
2 Vicinity Map	5
3 Existing Conditions	13
4 Site Photographs	17
5 Abalone Cove Restoration Area	29

TABLES

1 Non-Native Plant Species and Associated Cal-IPC Ratings	10
2 Proposed Coastal Sage Scrub Planting Palette (Approximately 3.5 Acres)	19
3 Proposed Cactus Scrub Planting Palette (1.1 Acres)	21
4 Proposed Mulefat Scrub Planting Palette (Approximately 0.2 Acre)	22
5 Preliminary Restoration Project Schedule	25
6 Performance Standards	36

APPENDIX

A Soil Test Results	
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Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

1 INTRODUCTION

This Habitat Restoration Plan (HRP) was prepared for the Abalone Cove Reserve within the Palos Verdes Nature Preserve (PVNP) located in the City of Rancho Palos Verdes, California (Figures 1 and 2). The Abalone Cove Reserve is one of ten ecological reserves within the approximately 1,400-acre PVNP. The PVNP is owned by the City of Rancho Palos Verdes and managed by the Palos Verdes Peninsula Land Conservancy (PVPLC).

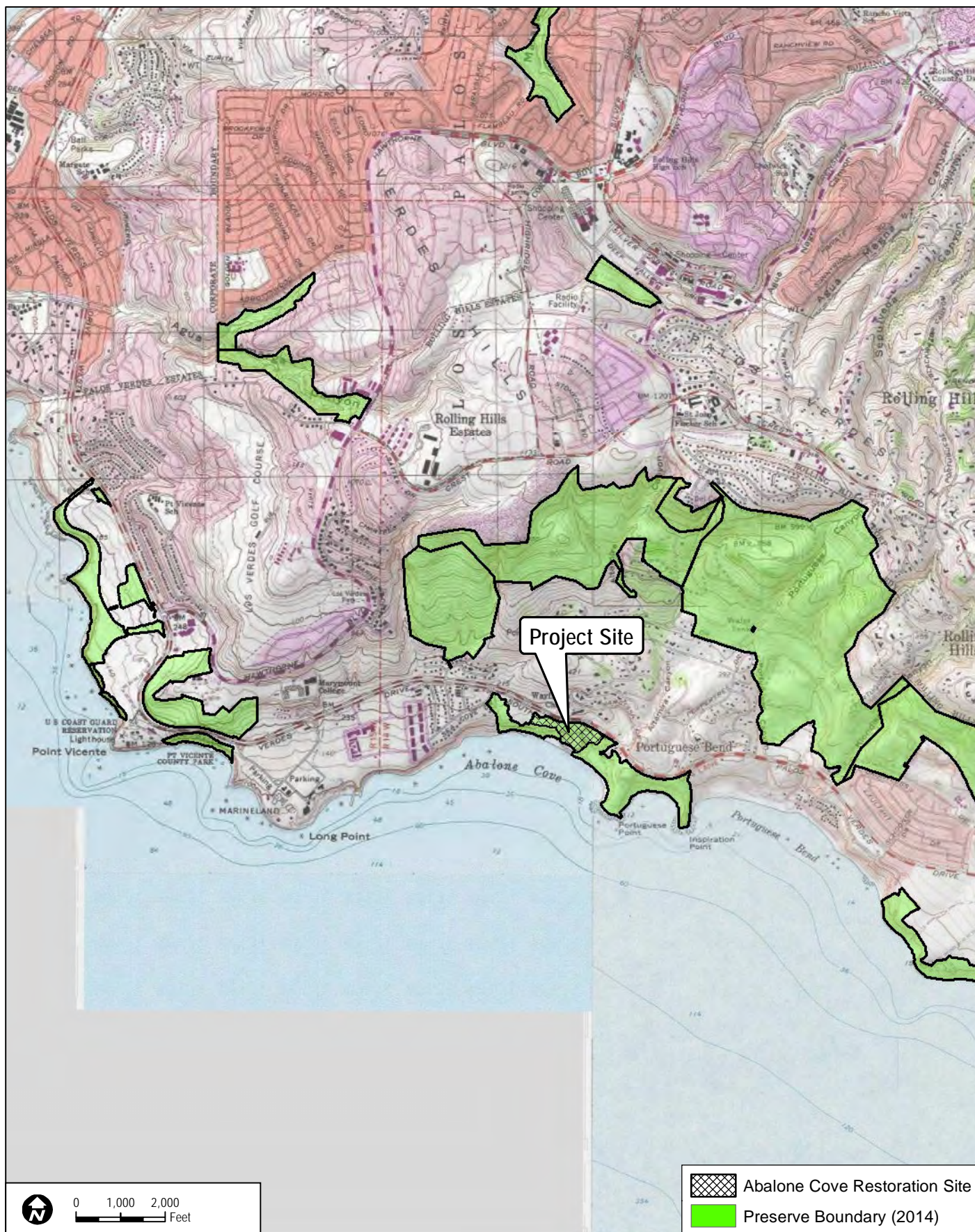
This HRP discusses implementing restoration of approximately 3.5 acres of coastal sage scrub, 1.1 acre of cactus scrub, 0.2 acre of mulefat scrub, and the enhancement of approximately 8.3 acres of mixed coastal scrub in a disturbed area of the Abalone Cove Reserve. Portions (approximately 2.2 acres) of the habitat enhancement area were identified for planting additional cactus. The HRP addresses restoration design, planting recommendations, installation procedures, maintenance requirements, monitoring methodology, and performance standards.

**Habitat Restoration Plan for the Abalone
Cove Reserve in the Palos Verdes Nature Preserve**

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Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

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DUDEK

9085

SOURCE: USGS 7.5-Minute Redondo Beach, San Pedro Series Quadrangles.

Habitat Restoration Plan for the Abalone Cove Ecological Reserve in the Portuguese Bend Nature Preserve

FIGURE 2
Vicinity Map

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

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Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

2 EXISTING CONDITIONS

2.1 Site Description

The Abalone Cove Reserve is located on the southern portion of the Palos Verdes Peninsula. The entire Abalone Cove Reserve is approximately 64 acres and is located south of Palos Verdes Drive South along the shoreline of the peninsula. There are two promontories, Portuguese and Inspiration Points, which bound the cove within the Abalone Cove Reserve. The proposed restoration area is located upslope from the Portuguese Bend Nursery School (Beach School) in the central part of the reserve.

2.2 Vegetation Communities

Plant communities and land covers within the Abalone Cove Reserve are typical of plant communities found in this region, exhibiting various levels of disturbance, but containing elements of the native plant communities. Vegetation mapping of the reserve was prepared by the PVPLC and the California Native Plant Society (CNPS) (PVPLC and CNPS 2010). According to the vegetation mapping conducted by PVPLC and CNPS, the proposed restoration area consists of California coastal sage scrub, mixed coastal scrub, and non-native grassland, comprised of several subtypes (e.g., alliances and associations). The existing vegetation communities present in the restoration/enhancement area are described below.

2.2.1 Coastal Sage Scrub

The coastal sage scrub on site was mapped by CNPS as *Encelia californica* association, *Encelia californica* alliance, *Encelia californica-Artemisia californica* association, and *Rhus integrifolia* (strongly dominant) association (PVPLC and CNPS 2010). Coastal sage scrub is composed of low, subshrubs approximately 1 meter (3 feet) high, many of which are facultatively drought-deciduous (Holland, 1986). Dominant shrub type varies across this vegetation type, depending on localized factors and levels of disturbance, but often includes California Sagebrush (*Artemisia californica*) and California Brittlebush (*Encelia californica*). In this community the shrub layer primarily forms a continuous canopy, but there are areas with a more open canopy, widely spaced shrubs, and fairly well-developed understory. Within the site non-native species, including black mustard (*Brassica nigra*), Russian thistle (*Salsola tragus*), wild oat (*Avena barbata*, *A. fatua*) and other non-native grasses have invaded the coastal sage scrub community.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

2.2.2 Mixed Coastal Scrub

The mixed coastal scrub on site was mapped by CNPS as disturbed *Rhus integrifolia* association, and urban trees (PVPLC and CNPS 2010). Though these areas are dominated by lemonadeberry (*Rhus integrifolia*) they are disturbed and contain many non-native shrubs and trees, including coastal wattle (*Acacia cyclops*) spiny holdback (*Caesalpinia spinosa*), and Phoenix palm (*Phoenix canariensis*).

2.2.3 Non-native Grassland

Non-native grassland within the project site was mapped by CNPS as cleared land, and California annual and perennial grassland macrogroup (PVPLC and CNPS 2010). Non-native grassland is typically characterized by dense to sparse cover of weedy, introduced annuals including wild oat, brome grasses (*Bromus diandrus*, *B. madritensis*, *B. hordeaceus*) and black mustard. Annual grassland often occurs in areas where there has been some historic disturbance to the natural community. At the proposed restoration site, non-native grassland is heavily dominated by wild oat, brome grasses, black mustard, fennel, tocalote (*Centaurea melitensis*), and false brome (*Brachypodium distachyon*).

2.3 Geology and Soils

The Palos Verdes Peninsula is primarily an old marine terrace with relatively steep eroded canyons which drain southwesterly into the Pacific Ocean. The underlying geologic material consists of marine sedimentary and basaltic rocks. The area is seismically active, with active Palos Verdes and San Pedro fault zones that have caused the peninsula to uplift relative to the adjacent Los Angeles Basin and the offshore bedrock.

According to the Report and General Soil Map for Los Angeles County (USDA 1969), the soils within the Abalone Cove Reserve are composed of the Altamont-Diablo association (30–50% slopes). Soils of the Altamont-Diablo association occur on gently sloping to rolling foothills throughout the Los Angeles basin as far north as Point Dume. The Altamont-Diablo association is comprised of approximately 60% Altamont soils and 30% Diablo soils. Diablo soils are described to be 22–52 inches deep, are well drained, and have slow subsoil permeability. Altamont soils are described to be 24–36 inches deep, are well drained, and have slow subsoil permeability. They have dark brown, neutral, clay surface layers about 12 inches thick underlain by a brown, calcareous clay subsoil.

The proposed restoration area is primarily a terrace above the coastal bluffs. The terrace appears to have been used for agriculture in the 1950's and 1960's, but has lain fallow for several decades. Three soil samples were collected from the proposed restoration area. The soil samples

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

were collected from three areas proposed for restoration (Figure 3). Each of the soil samples was composed of 3-4 subsamples consisting of the 12-16-inch deep soil profile from each location to create a composite soil sample for analysis. The composite soil samples are representative of the general soil conditions on site within the rooting zone of the target plant species. The soil samples were submitted to Wallace Laboratories for analysis of standard soil constituents, agricultural suitability, texture, and cation exchange capacity. The results of the analysis show that, the soils are clay, with a slow/fair infiltration rate and fair organic matter (Appendix A). The soils on site are slightly alkaline (pH = 7.69-7.76) and the salinity is low (ECe = 0.44-0.72). Major nutrients (nitrogen and phosphorus) are low.

Plant establishment is not expected to be significantly inhibited due to the soil chemistry described above. The soils appear to be suitable for the establishment of the target habitats without soil remediation or extensive soil amendments. However, container plants may struggle to become established and grow healthfully without supplemental watering, and amendments may be necessary if plants are struggling to become established. While the soils on site pose no significant problems to establishment of native habitat, as native soils they have low levels of major nutrients. Native species are adapted to lower nutrient soils, but will benefit from some supplemental nutrient augmentation during planting to initiate establishment (e.g., slow-release fertilizer packet).

2.4 Special-Status Species

Two special-status wildlife species have been documented within or nearby the restoration and enhancement areas. Coastal California gnatcatcher (*Poliophtila californica californica*) (CAGN) and the cactus wren (*Campylorhynchus brunneicapillus*) (CAWR) have been observed in the coastal sage scrub enhancement area, as well as on the southern border of the coastal sage scrub restoration area (PVPLC 2012) (Figure 3).

No special-status plant species have been documented within the specific area identified for restoration in the HRP. However, four special-status plant species have been documented nearby, including aphanisma (*Aphanisma blitoides*), south coast saltscale (*Atriplex pacifica*), woolly sea-blite (*Suaeda taxifolia*), and sea dahlia (*Coreopsis maritima*) (Dudek and PVPLC 2007; CNPS 2015). In addition to special-status plant species, the host plant seacliff buckwheat (*Eriogonum parvifolium*) for the federally listed, endangered, El Segundo blue butterfly (*Euphilotes battoides allyni*) is known to occur in the vicinity of the proposed restoration areas. Observation of the El Segundo blue butterfly has not been reported at the Abalone Cove Reserve.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

2.5 Non-Native Invasive Species

Non-native species are abundant within the area identified for restoration, making up the majority of the existing vegetative cover. Non-native species are also common in the area proposed for enhancement. Controlling non-native species during the plant establishment phase will present a significant challenge, and should be prioritized as the most critical aspect of the maintenance program. The most predominant non-native species observed on-site include black mustard, coastal wattle, spiny holdback, Peruvian pepper, Brazilian pepper, and non-native grasses. These species, as well as additional non-native species observed or expected on site, are provided in Table 1 with their associated rating in the California Invasive Plant Council's (Cal-IPC) Inventory of Invasive Plant Species (2015).

Table 1
Non-Native Plant Species and Associated Cal-IPC Ratings

High
<i>Bromus madritensis</i> ssp. <i>madritensis</i> —compact brome
<i>Carpobrotus edulis</i> —hottentot fig
<i>Foeniculum vulgare</i> —fennel
Moderate
<i>Atriplex semibaccata</i> —Australian saltbush
<i>Avena barbata</i> —slender oat
<i>Brassica nigra</i> – black mustard
Moderate
<i>Bromus diandrus</i> —ripgut brome
<i>Centaurea melitensis</i> —Maltese star-thistle
<i>Glebionis coronaria</i> —crowndaisy
<i>Hordeum murinum</i> —mouse barley
<i>Mesembryanthemum crystallinum</i> —common iceplant
<i>Myoporum laetum</i> —myoporum
<i>Pennisetum setaceum</i> —crimson fountaingrass
<i>Euphorbia terracina</i> —Geraldton carnation weed
Limited
<i>Bromus hordeaceus</i> —soft brome
<i>Erodium cicutarium</i> —redstem stork's bill
<i>Marrubium vulgare</i> —horehound
<i>Olea europaea</i> —olive
<i>Phoenix canariensis</i> —phoenix palm
<i>Ricinus communis</i> —castorbean
<i>Salsola tragus</i> —prickly Russian thistle
<i>Schinus molle</i> – Peruvian peppertree
<i>Schinus terebinthifolius</i> —Brazilian peppertree

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

Table 1
Non-Native Plant Species and Associated Cal-IPC Ratings

None
* <i>Acacia cyclops</i> —coastal wattle
<i>Caesalpinia spinosa</i> —spiny holdback
<i>Erigeron bonariensis</i> - asthmaweed
<i>Lactuca serriola</i> – prickly-lettuce
<i>Malva parviflora</i> —cheeseweed mallow
* <i>Mellilotus indicus</i> —annual yellow sweetclover
** <i>Pinus</i> sp.—pine
<i>Solanum elaeagnifolium</i> – silverleaf nightshade
<i>Sonchus oleraceus</i> —common sowthistle
* <i>Tropaeolum majus</i> —nasturtium
<i>Yucca gloriosa</i> – Spanish dagger

* Note that while there are several species on the list that do not have a Cal-IPC rating for the state of California, that some of these species can be locally invasive. Species with an asterisk are considered to be moderately invasive within the region and should be aggressively controlled. The Targeted Exotic Removal Program for Plants (TERPP) provides additional target invasive species (PVPLC 2013) that may occur on-site

** Note that some trees taller than 5 feet will be left in place and not removed. Seedlings and young saplings less than 5 feet tall will be removed.

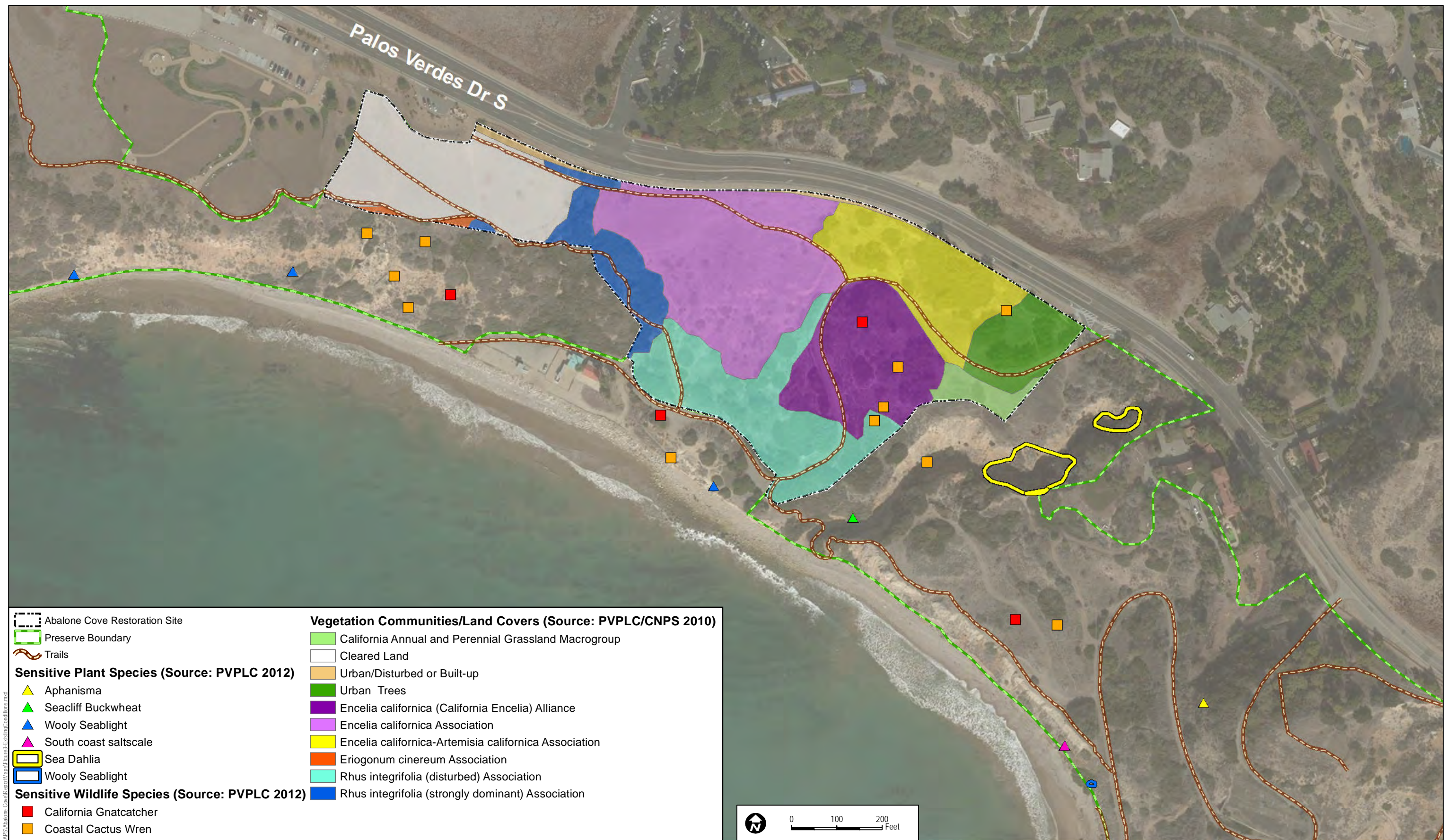
2.6 Additional Considerations

The City of Rancho Palos Verdes has plans for a stabilization project on the walls of the steep, highly eroded canyon on the eastern border of the enhancement area. To allow a buffer for stabilization activities, the enhancement area will leave a buffer of at least 30 feet along the canyon rim, where no enhancement activities will be undertaken.

Additionally, two or more electric utility poles intersect the enhancement area in transit to the Beach School. Restoration and enhancement activities will allow a 15 foot buffer around utility poles, allowing only the management and control of particularly invasive species within these zones (i.e., no planting or seeding).

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

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Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

3 RESTORATION PROGRAM

This HRP outlines the restoration and enhancement implementation strategy for upland habitat at the Abalone Cove Reserve and proposes to provide for the restoration of approximately 4.8 acres of habitat restoration, and the enhancement of approximately 8.3 acres of mixed coastal scrub. This HRP uses a restoration approach that emphasizes the recovery of the degraded ecosystem through planting and seeding to re-establish or enhance biological functions and services within portions of the Abalone Cove Reserve.

3.1 Restoration Site Goals and Objectives

The disturbed and fragmented habitat existing in the proposed restoration and enhancement locations limit the magnitude of potential wildlife use and provide opportunities for the further spread and establishment of invasive weed species in the area. The planting of native coastal sage scrub, cactus scrub, mulefat scrub, and enhancement of mixed coastal scrub will provide contiguous native habitat that includes a mosaic of shrub cover which will resist the invasion of invasive weed species and provide increased nesting, cover, and foraging opportunities for wildlife. In particular, the overarching goal of the restoration program is to provide habitat for coastal California gnatcatcher and the cactus wren.

The habitat restoration program will focus on the creation of habitat for covered species with the objective of increasing the overall habitat carrying capacity for the target species populations. Coastal scrub restoration is intended to provide improved foraging habitat for resident and migrating wildlife species, and potential nesting and foraging habitat for the coastal California gnatcatcher, and other sensitive wildlife species. Achievement of the performance standards described herein would create suitable habitat for these species. However, occupation of the site by these species is not a requirement for successful project completion.

In addition to these broad goals, the following site-specific objectives for the Abalone Cove Reserve restoration site have been incorporated into this HRP in the interest of minimizing adverse impacts to biological resources:

- Avoid additional or unplanned disturbance to existing native habitats during implementation of the project construction and long-term maintenance activities;
- Prevent any impacts to sensitive plant or wildlife species during implementation of the project construction and long-term maintenance activities;
- Control non-native invasive weed species considered to be highly or moderately invasive on the Cal-IPC Invasive Plant Inventory (2015), and others identified by PVPLC as locally invasive (PVPLC 2013);

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

- Utilize erosion control measures in the form of “Best Management Practices” (BMPs) on the site as conditions necessitate;
- Reintroduce special-status plant species and/or host plants of special-status wildlife species as components of the planting plans where feasible and as appropriate.

3.2 Habitats to be Established or Enhanced

The habitat restoration program consists of site preparation (primarily non-native plant species removal), native planting, seeding, supplemental watering, maintenance, and monitoring. Proposed planting for the target habitat types will focus primarily on the installation of container plants to achieve the project goals. A native seed mix will also be applied as a supplemental measure to increase cover and diversity.

The habitat restoration areas are currently dominated by non-native species. The existing habitat in the restoration areas contains many non-native annual herbs, including black mustard, Russian thistle, and bromes (Figure 4, Photos 1 and 2). Non-native perennials, such as fennel, spiny holdback, Peruvian pepper, and Brazilian pepper also exist within the restoration areas.

Coastal sage scrub habitat will make up the majority of the restored habitat, followed by cactus scrub. Mulefat scrub is planned for approximately 0.2 acre within the restoration area. Each specific habitat type to be restored is described below. It is expected that all planting shall be installed to mimic the natural distribution and vegetation mosaic of adjacent healthy habitats.



Photo 1: Representative view of western restoration area (facing west)



Photo 2: Non-native plants in the western restoration area (black mustard, brome grasses, Russian thistle)



Photo 3: Trail lined by invasive spiny holdback (*Ceanothus spinosa*)



Photo 4: Invasive perennial weeds in the habitat enhancement zone (Coastal wattle, Brazilian pepper)



Photo 5: Representative view of the eastern restoration area (facing west)



Photo 6: Invasive annual weeds in the restoration site (black mustard, wild oat)

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Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

3.2.1 Coastal Sage Scrub

The restoration strategy for coastal sage scrub habitat on the Abalone Cove Reserve restoration site includes reintroducing regionally appropriate native coastal sage scrub species that are currently present in adjacent native habitats. The plant palette includes a container plant and seed mix composition (Table 2) that has been designed to replicate the native composition of a healthy coastal sage scrub plant community similar to existing coastal sage scrub habitat present on the Abalone Cove Reserve site, and with the specific intent to provide habitat suitable for occupation by coastal California gnatcatcher. The planting palette has thus been designed to contain a composition of shrub species that are dominant in coastal sage scrub habitat occupied by coastal California gnatcatcher (Atwood et al. 1994). On the Palos Verdes Peninsula, the primary coastal sage scrub dominants include California sagebrush, California brittlebush, and coastal buckwheat, with coast goldenbush, lemonadeberry, California buckwheat, sages, bladderpod, coast prickly-pear, and wishbone bush as common constituents.

The plant palette provides a quantity of container plants (perennial species) that is estimated to establish approximately 75% cover for coastal sage scrub, 60% cover for cactus scrub, and 100% for mulefat scrub once the plants reach maturity. The seed mix is provided to address erosion control and enhance species diversity, and will be applied as needed, and as determined necessary by the PVPLC.

Table 2
Proposed Coastal Sage Scrub Planting Palette (Approximately 3.5 Acres)

Botanical Name	Common Name	Container Size	Spacing (on center)	Group Size	Quantity (per acre)	Total # Plants
<i>Container Plants</i>						
<i>Artemisia californica</i>	California sagebrush	D40	5	5	348	1,220
<i>Astragalus trichopodus</i> var. <i>lonchus</i>	Ocean locoweed	D40	3	7	184	645
<i>Baccharis pilularis</i>	Coyote brush	D40	5	3	87	305
<i>Brickellia californica</i>	California bricklebrush	D40	5	3	87	305
<i>Corethrogyne filaginifolia</i>	Common sandaster	D40	3	3	24	85
<i>Cylindropuntia prolifera</i>	Coastal cholla	1-gallon	4	5	27	95
<i>Dudleya virens</i>	Bright green dudleya	D40	3	3	24	85
<i>Elymus condensatus</i>	Giant wildrye	D40	6	3	24	85
<i>Encelia californica</i>	California brittlebush	D40	5	5	261	915
<i>Eriogonum cinereum</i>	Coastal buckwheat	D40	5	5	87	305
<i>Eriogonum fasciculatum</i>	California buckwheat	D40	5	5	157	549

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

Table 2
Proposed Coastal Sage Scrub Planting Palette (Approximately 3.5 Acres)

Botanical Name	Common Name	Container Size	Spacing (on center)	Group Size	Quantity (per acre)	Total # Plants
<i>Eriogonum parvifolium</i>	Seacliff buckwheat	D40	5	5	87	305
<i>Eriophyllum confertiflorum</i>	Golden yarrow	D40	3	3	145	508
<i>Isocoma menziesii</i>	Coast goldenbush	D40	5	3	87	305
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	Wishbone bush	D40	4	5	54	191
<i>Opuntia littoralis/oricola</i>	Chaparral prickly-pear	1-gallon	6	3	24	85
<i>Peritoma arborea</i>	Bladderpod	D40	5	5	35	122
<i>Rhus integrifolia</i>	Lemonadeberry	D40	15	1	4	14
<i>Salvia leucophylla</i>	Purple sage	D40	5	5	87	305
<i>Salvia mellifera</i>	Black sage	D40	5	3	87	305
Total Container Plants					1,920	6,734
Seed Mix						
Botanical Name	Common Name	Pure Live Seed	Lbs. Per Acre		Total Lbs.	
<i>Eschscholzia californica</i> var. <i>maritima</i>	California poppy	85	2		7	
<i>Lupinus bicolor</i>	Miniature lupine	90	2		7	
<i>Lupinus succulentus</i>	Arroyo lupine	90	4		14	
<i>Stipa lepida</i>	Foothill needlegrass	65	1		3.5	
<i>Stipa pulchra</i>	Purple needlegrass	75	6		21	
Total Lbs.			15		52.5	

3.2.2 Cactus Scrub

The restoration strategy for cactus scrub is comparable to that described for coastal sage scrub, except that the composition of species was modified to be dominated by prickly-pear cactus (*Opuntia littoralis*, *O. oricola*). The plant palette includes a container plant and seed mix composition (Table 3) that has been designed to replicate the native composition of a healthy cactus scrub plant community similar to existing cactus scrub habitat present on the Abalone Cove Reserve site, and with the specific intent to provide habitat suitable for occupation by cactus wren. In addition to areas identified for cactus scrub restoration, approximately 2.2 acres of the habitat enhancement area were designated for planting additional cactus. These areas were previously documented to support cactus wren and have since been overgrown with non-native trees and shrubs and lemonadeberry

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

Table 3
Proposed Cactus Scrub Planting Palette (1.1 Acres)

Botanical Name	Common Name	Container Size	Spacing (on center)	Group Size	Quantity (per acre)	Total # Plants
<i>Container Plants</i>						
<i>Artemisia californica</i>	California sagebrush	D40	5	5	227	249
<i>Astragalus trichopodus</i> var. <i>lonchus</i>	Ocean locoweed	D40	3	7	111	123
<i>Brickellia californica</i>	California bridlebush	D40	5	3	52	57
<i>Corethrogyne filaginifolia</i>	Common sandaster	D40	3	3	24	27
<i>Cylindropuntia prolifera</i>	Coastal cholla	1-gallon	4	10	272	299
<i>Encelia californica</i>	California brittlebush	D40	5	5	87	96
<i>Eriogonum fasciculatum</i>	California buckwheat	D40	5	3	174	192
<i>Isocoma menziesii</i>	Coast goldenbush	D40	5	3	35	38
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	Wishbone bush	D40	4	5	54	60
<i>Opuntia littoralis/ oricola</i>	Coast prickly-pear	1-gallon	6	30	363	399
<i>Peritoma (=Isomeris) arborea</i>	Bladderpod	D40	6	5	36	40
<i>Rhus integrifolia</i>	Lemonadeberry	D40	15	1	2	2
<i>Salvia mellifera</i>	Black sage	D40	5	3	87	96
Total Container Plants (per acre)					1,524	1,678
<i>Seed Mix</i>						
Botanical Name	Common Name	Pure Live Seed	Lbs. Per Acre		Total Lbs.	
<i>Eschscholzia californica</i> var. <i>maritima</i>	California poppy	74	2		2.2	
<i>Lupinus bicolor</i>	pygmy lupine	78	2		2.2	
<i>Lupinus succulentus</i>	arroyo lupine	81	4		4.4	
<i>Phacelia ramosissima</i>	branching phacelia	80	0.25		0.275	
<i>Stipa lepidia</i>	foothill needlegrass	54	1		1.1	
<i>Stipa pulchra</i>	purple needlegrass	42	6		6.6	
Total Lbs. Per Acre			15.25		16.8	

3.2.3 Mulefat Scrub

The restoration strategy for mulefat scrub habitat on the Abalone Cove Reserve restoration site includes reintroducing regionally appropriate native mulefat scrub species. A small drainage within the restoration area has been selected as being compatible with mulefat scrub based on the vegetation that currently inhabits the channel and its apparent hydrology. The mulefat scrub restoration area within the Abalone Cove Reserve will contain the native

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

species mulefat (*Baccharis salicifolia*), giant wildrye (*Elymus condensatus*), and blue elderberry (*Sambucus nigra*) as dominant species (Table 4).

Table 4
Proposed Mulefat Scrub Planting Palette (Approximately 0.2 Acre)

Botanical Name	Common Name	Container Size	Spacing (on center)	Group Size	Quantity (per acre)	Total # Plants
Container Plants						
Artemisia dracunculus	Tarragon	D40	4	3	136	27
Baccharis pilularis	Coyote bush	D40	5	3	87	17
Baccharis salicifolia	Mulefat	1-gallon	6	3	605	121
Elymus condensatus	Giant wildrye	D40	5	3	174	35
Isocoma menziesii	Coast goldenbush	D40	5	3	87	17
Muhlenbergia rigens	Deergrass	D40	3	3	242	48
Sambucus nigra	Blue elderberry	1-gallon	8	1	102	20
Verbena lasiostachys	Western vervain	D40	3	3	242	48
Total Container Plants (per acre)					1,675	333
Seed Mix						
Botanical Name	Common Name	Pure Live Seed		Lbs. Per Acre		Total Lbs.
Ambrosia psilostachya	Western ragweed	8		2		0.4
Artemisia douglasiana	Mugwort	5		1		0.2
Eschscholzia californica var. maritima	California poppy	78		2		0.4
Isocoma menziesii	Coast goldenbush	80		1		0.2
Lupinus succulentus	Arroyo lupine	54		2		0.4
Stipa pulchra	Purple needlegrass	42		4		0.8
Total Lbs. Per Acre				12.0		2.4

3.3 Habitat to be Enhanced

The habitat enhancement program consists of site preparation (primarily non-native plant species removal), maintenance, monitoring, and potential native planting or seeding. The habitat enhancement area is currently dominated by a mix of native and non-native species. Although the enhancement area currently supports native species, including lemonadeberry (*Rhus integrifolia*) and coast brittlebush (*Encelia californica*), a number of non-native perennials, such as coastal wattle, phoenix palm, spiny holdback, Peruvian pepper, and Brazilian pepper are also common.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

Habitat enhancement generally includes control of non-native weed species and reliance on natural succession to fill the gaps left by removal. In the case of the enhancement area in Abalone Cove Reserve it is likely that most locations in the enhancement zone will improve naturally after initial removal of invasive species. However, in locations that a significant area is cleared, in-planting of native species may be necessary. The area north of the access road, nearest to Palos Verdes Drive South in particular may necessitate additional planting after removal activities occur.

The planting palette in Table 2 for coastal sage scrub habitat and Table 3 for cactus scrub provide options for installing supplemental plants in areas that require selective planting to fill in gaps created from invasive species removal. Note that Tables 2 and 3 do not account for the quantity of container plants that will be needed for the enhancement areas, as the acreage of invasive species removal is not known. However, the number of container plants is expected to be relatively low compared to the restoration areas. Selective in-planting shall mimic the natural distribution and vegetation mosaic of adjacent native habitats.

3.4 Revegetation Materials

Plant materials for the restoration planting areas will include container stock and seed of coastal scrub species, as indicated in the plant palettes provided in Tables 2–4. As much as feasible, the container plant materials will be grown from native seed collected on the Palos Verdes Peninsula. The plant nursery will grow the plants primarily in D40 Deepots, with some smaller and larger sizes depending on the species (as indicated in Tables 2–4). Additionally, for the seed mixes, PVPLC will coordinate collection of available seed from the peninsula for application at the restoration site. If some species cannot be grown as container stock at the nursery, or local seed is not available for collection, the planting palettes may be adjusted, or another source may be used for acquiring locally sourced plant materials.

DriWater may also be used to aid plant establishment. DriWater is a time released natural cellulose gum gel that retains moisture which is slowly released into the soil when the gel is broken down by naturally occurring enzymes. The moisture released from the DriWater gel becomes available for uptake by developing plant roots. DriWater can be applied in cardboard cartons or in plastic tubes with gel packs. DriWater can be costly to utilize on large scale restoration projects, and therefore would only be used in special cases where supplemental watering was insufficient to promote plant establishment. DriWater may be most useful within the enhancement area if supplemental watering is infeasible.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

3.5 Target Functions and Values

The primary functional goal of the restored coastal sage scrub, cactus scrub, and mulefat scrub and the enhanced mixed coastal scrub is to restore vegetation that contains a diversity of native coastal scrub plant species and that provides habitat value for sensitive wildlife species, particularly for coastal California gnatcatcher and cactus wren. Additionally, a secondary consideration is to create contiguous and intact habitat which resists the re-establishment of invasive plant species.

3.6 Time Lapse

The length of time necessary to develop high quality habitat depends on a variety of factors including weather, soil conditions, herbivory protection, weed competition, and maintenance quality. Under optimal conditions, coastal sage scrub, cactus scrub, and mulefat scrub may take approximately three from the installation of container plants and application of seed to develop the appropriate structure to provide the functions and values needed for habitation of wildlife, including suitable nesting habitat for California gnatcatcher and other scrub species. In an unirrigated setting, and with drought conditions, scrub development may take longer than three years to mature enough to be suitable for nesting. As a hedge against drought, the addition of supplemental watering would increase plant survival, improve establishment, and hasten habitat development. This plan allows for five years of maintenance and monitoring to establish the target habitats.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

4 IMPLEMENTATION PLAN

4.1 Rationale for Expecting Success

The identified locations for restoration on the Abalone Cove Reserve are directly adjacent to viable and self-sustaining target habitats, indicating appropriate environmental conditions to support the intended habitats. This HRP includes a provision for supplemental watering to promote establishment and survival of native species included in the plant palette. The HRP also includes a 5-year maintenance plan, wherein invasive non-native weeds within the restoration site will be controlled to aid native plant establishment. Additionally, native plant materials will be grown or collected from sources on the Palos Verdes Peninsula, thus preserving genetic integrity and increasing the potential for long-term success.

4.2 Preliminary Schedule

Appropriate timing of planting and seeding will minimize the need for supplemental watering and will increase the survival rate of the installed plants. The best survival rates are achieved when container plants and seed are installed at the onset of the rainy season or soon thereafter (November through February). Planting and seeding at the site should be timed to take advantage of seasonal rainfall patterns and most appropriate growing season temperatures (see Charts 1–2 and Table 5).

Table 5
Preliminary Restoration Project Schedule

Task	Date
Site clearing	Fall prior to first year
Invasive weed species control and grow-kill cycles	Winter and Spring of first year
Installation of supplemental watering system	Summer of first year
Planting container stock	Fall and Early Winter of second year
Seed application	Fall and Early Winter of third year
Monitoring and maintenance	To begin upon successful installation of container plants

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

Chart 1
Average Monthly Precipitation for the Portuguese Bend Nature Preserve

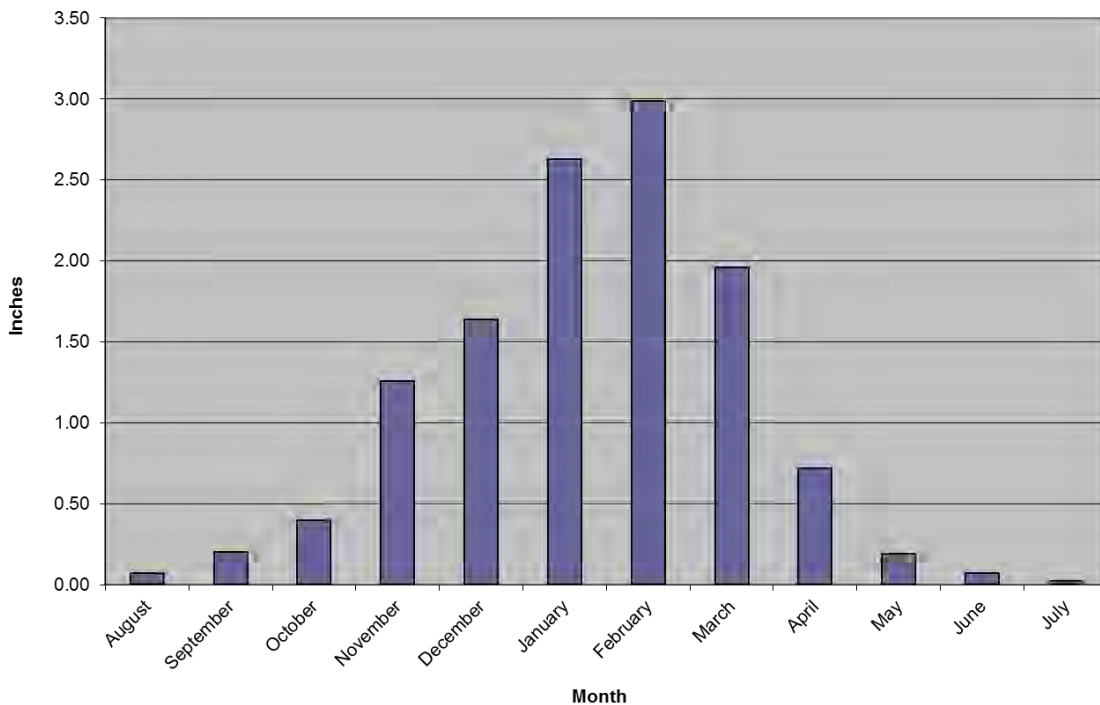
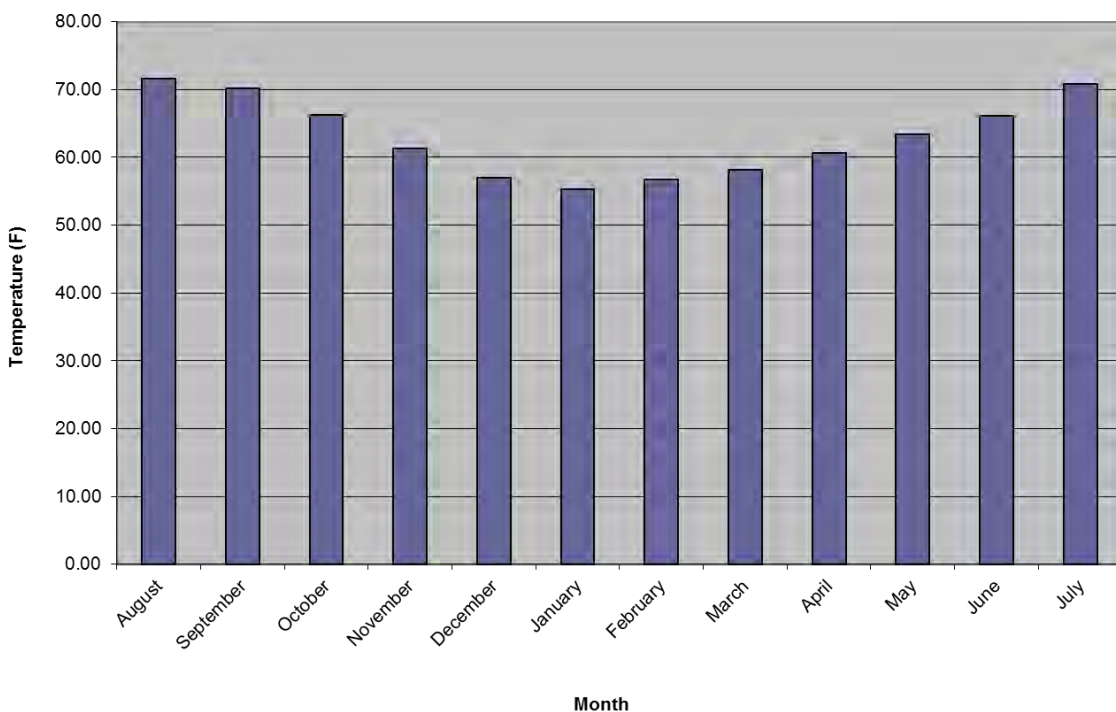


Chart 2
Average Monthly Temperatures for the Portuguese Bend Nature Preserve



Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

4.2.1 Site Preparation

Site preparation includes control of invasive weed species and soil preparation in the restoration areas. If clearing of weeds is planned to be performed during the migratory bird nesting season (February 15–September 15), a nesting bird survey should be conducted by a qualified wildlife biologist within 72 hours prior to vegetation removal in accordance with the Migratory Bird Treaty Act (16 U.S.G. 703-712).

During site preparation, all invasive weed species, particularly non-native annual grasses, black mustard, and fennel, should be killed and removed from the restoration areas. Invasive species control should also include exotic trees and shrubs such as spiny holdback, Peruvian pepper, Brazilian pepper, coastal wattle, pine trees, and palms, as directed by PVPLC staff.

The initial weed control effort will involve a combination of chemical and mechanical treatment. Prior to the installation of native plant materials, “grow and kill” weed removal treatments should be conducted by allowing non-native seedling emergence in the winter and spring. When weeds have begun to grow, and before they begin to develop flowers or flowering structures, a foliar application of an appropriate systemic herbicide should be applied to kill target weeds. If adequate rainfall occurs during this period, multiple grow-kill cycles should be repeated. The restoration ecologist will provide weed control recommendations to the restoration maintenance staff that are specific to the target weed species identified for control. Any use of herbicides shall be in accordance with label instructions, following the recommendations of a licensed Pest Control Advisor, and any application shall be applied under the direction of a state-certified Qualified Applicator.

4.2.2 Supplemental Watering System

The planned method of providing supplemental watering at the proposed restoration area is with a temporary above-ground drip irrigation system. This will help ensure that native container plants and seed installed on site will become adequately established. The supplemental watering system would only be used until the plants are established such that they can survive on their own between periods of rainfall. It is expected that, depending upon the level of plant establishment, the watering system would be removed after two to three years of use. Watering on site will gradually be decreased prior to the removal of the system so the plants can become acclimated to the site’s natural conditions.

The habitat enhancement area may prove infeasible for installation of a temporary watering system. Areas that require planting within the enhancement area will be considered for supplemental watering from a water truck or the use of alternative methods such as DriWater.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

There is a fire hydrant located immediately north of the proposed restoration site along Palos Verdes Drive South that may function as a point of connection for a temporary irrigation system (Figure 5). The irrigation system should be designed by a landscape architect to ensure that the system has adequate water pressure to supply water to all areas of the proposed restoration site. The supplemental watering system would be installed as an above-ground system, so that irrigation equipment may be removed once the system has been decommissioned.

4.2.3 Erosion Control

Where needed, erosion control measures, such as the installation of sandbags, fiber rolls, silt fencing, and/or erosion-control matting may be necessary to control erosion until target vegetation is established. At a minimum, silt fencing should be installed at the toe of slopes that are unvegetated after removing non-native species. Additionally, erosion control materials may be needed at the edge of the coastal bluff, particularly in the locations where surface runoff coalesces and runs off the bluff. No erosion control materials should be used that contain seed from non-native plants. The need and location of erosion control will be determined in the field by the project's restoration ecologist.

4.2.4 Plant Installation

Standard planting procedures will be employed for installing container stock. Planting holes shall be approximately twice the width of the rootball, and as deep. If dry soil conditions exist at the time of plant installation, planting holes will be filled with water and allowed to drain immediately prior to planting. A fertilizer packet with controlled-release fertilizer (e.g., Best Paks 20-10-5) will be placed in the bottom of each hole prior to planting.

4.2.5 Seed Application

Seed will be hand broadcast throughout the restoration site. The seed mix is primarily a supplemental feature to increase diversity and will not occur until the second year of the Restoration Program. The seeding sites should be prepared by removing weedy vegetation to expose the soil surface. The seed should be raked into the soil so there is good seed-soil contact. Seeding should be timed to occur prior to or early in the rainy season.



SOURCE: Palos Verdes Peninsula Land Conservancy, 2014; Bing Maps, 2015

FIGURE 5
Abalone Cove Restoration Area

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Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

5 MAINTENANCE PLAN

The purpose of the maintenance plan is to provide guidelines for long-term maintenance of the restoration site during the establishment period. Maintenance activities will be initiated during the weed reduction period (i.e., grow-kill cycles), and will occur at the direction of the project's restoration ecologist on an as-needed basis. The maintenance period will intensify after the installation of the container plants. Maintenance will be necessary until the habitats are fully established, which is estimated to take approximately five years.

Because the goal of this project is to establish a natural system that can support itself with little or no maintenance, the primary focus of the maintenance plan is concentrated in the first few seasons of plant growth following the revegetation effort, when weeds can easily out-compete native plants. The intensity of the maintenance activity is expected to subside each year as the native plants become established, and local competition from non-native plants for resources is minimized through direct removal and treatment of non-native plants.

5.1 Maintenance Activities

Maintenance activities will be primarily related to non-native invasive plant species control. Supplemental watering, supplemental planting, trash removal, and erosion control will also be conducted, as necessary.

- Non-native plant species should be controlled as soon as they begin to establish. Recommended control methods should be tailored to each specific weed species and should include the most effective control measures for the species and time of year. Control methods may include a combination of manual, mechanical, and chemical control.
- Container plants should be watered when natural rainfall is not adequate to sustain the establishing plants. The project's restoration ecologist will be responsible for scheduling the supplemental watering to promote plant establishment. Supplemental watering should be conducted as deep, soaking watering to promote deep rooting.
- Generally, the site will not be fertilized during the maintenance period unless determined necessary by the project's restoration ecologist as a remedial measure to correct soil nutrient deficiencies.
- Deadwood and leaf litter of native vegetation should not be removed. Deadwood and leaf litter provide valuable microhabitats for invertebrates, reptiles, small mammals, and birds. Non-organic trash and debris should be removed from the revegetation areas on a regular basis.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

- Erosion control materials should be maintained in working order until they are deemed no longer necessary by the project's restoration ecologist. Maintenance of erosion control materials may include repairing or replacing dilapidated, damaged, or ineffective materials.

5.2 General Habitat Maintenance Guidelines

5.2.1 Weed Control

Weeds are expected to be the primary pest problem in the restoration area during the first several years of the maintenance period. Weeds should be controlled so they do not prevent the establishment of the native species or invade adjacent areas. A combination of physical removal, mechanical treatments (weed whipping) and appropriate herbicide treatments should be used to control the non-native/invasive plant species. Weeds should be controlled prior to setting seed, and should be removed from the site if they become large enough to block sunlight to developing native plants.

Re-establishment of non-native plants onto the site can be adequately minimized by regular and timely maintenance visits with implementation of effective weed control measures. Weed control will require constant diligence by the maintenance personnel. Invasive plant species, such as those listed in Table 1 should be controlled wherever possible within the restoration area. Mature invasive tree species will be retained at the discretion of the PVPLC though the majority of individuals should be removed to reduce the spread of weed propagules.

Removal of weeds by hand where practicable and effective is the most desirable method of control and should be done around individual plantings and native seedlings to avoid inadvertent damage to the native species. However, several of the invasive species may be more effectively controlled with herbicide due to their tenacious and spreading root systems, their size, or their ability to re-sprout from root fragments. All herbicides shall be used in accordance with label instructions, following the recommendations of a licensed Pest Control Advisor, and any application shall be applied under the direction of a state-certified Qualified Applicator. The project's restoration ecologist should monitor control efforts to ensure that the target weed species are being adequately addressed without impacting the native plants.

The non-native Bagrada bug (*Bagrada hilaris*) has been documented on the Palos Verdes Peninsula, and is known to cause substantial damage to plant species from the mustard family (*Brassicaceae*) (County of Los Angeles 2013; University of California, Riverside 2013). As black mustard is one of the predominant species within the proposed coastal sage scrub restoration area, the Bagrada bug may occur; however, it is expected that the damage

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

caused by this insect would be to non-native mustard species, and not native plants. Despite this, if the species becomes problematic as a pest species on the native plants, then the restoration ecologist will evaluate whether or not control measures are necessary. Similarly, if other deleterious pests (e.g., beetles on bladderpod) become problematic enough to cause container plant mortality, the restoration ecologist may recommend measures to minimize pests and promote healthy plant establishment.

5.2.2 Supplemental Watering System

Supplemental watering will be provided for two to three years after planting to help the container plants become established. Supplemental watering will be provided through a drip irrigation system. Supplemental watering would likely be necessary every 3–4 weeks during the dry season, and more frequently immediately after installation if natural rainfall does not provide adequate moisture. If a temporary, on-grade supplemental watering system is installed in the restoration area as described in Section 4.4, it would need to be maintained and repaired as necessary.

The watering system shall be checked regularly to ensure proper operation and adequate coverage of the restoration areas. Problems with the watering system shall be repaired immediately to reduce potential plant mortality or erosion. The frequency and duration of irrigation applications shall be adjusted seasonally in coordination with the project's restoration ecologist to meet habitat needs.

Supplemental watering will be terminated when deemed appropriate by the project's restoration ecologist. All above-ground components of the watering system should be removed from the site at the successful completion of the project. The timing for cessation and removal of the irrigation system shall be determined by the project's restoration ecologist.

5.2.3 Clearing and Trash Removal

Trash consists of all man-made materials, equipment, or debris dumped, thrown, washed into, or left within the restoration area. Pruning or clearing of native vegetation is not anticipated to be necessary within the restoration area, unless extensive growth is causing a maintenance problem for a utility or for an area outside of the restoration area. Any pruning or clearing of native vegetation should be approved by the project's restoration ecologist. Deadwood and leaf litter of native vegetation will be left in place to replenish soil nutrients and organic matter.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

5.3 Schedule of Maintenance Inspections

The project's restoration ecologist will perform quarterly maintenance/monitoring inspections during the scheduled maintenance and monitoring period. Recommendations for maintenance efforts will be based upon these site observation visits. Weed control shall be conducted as needed to ensure adequate control to promote healthy establishment of the target habitat types. It is anticipated that weed control will be necessary on a monthly basis during the winter and early spring when weeds are vigorously growing. Weed control during other times of the year will likely be diminished, but conducted as necessary, and as directed by the project's restoration ecologist.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

6 MONITORING PLAN

Monitoring of the restoration site has a two-fold purpose: **(1)** To monitor the progress of the Abalone Cove Reserve restoration areas by assessing native habitat establishment relative to the established performance standards; and **(2)** To direct and monitor the maintenance activities and determine remedial actions in a manner that ensures that appropriate maintenance occurs in a timely manner. The monitoring will be performed by the project's restoration ecologist.

The project's restoration ecologist will be responsible for monitoring activities of all the work crews during preparation of the restoration area including site clearing and soil preparation, weed control, container plant and seed application, and quarterly monitoring for the duration of the 5-year maintenance and monitoring period.

Reports will be prepared annually for the restoration areas after installation is complete. Each report will include qualitative data, photo documentation, and future recommendations for site maintenance as described below.

6.1 Performance Standards

Performance standards have been established for the habitat restoration area based on the guidelines in the draft NCCP and on expected vegetative development relative to undisturbed habitat of the same type (Table 6). The following performance standards apply to the Abalone Cove restoration site:

1. Soil at the site is stable and shows no significant erosion.
2. After five years, non-native plant cover is less than 25% with less than 15% cover of invasive perennial species. After five years, there will be no presence of species on Cal-IPC List A with the possible exception of Cal-IPC List A non-native annual grasses.
3. Native plant cover after three years in the CSS community should be greater than 40% with at least 30% cover from perennial species. At five years, total native cover should be greater than 50% with appropriate species diversity.
4. Native plant cover after three years in the cactus scrub community should be greater than 30% with at least 20% cover from perennial species and 5% cover from cactus species. Native plant cover after five years in the cactus scrub community should be greater than 40% with at least 10% cover from cactus.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

Table 6
Performance Standards

Year	Percent Cover of Native Species (%) [*]			Non-native Cover (for all habitat types)	
	<i>Coastal Sage Scrub</i>	<i>Cactus Scrub</i>	<i>Mulefat Scrub</i>	<i>Invasive Perennial Species Cover</i>	<i>Total Non-native Species Cover</i>
Year 3	>40% (>30% perennial)	>30% (>20% perennial and >5% cacti)	>40%	<15% (0% of Cal-IPC List A) [*]	<25%
Year 5	>50%	>40% (>10% cacti)	>50%	<15% (0% of Cal-IPC List A) [*]	<25%

^{*} The NCCP success criteria allow an exception to the requirement for 0% Cal-IPC List A for non-native annual grasses. In other words, Cal-IPC List A grass species would not count toward the 0% criteria, but would count toward the 25% criteria for total non-native species cover.

The Year 3 performance standards will be utilized to assess the annual progress of the restoration area, and are regarded as interim project objectives designed to reach the final Year 5 goals. Fulfillment of these standards will indicate that the restoration area on the project site is progressing toward the habitat type and functions that constitute the long-term goals of the plan. If the restoration efforts fail to meet the performance standards in any year, the project's restoration ecologist may recommend remedial action to be implemented the following year with the intent to enhance the vegetation to a level of conformance with the original standard. These remedial actions may include re-seeding, re-planting, applying soil amendments, additional weed control measures, erosion control, or adjustments to the watering and maintenance practices.

6.2 Monitoring Methods and Schedule

Annual qualitative assessments will be conducted through visual analysis of the restoration area to assess vegetation development, weed presence, and plant establishment. Qualitative monitoring will include reviewing the health and vigor of container plants and seed germination/establishment, assessing survival/mortality, checking for the presence of pests and disease, soil moisture content, and the effectiveness of the supplemental watering, erosion problems, invasion of weeds, and the occurrence of trash and/or vandalism. Representative photographs of the restoration site from stationary photo points will be taken annually.

Permanent vegetation sampling sites will be established within the coastal sage scrub and cactus scrub restoration areas at randomized representative locations. A minimum of one transect will be established for each two acres of restoration area, and at least one transect for each habitat type. The mulefat scrub area is too small to establish quantitative sampling sites and will be evaluated with visual estimates of cover. Transect data will be collected in Years 3 and 5 from the restoration sites in the spring and will be used to determine compliance and achievement of

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

the restoration performance standards. Transect data will be collected using the point-intercept method to determine percent target vegetation cover and weed cover. If the restoration project is in compliance with the Year 5 performance standards in an earlier monitoring period, then qualitative assessments may be substituted for the quantitative monitoring until the end of the 5-year restoration program. If the restoration site is performing below the interim performance standards, the project's restoration ecologist will determine if remedial measures are necessary.

Each monitoring visit will be followed by a summary of observations, recommendations, and conclusions. Results from the annual monitoring will be used to evaluate the progress of each habitat toward the ultimate goals of the project, and to recommend appropriate management actions.

6.3 Monitoring Reports

The designated restoration ecologist will monitor and report on the restoration work underway in the Abalone Cove Reserve. The restoration area will be monitored for five years, with reports prepared in Years 1-3 and Year 5. Monitoring reports should provide concise, meaningful summaries of the restoration progress and provide direction and maintenance recommendations for future work.

Annual reports will include the following:

1. A description of the restoration and maintenance activities (e.g., seeding, irrigation, weed control, trash removal) conducted on the site during the previous year including the dates the activities were conducted.
2. A description of existing conditions within the restoration site, including descriptions of vegetation composition, weed species, and erosion problems, if any.
3. Qualitative and quantitative monitoring data related to proposed target goals including a comparative analysis of data over the years the project has been monitored.
4. Recommendations for remedial measures to correct problems or deficiencies, if any.
5. Representative photographs of notable observations on site and from fixed photo viewpoints.

6.4 Project Conclusion

At the end of the 5-year monitoring period, a final report will be prepared by the restoration ecologist for submittal to PVPLC. The final report will summarize the project relative to project goals. Upon completion, the site will be managed along with other reserve lands in the Palos Verdes Nature Preserve by the PVPLC.

Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

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Habitat Restoration Plan for the Abalone Cove Reserve in the Palos Verdes Nature Preserve

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APPENDIX A

Soil Test Results

WALLACE LABS		SOILS REPORT		Print Date	July 17, 2015	Receive Date	7/16/15
365 Coral Circle		Location		Palos Verdes Peninsula, Job No. 9085			
El Segundo, CA 90245		Requester		Andy Thomson and Jake Marcon, Dudek			
(310) 615-0116		graphic interpretation: *		very low, ** low, *** moderate			
ammonium bicarbonate/DTPA		**** high, ***** very high					
extractable - mg/kg soil		Sample ID Number	15-198-07	15-198-08		15-198-09	
Interpretation of data		Sample Description	AC #1	AC #2		AC #3	
low medium high		elements	graphic	graphic		graphic	
0 - 7 8-15 over 15		phosphorus	10.35 ***	10.25 ***		9.20 ***	
0-60 60 -120 121-180		potassium	522.13 *****	318.32 *****		247.26 *****	
0 - 4 4 - 10 over 10		iron	1.38 *	1.45 *		1.38 *	
0- 0.5 0.6- 1 over 1		manganese	2.01 *****	2.01 *****		1.61 *****	
0 - 1 1 - 1.5 over 1.5		zinc	2.45 *****	2.40 *****		11.62 *****	
0- 0.2 0.3- 0.5 over 0.5		copper	6.19 *****	5.50 *****		6.36 *****	
0- 0.2 0.2- 0.5 over 1		boron	0.18 **	0.23 ***		0.17 **	
		calcium	322.10 ***	316.50 ***		326.12 ***	
		magnesium	259.18 *****	304.98 *****		347.17 *****	
		sodium	197.35 ***	212.89 ****		155.06 ***	
		sulfur	20.84 *	20.50 *		27.78 **	
		molybdenum	0.08 ***	0.01 **		0.10 ****	
		nickel	2.51 **	1.85 **		1.74 **	
The following trace		aluminum	n d *	n d *		n d *	
elements may be toxic		arsenic	0.07 *	0.01 *		0.03 *	
The degree of toxicity		barium	2.41 *	1.81 *		2.97 *	
depends upon the pH of		cadmium	1.46 **	0.99 *		1.00 *	
the soil, soil texture,		chromium	n d *	n d *		n d *	
organic matter, and the		cobalt	0.06 *	0.04 *		n d *	
concentrations of the		lead	2.51 **	2.10 **		4.20 **	
individual elements as		lithium	0.40 *	0.40 *		0.43 *	
well as to their interactions.		mercury	n d *	n d *		n d *	
The pH optimum depends		selenium	n d *	n d *		n d *	
upon soil organic		silver	n d *	n d *		n d *	
matter and clay content-		strontium	0.61 *	0.68 *		0.75 *	
for clay and loam soils:		tin	n d *	n d *		n d *	
under 5.2 is too acidic		vanadium	1.28 **	1.20 **		1.38 **	
6.5 to 7 is ideal		Saturation Extract					
over 8.0 is too alkaline		pH value	7.69 ****	7.76 ****		7.68 ****	
The ECe is a measure of		ECe (milli-	0.72 **	0.45 **		0.44 **	
the soil salinity:		mho/cm)		millieq/l		millieq/l	
1-2 affects a few plants		calcium	61.1 3.1	38.8 1.9		41.3 2.1	
2-4 affects some plants,		magnesium	14.3 1.2	8.7 0.7		9.7 0.8	
> 4 affects many plants.		sodium	43.6 1.9	32.9 1.4		26.5 1.2	
		potassium	11.4 0.3	2.3 0.1		2.5 0.1	
		cation sum		4.2		4.1	
problems over 150 ppm		chloride	128 3.6	48 1.3		49 1.4	
good 20 - 30 ppm		nitrate as N	12 0.9	7 0.5		5 0.3	
		phosphorus as P	0.2 0.0	0.3 0.0		0.1 0.0	
toxic over 800		sulfate as S	7.6 0.5	8.5 0.5		11.3 0.7	
		anion sum		2.4		2.4	
toxic over 1 for many plants		boron as B	0.28 **	0.16 *		0.22 **	
increasing problems start at 3		SAR	1.3 *	1.2 *		1.0 *	
est. gypsum requirement-lbs./1000 sq. ft.			37	54		58	
relative infiltration rate		slow/fair	sand - 19.6%	slow sand - 18.0%		slow sand - 18.1%	
soil texture		clay	silt - 34.3%	clay silt - 33.1%		clay silt - 35.9%	
lime (calcium carbonate)		slight	clay - 46.1%	low clay - 48.9%		slight clay - 46.0%	
organic matter		fair		fair		fair	
moisture content of soil		14.5%	gravel over 2 mm	15.2% gravel over 2 mm		15.4% gravel over 2 mm	
half saturation percentage		41.3%	8.8%	40.8% 8.4%		46.3% 8.9%	

Elements are expressed as mg/kg dry soil or mg/l for saturation extract.

pH and ECe are measured in a saturation paste extract. nd means not detected.

Sand, silt, clay and mineral content based on fraction passing a 2 mm screen.

APPENDIX B

2020 RESTORATION MONITORING REPORT

In 2020 vegetation surveys were conducted at restoration sites within currently-managed NCCP/HCP restoration projects located at Alta Vicente and Portuguese Bend Reserves to quantify establishment of native plant habitat through measurements of estimated percent cover of native and non-native plants, litter, and bare ground. This data is used to evaluate the success of restoration based on the goals determined in each site-specific restoration plan.

1.0 ALTA VICENTE SURVEY METHODS

Restored habitat areas were surveyed through qualitative and photographic vegetative assessment techniques along 50m permanent transect lines (location of transects: Appendix B1 and B2, Figure 1 and Figure 2) within three habitat types (coastal sage scrub, cactus scrub, and Palos Verdes blue butterfly habitat). Transects were surveyed in April 2020 by PVPLC Biologist Austin Parker. Success criteria was assessed using qualitative methodology (CNPS Rapid Vegetation Assessment Method) in monitoring Years 1 and Year 2 and with quantitative methodology (point-intercept method) in Years 3 and 5. Photopoints were collected in all monitoring years. Areas that had not achieved success by Year 5 according to criteria, were assessed using qualitative methods to determine overall plant health for the restored area. Qualitative measurements of percent cover for native, non-native, species-specific, and bare/litter categories were collected through use of an adapted form of the CNPS Rapid Vegetation Assessment Method. Quantitative measurements of percent cover and plant size (height and width) were collected using the point-intercept method on a 50m transect to evaluate restoration success based on set criteria for Year 3 and Year 5 after planting. Photopoints were taken at both ends of permanent monitoring transects to aid in the assessment of plant health and establishment. Transects not meeting success criteria by Year 5 (end of required monitoring period) were monitored using qualitative measures to assess plant percent cover and overall recovery of the habitat within a 10-m buffer of the transect.

1.1 ALTA VICENTE PHASE 2 SURVEY RESULTS (YEAR 10)

Cactus Scrub

All Cactus Scrub transects were removed from monitoring activities after achieving success criteria in 2018 or earlier.

PVB Butterfly Habitat

Two monitoring transects (AV2 and AV5) were surveyed within the PVB butterfly habitat of Phase 2 restored areas. AV2 was surveyed within the PVB habitat of Phase 2 restoration following a relocation from Phase 1. Qualitative survey methods (CNPS Rapid Vegetation Assessment Method) found percent cover of native plant species to be 44% with 2% cover by PVB host plants (Table 1). Native plant cover is within the success criteria range for Year 5 goals (Table 8) but host plant cover falls below Year 5 goals.

At AV5, qualitative survey methods (CNPS Rapid Vegetation Assessment Method) found percent cover by native plant species to be 43% with 6% cover by PVB host plants (Table 1). Qualitative assessments indicate that habitat along AV5 is within success criteria goals for native cover (30-60% in Year 5) but the host plant cover falls below Year 5 goals.

Coastal Sage Scrub

One monitoring transect (AV6) was surveyed within the coastal sage scrub of Phase 2 restoration. Qualitative survey methods (CNPS Rapid Vegetation Assessment Method) found percent cover of native plant species to be 58% with the highest cover by *Encelia californica* (20%) and *Artemisia californica* (20%) (Table 1). Qualitative methods describe AV6 as achieving success criteria goals for native plant cover, and will be removed from future monitoring efforts.

1.2 ALTA VICENTE SURVEY RESULTS PHASE 3 (YEAR 3)

Phase 3 restoration in Alta Vicente was officially monitored in 2020 (Year 3) for the first time (AV7 and AV8) using quantitative monitoring methods as well as the Grassland area within Phase 3 using qualitative monitoring methods (CNPS Rapid Assessment Methodology)

Using qualitative methods (Point intercept line transect) two coastal sage scrub habitats were found to be 38% (AV7) and 42% (AV8). While being only 2% below success criteria, AV7 has not met year 3 goal. AV8 however, has met year 3 CSS success criteria and is seemingly on track to meet year 5 success criteria.

1.3 ALTA VICENTE SURVEY RESULTS PHASE 4 (YEAR 2)

Phase 4 restoration in Alta Vicente will not be officially monitored until 2021 (Year 3), however preliminary assessments describe habitat as establishing well and in good health. Using qualitative methods (CNPS Rapid Vegetation Assessment Method) coastal sage scrub and wildflower habitats were found to already be approaching Year 3 goals with native cover at 40% in coastal sage scrub restored areas.

1.4 ALTA VICENTE CONCLUSIONS AND RECOMMENDATIONS

In 2020, two transects (AV6, AV8) met success criteria standards, while three transects (AV2, AV5 and AV7) did not. Transect AV6 within coastal sage scrub habitat was successful in meeting performance standards. Perennial species such as *Artemisia californica*, *Encelia californica*, and *Eriogonum fasciculatum* appear to be well established and in good health. Three species of cactus were observed at the site, with highest presence by *Opuntia littoralis*. Increased cactus presence at the site is likely a result of infill planting directed by the 2017 monitoring report and increased detection due to lower non-native plant and *Encelia californica* cover at the transect. The cactus scrub habitat areas in Phase 1 and 2 restoration at Alta Vicente also received additional cactus planting in 2018 in connection with coastal cactus wren recovery efforts at the site. The recent success at these transects could be attributed to an increased in precipitation

in 2017, 2019, and 2020. Watering and maintenance of these cactus plantings occurred in 2018, 2019 and again in 2020.

Palos Verdes blue butterfly restoration areas made good improvements to meet success criteria standards in 2020, but still failed to meet success criteria. Considerable effort was given to the removal of the invasive plant, crystalline ice plant, in 2016, which was promptly followed by non-native annual grasses colonizing the site. This persistent weed encroachment has required frequent visits from field technicians to reduce weed cover. Following the observed absence of host plant along PVB transects (AV2, AV5) in 2017 monitoring, infill planting later that year (October) reintroduced PVB host plants to the site. It is thought that these infill plants and their progeny comprised the majority of host plants detected in the 2018, 2019, and 2020 monitoring and produced 2% and 7% cover by host plant species at transects AV2 and AV5. Restoration work in October 2018 also added additional host plant and drip line irrigation to further promote host plant establishment. It is recommended that weed removal continue and be more frequently implemented at PVB host plant restoration sites than other perennial dominated habitat types. Any infill planting that needs to occur in these areas should be solely PVB and ESB host plant species. Along with potential infill planting of butterfly host plants, future thinning of shrubs may be necessary to keep these areas within Butterfly habitat success criteria percent cover.

2.0 PORTUGUESE BEND SURVEY METHODS (PHASE 1, 2, 3, 4 AND 5)

Restored habitat areas were surveyed through qualitative, quantitative, and photographic vegetative assessment techniques. Qualitative measurements of percent cover for native, non-native, species-specific, and bare/litter were collected through use of an adapted form of the CNPS Rapid Vegetation Assessment Method across nine transects (PBI - PB9). Quantitative measurements of percent cover and plant size (height and width) were collected through use of the point-intercept method across two transects in their third or fifth year of establishment (PV7 and PB9). Photopoint documentation of all restored areas continued, and typically included a photograph being taken at the beginning and end of each monitoring transect. Monitoring surveys were conducted throughout April 2020. Locations of monitoring transects and photopoints can be found in Appendix B2, Figure 2.

2.1 PORTUGUESE BEND SURVEY RESULTS FOR PHASES 1 AND 2 (YEAR 8)

South-facing Coastal Sage Scrub (CSS)

Two monitoring transects (PBI and PB2) within the south-facing CSS of Phase 1 and 2 restoration did not meet Year 5 success criteria evaluation in 2017 and were subsequently monitored in 2018, 2019, and again in 2020 using qualitative (CNPS Rapid Vegetation Assessment) methods.

At PBI, the presence of 12 native plant species, a total native plant cover of 52.5%, and a non-native plant cover of 2.5% were observed (Table 7). Native plant species with the highest percent cover at this transect included *Artemisia californica* (25%), *Heteromeles arbutifolia* (8%), and *Encelia californica* (%) (Table 7). PBI did meet final success criteria for native plant cover in 2020. At the second monitoring transect, PB2, the presence of 17 native plant species, a total native cover of 50.5%, and non-native cover of 10% were observed (Table 7). Native species with the highest percent cover at this transect included *Artemisia californica* (27%) and *Eriogonum fasciculatum* (8%) (Table 7). PB2 did meet final success criteria in 2020. Transects PBI and PB2 will no longer be monitored using qualitative methods.

North-facing Coastal Sage Scrub (CSS)

One monitoring transect (PB3) situated within the north-facing CSS of Phase 1 and 2 restoration failed to meet success criteria evaluation in 2017 and was subsequently monitored in 2018, 2019, and again in 2020 using qualitative methods (CNPS Rapid Vegetation Assessment).

At PB3, the presence of 18 native plant species, a total native plant cover of 52.5%, and a non-native plant cover of 4.5% were observed (Table 7). Native plant species with the highest percent cover at this transect included *Artemisia californica* (15%) and *Baccharis pilularis* (20%) (Table 7). PB3 did meet final success criteria for native plant cover in 2020. Transect PB3 will no longer be monitored using qualitative methods.

Cactus Scrub

All Cactus Scrub transects situated within cactus scrub of Phase 1 and 2 restoration have met the success criteria and were removed from monitoring activities.

2.2 PORTUGUESE BEND SURVEY RESULTS FOR PHASE 4 (YEAR 6)

North-facing Coastal Sage Scrub (CSS)

All North-facing Coastal Sage Scrub transects situated within cactus scrub of Phase 1 and 2 restoration have met the success criteria and were removed from monitoring activities.

2.3 PORTUGUESE BEND SURVEY RESULTS PHASE 5 (YEAR 5)

South-facing Coastal Sage Scrub (CSS)

One monitoring transect (PB8) within south-facing CSS of Phase 5 restoration was evaluated against success criteria in 2018 and surveyed using both quantitative (point intercept) and qualitative (CNPS Rapid Vegetation Assessment) methods. Quantitative and qualitative measurements describe this transect as meeting criteria for both native and non-native plant cover in Year 3 monitoring in 2018. PB8 was monitored again in 2020 (Year 5) using both quantitative and qualitative methods.

At PB8, quantitative methods were used to identify the presence of 11 native plant species, a total native plant cover of 81% and non-native plant cover of 0% (Table 3). Native plant species with the highest percent cover at this transect included *Artemisia californica* (35%) and *Eriogonum fasciculatum* (Table 3). Qualitative methods (CNPS Rapid Vegetation Assessment) were used to identify the presence of 16 native plants, a total native plant cover of 58.5%, and non-native cover of 2.5% (Table 7). Native species with the highest percent cover were *Artemisia californica* (25%), *Eriogonum fasciculatum* (8%), and *Encelia californica* (7%) (Table 7). Quantitative and Qualitative measurements describe this transect as meeting criteria for both native and non-native plant cover in Year 5 monitoring. The transect PB8 will no longer be monitored in the future.

Cactus Scrub

One monitoring transect (PB9) within cactus scrub of Phase 5 restoration was evaluated against success criteria in 2020 and surveyed using both quantitative (point intercept) and qualitative (CNPS Rapid Vegetation Assessment) methods.

At PB9, quantitative methods were used to identify the presence of 8 native plant species, a total native plant cover of 72% and non-native plant cover of 6% (Table 3). Native plant species with the highest percent cover at this transect included *Artemisia californica* (15%), *Encelia californica* (15%), and *Opuntia littoralis* (23%) (Table 3). Qualitative methods (CNPS Rapid Vegetation Assessment) were used to identify the presence of 14 native plants, a total native plant cover of 54.5%, and non-native cover of 2% (Table 7). Native species with the highest percent cover were *Artemisia californica* (15%) and *Encelia californica* (13%) (Table 7). Quantitative measurements describe this transect as meeting criteria for both native and non-native plant cover in Year 5 monitoring, however qualitative measurements describe this transect as not passing due to the total Cactus species (5% qualitatively) not meeting success criteria. The transect PB9 will be monitored in 2021 (Year 6) using qualitative methods.

2.4 PORTUGUESE BEND CONCLUSIONS AND RECOMMENDATIONS

Five transects within restored habitat of Portuguese Bend were evaluated for success criteria in 2020. Of these, two (PB8, PB9) were under quantitative evaluation (Year 5) as well as qualitative evaluation, another four transects (PBI, PB2, and PB3) were qualitatively evaluated after failing to meet Year 5 success criteria in previous years.

Several transects within coastal sage scrub habitat (north and south facing) of Phase 1 and 2 were able to meet success criteria along with one transect in cactus habitat of Phase 5. Phase 1 and 2 are the earliest phases of the now 25 acres of restoration in Portuguese Bend. Monitoring transects in these areas have now met success criteria measures and display good overall health of the vegetation. As mentioned in the 2017, 2018, and 2019 reports, several factors had been preventing transects within these phases from being successful; namely the invasion by the non-native black mustard (*Brassica nigra*) and drought conditions. With the efforts to clear black mustard from the restoration

area, native plants were still slow to recover following the strong mustard influx in 2017 and 2019 that comes with the higher than normal average rainfall that occurred in 2017 and 2019. But with that precipitation increase came an increase in native shrub cover, thus reaching the goal of at least 50% percent relative cover of native Coastal Sage Scrub plants in these initial phases. The cactus restoration in Phase 5 also failed to meet criteria in the qualitative methods, but passed using the quantitative methods. Infill planting of native species, mostly cactus species, occurred in 2018 and early 2019, before the growing season. It is recommended that Phase 5 cactus restoration area continue to be monitored and maintained to remove non-native plant cover and allow the cactus species to grow and increase their relative cover so that the area can pass the qualitative monitoring. Even with infill planting efforts, cactus scrub is notoriously slow growing and will take longer than the allotted 5 year project timeline to reach success criteria.

The resulting increase in percent cover of native shrubs and subsequent achieving of success criteria in Phase 1 and 2 may be attributed to the higher than normal rainfall in early 2019 as well as the slightly above rainfall in 2020. Also later phases of restoration in Portuguese Bend (Phase 4 and 5) appear to be benefiting from “lessons learned” in earlier phases (Phase 1 and 2). The early phases were planted in lower density and irrigated with overhead sprinklers, and have not achieved success criteria in the timeline required by the Habitat Restoration Plan and NCCP/HCP. PVPLC has since implemented restoration phases with drip irrigation which has reduced plant die off and reduced germination of nonnative weeds, as well as planting in higher density (more plants per acre). Subsequent planting phases have achieved more transects passing or progressing toward achieving success criteria goals. It is recommended that areas with near or qualifying success criteria evaluations continue to receive nonnative plant control to maintain positive native plant growth and establishment.

Table 1. Alta Vicente Qualitative Survey Data

Percent cover along each 50m transect as observed along 10m swath on each side of the transect.

Species	AV2	AV5	AV6	Phase 4	Grassland
<i>Acmispon glaber</i>	1	1		1	
<i>Amsinckia menziesii</i>					
<i>Artemisia californica</i>	20	15	20	12	
<i>Asclepias fascicularis</i>					1
<i>Astragalus trichopodus</i>	1	5		0.5	
<i>Atriplex lentiformis</i>				18	
<i>Baccharis salicifolia</i>					
<i>brickelia</i>					
<i>Cylindropuntia prolifera</i>	0.5		0.5		
<i>Deinandra paniculata</i>					
<i>Descurainia pinnata</i>		0.5			
<i>Elymus condensatus</i>	1	1			
<i>Encelia californica</i>	5	15	20	2	
<i>Eriogonum cinereum</i>	1	1	1		
<i>Eriogonum fasciculatum</i>				3	
<i>Eriogonum parvifolium</i>		1	2		
<i>Eschscholzia californica</i>				0.5	2
<i>Euphorbia albomarginata</i>					
<i>Hazardia squarrosa</i>					
<i>Heteromeles arbutifolia</i>	0.5				
<i>Isocoma menziesii</i> var. <i>sedoides</i>					
<i>Lupinus succulentus</i>					
<i>Malosma laurina</i>	1				
<i>Malacothrix saxatilis</i>		0.5			
<i>Marah macrocarpa</i>					
<i>Melilotus indicus</i>		0.5			
<i>Mirabilis laevis</i>	0.5	0.5			
<i>Opuntia littoralis</i>	1		2		
<i>Opuntia oricola</i>			2		
<i>Peritoma arborea</i>	0.5	0.5	0.5		
<i>Rhus integrifolia</i>	5	1	8	2	
<i>Rhus ovata</i>					
<i>Ricinus communis</i>					
<i>Salsola</i> sp.		0.5			
<i>Salvia leucophylla</i>	5		2	1	0.5
<i>Salvia mellifera</i>	0.5				
<i>Stipa</i> sp.					40
<i>Solanum douglasii</i>					
<i>Verbena</i> sp.					
Total Native Cover	44	43	58	40	43.5
NNAG	2	5	1	3	7
NNP	3	9.5	4	5.5	10
Total Non-native Cover	5	14.5	5	8.5	17
Bare	16	10	16	1	1
Litter	35	32	21	51.5	38.5
Total Bare and Litter	51	42	37	52.5	39.5
Total Plant Cover	49	58	63	48.5	60.5

Table 2. Alta Vicente Quantitative Survey Data for Phase 3

Relative % Cover	AV7	AV8
<i>Artemisia californica</i>	20	2
<i>Encelia californica</i>		12
<i>Eriogonum cinereum</i>	2	12
<i>Eriogonum fasciculatum</i>	12	8
<i>Eriogonum parvifolium</i>		4
<i>Salvia leucophylla</i>	2	4
<i>Salvia mellifera</i>	2	
Total Native Plants	38	42
NNAG	0	0
NNP	0	0
Total Non-native Plants	0	0
Bare	30.00	27
Litter	32.00	29
Total Bare and Litter	62.00	56.00
Total Plant Cover	38	41

Sampling dates for Alta Vicente 2020 CNPS Rapid Vegetation Assessment and quantitative monitoring of phase 3:

AV2, AV5, and AV6, Phase 4, Grassland: April 2020

Table 3. Portuguese Bend

Portuguese Bend Quantitative Monitoring

Relative % Cover	PB8	PB9
<i>Artemisia californica</i>	35	15
<i>Asclepias fascicularis</i>	4	
<i>Baccharis pilularis</i>	4	2
<i>Encelia californica</i>	4	15
<i>Eriogonum cinereum</i>		3
<i>Eriogonum fasciculatum</i>	18	3
<i>Eriogonum parvifolium</i>	4	
<i>Malacothrix saxatilis</i>	2	
<i>Opuntia littoralis</i>		23
<i>Stephanomeria virgata</i>		6
<i>Salvia leucophylla</i>	2	3
<i>Salvia mellifera</i>	4	
<i>Sambucus nigra ssp. caerulea</i>	2	
<i>Solanum douglasii</i>	2	
<i>Stipa sp.</i>		2
Total Native Plants	81	72
NNAG	0	0
NNP	0	6
Total Non-native Plants	0	6
Bare	10.00	6
Litter	10	16
Total Bare and Litter	20	22
Total Plant Cover	81	72

Sampling dates for Portuguese Bend 2020 point-intercept:

PB8 and PB 9: April 2020

Table 4. Portuguese Bend Qualitative Monitoring Data

Percent cover along each 50m transect as observed along 10m swath on each side of the transect.

2020 Vegetation Assessment (for report)					
Percent Cover (Veg Assessment)					
Species	PB1	PB2	PB3	PB8	PB9
<i>Acmispon glaber</i>		0.5	0.5		
<i>Ambrosia psilostachya</i>			0.5		
<i>Artemisia californica</i>	25.0	27.0	15.0	25.0	15.0
<i>Asclepias fascicularis</i>				0.5	
<i>Astragalus trichopodus</i>	0.5			0.5	
<i>Baccharis pilularis</i>	3.0	2.0	20.0	1.0	0.5
<i>Baccharis salicifolia</i>		0.5		0.5	
<i>Castilleja exserta</i>		0.5			
<i>Deinandra fasciculata</i>		1.0			
<i>Dichelostemma capitatum</i>					
<i>Elymus condensatus</i>			0.5		
<i>Encelia californica</i>	5.0			7.0	13.0
<i>Eriogonum cinereum</i>		0.5	2.0		1.0
<i>Eriogonum fasciculatum</i>	3.0	8.0	1.0	8.0	0.5
<i>Eriogonum parvifolium</i>				1.0	0.5
<i>Heteromeles arbutifolia</i>	8.0	2.0	3.0	2.0	2.0
<i>Isocoma menziesii</i> var. <i>sedoides</i>	1.0	2.0	1.0		
<i>Malacothrix saxatilis</i>			0.5	5.0	13.0
<i>Malosma laurina</i>			1.0		
<i>Marah macrocarpa</i>			0.5		
<i>Opuntia littoralis</i>					5.0
<i>Phacelia cicutaria</i>					0.5
<i>Pseudognaphalium biolettii</i>		0.5			
<i>Rhus integrifolia</i>	2.0	2.0	2.0	3.0	
<i>Salvia leucophylla</i>	3.0	1.0	1.0	2.0	1.0
<i>Salvia mellifera</i>	1.0	1.0	0.5	1.0	
<i>Salvia leucophylla</i>			1.0		
<i>Sambucus nigra</i> subsp. <i>caerulea</i>			2.0	1.0	1.0
<i>Sisyrinchium bellum</i>		0.5			
<i>Stipa</i> sp.		1.0		0.5	0.5
<i>Stephanomeria virgata</i>	0.5			0.5	1.0
Unidentified No 1	0.5	0.5	0.5		
Total Native Cover	52.5	50.5	52.5	58.5	54.5
NNAG	1.0	7.0	2.0	1.0	0.5
NNP	1.5	3.0	2.5	1.5	1.5
Total Non-native Cover	2.5	10.0	4.5	2.5	2.0
<i>Bare</i>	10.0	1.0	1.0	1.0	1.0
<i>Litter</i>	35.0	39.5	42.0	38.0	42.5
Total Bare and Litter	45.0	40.5	43.0	39.0	43.5
Total Plant Cover	55.0	60.5	57.0	61.0	56.5

Sampling dates for Portuguese Bend 2020 CNPS Rapid Vegetation Assessment:

PB1, PB2, and PB7: April 2020

PB8, and PB9: April 2020

Table 5. Alta Vicente and Portuguese Bend success criteria measures.

Preserve	Year	Percent Cover of Native Species (%)			Percent Cover of Non-native Species (%)	
		CSS	Cactus Scrub ¹	PVB Habitat ²	CSS	Cactus Scrub
Alta Vicente	Year 1*	10%	10%	10%		
	Year 2*	20%	20%	20%		
	Year 3	>40%	>30%	30%-60% max		
	Year 5	>50%	>40%	30%-60% max		
Portuguese Bend	Year 3	>40% (≥30% perennial)	>30% (≥20% perennial and 5% cactus)			
	Year 5	>50%	>40% (≥ 10% cactus)		<25% (<5% perennials w/ no CAL-IPC List A except NNAG)	<25% (<5% perennials w/ no CAL-IPC List A except NNAG)

* Percentage based on visual estimates.

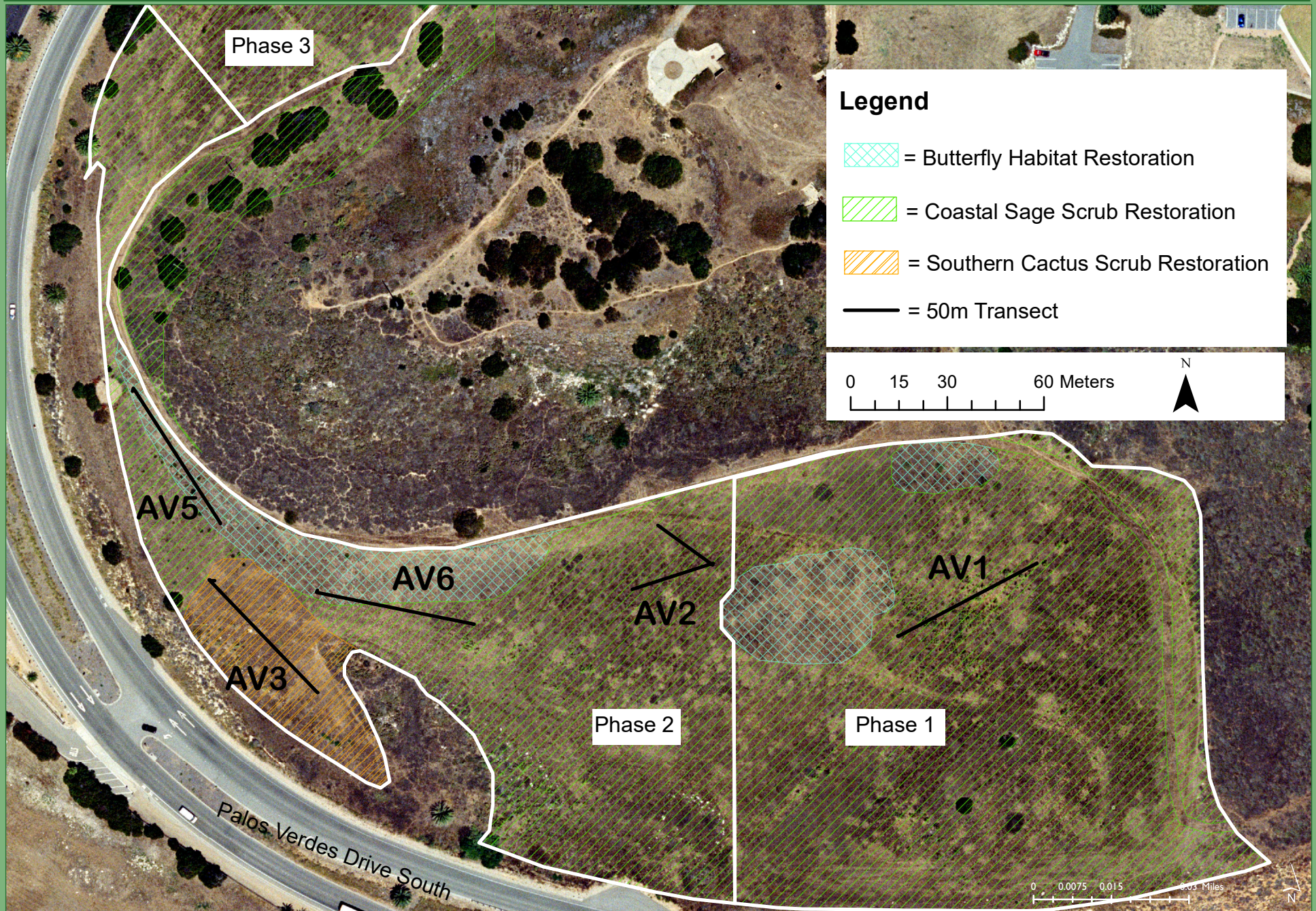
¹ Percentage coverage of cactus species should be at least 1% for Year 1, 3% for year 2, 5% for Year 3, and 10% for Year 5.

² From Year 3 on, there should be at least 10% coverage from *Acmispon glaber* and/or *Astragalus trichopodus* and the woody shrubs should be maintained at 10-20%.

CAL-IPC = California Invasive Plant Council

NNAG = non-native annual grass

Alta Vicente Monitoring Transects



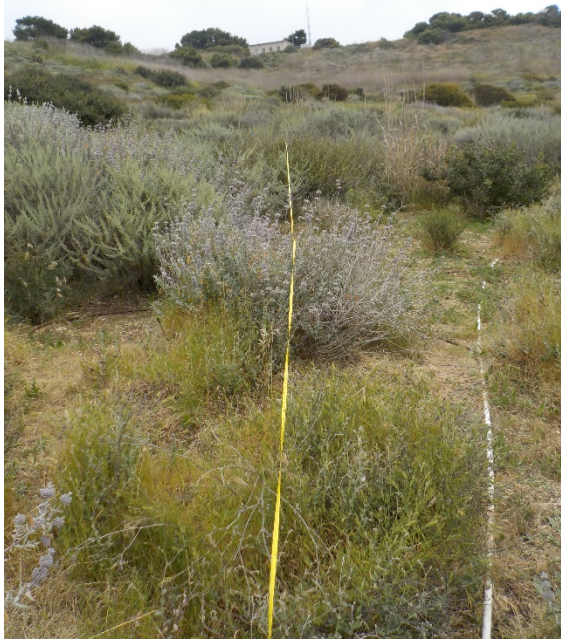
Appendix B1 – Alta Vicente Transect Images



AV2 Beginning



AV2 Middle



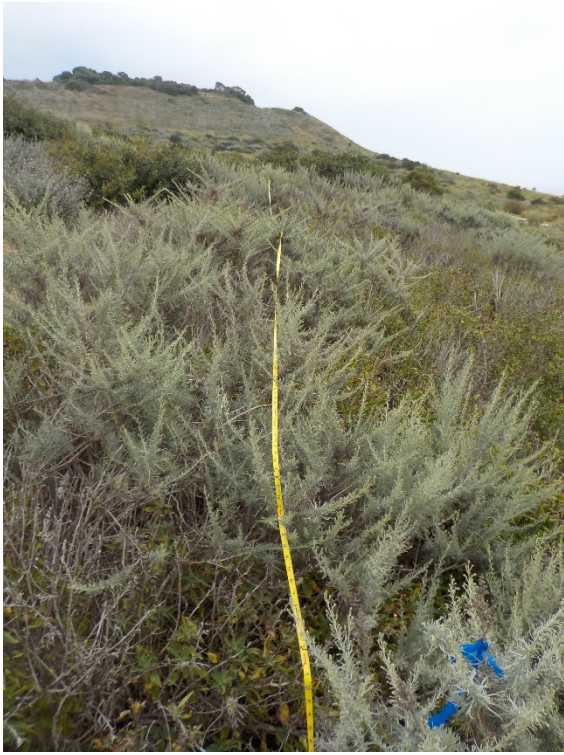
AV2 End



AV5 Beginning



AV5 End



AV6 Beginning



AV6 End



AV7 Beginning



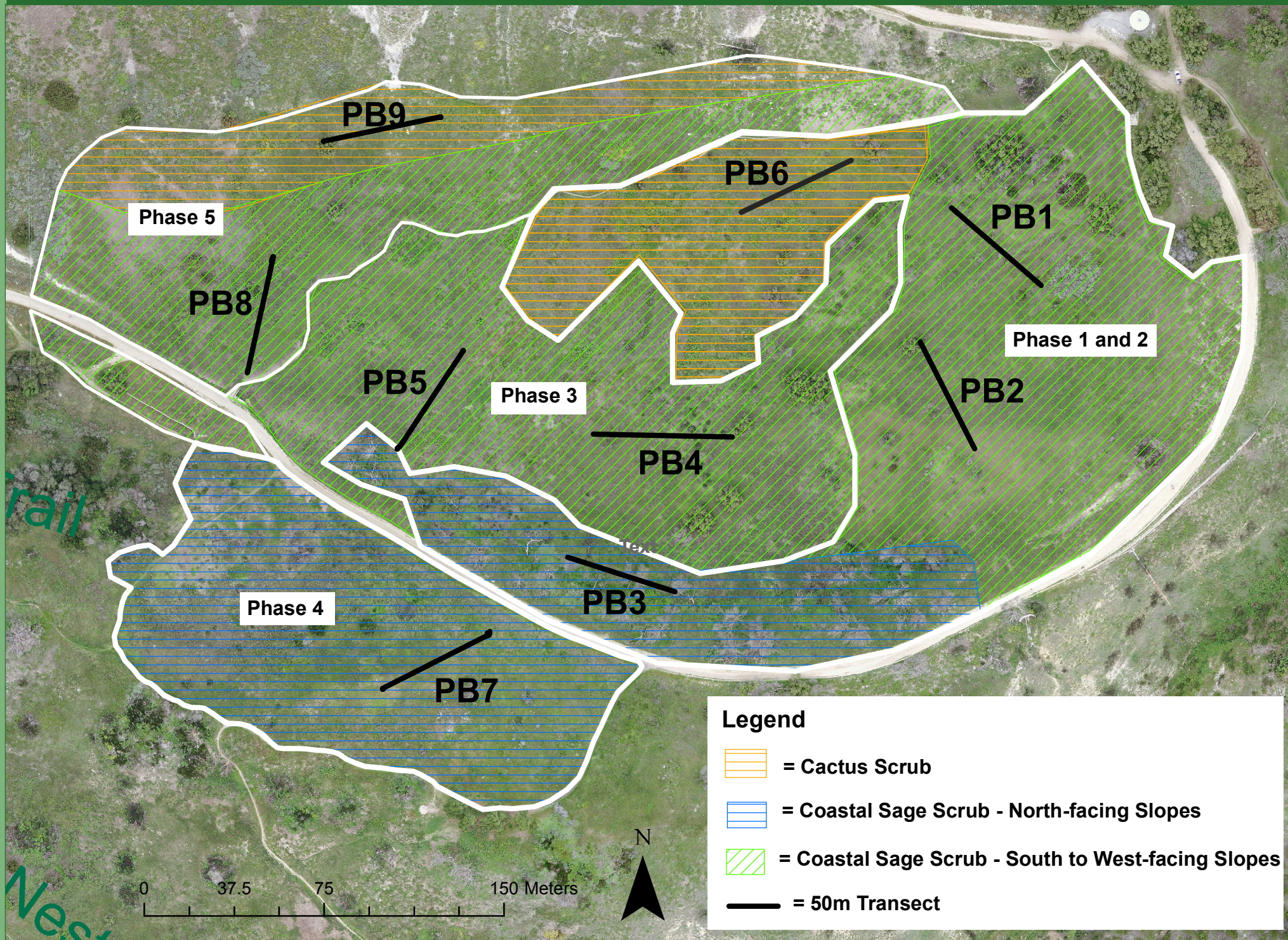
AV7 End



AV8 Beginning



AV8 End



Appendix B2 – Portuguese Bend Transect Images



PB1 Beginning



PB1 End



PB2 Beginning



PB2 End



PB3 Beginning



PB3 End



PB8 End



PB9 Beginning



PB9 End

APPENDIX C

HABITAT IMPACTS

Preserve Projects and Habitat Impacts Summary

In January of 2020, PVPLC proposed the flying of a drone for research purposes in the lower Portuguese bend area. Since bird breeding season had not yet started, no bird surveys were conducted. PVPLC staff was on site throughout the flight to make sure all habitat minimization measures were in place.

In the summer of 2020, the PVIC trail coastal bluff fence replacement was set to start. The project consisted of the removal of old metal and wooden fencing on the coastal side of the trail and replacement with concrete precast ranch railing. The project was completed by the fall and PVPLC staff met on site to document any impacts to the surrounding habitat.

In March of 2020, Cox cable coordinated with PVPLC and RPV to underground aerial cable that was mounted on steel posts along the preserve boundary. PVPLC made sure no impacts would occur to the surrounding biological resources.

In April of 2020, SCE contractor Hampton-Teddere proposed work on various poles for enhanced fire safety. Bird surveys showed no nesting activity in the area and the project had minimal impacts.

In April of 2020, various power poles on Burma Road were targeted for upgrades for high fire area. The poles were surveyed for nesting activity and impacts and none were found.

In June of 2020, SCE proposed work on a power pole at Beach School Trail in Abalone Cove. Minimization measures were taken to keep all equipment on the road and not create any new impacts to the preserve.

In July of 2020, SCE proposed the removal of various nonfunctional power poles on the preserve. Various site visits addressed access and any possible impacts to the preserve. Minimization measures were taken to limit impacts to the preserve and the poles were carefully removed and disposed of.

In July of 2020, SCR targeted several poles on Water tank and Klondike trail for replacement. Poles were replaced and annual fuel modification zones were cleared around those poles. Bird surveys were conducted and no impacts were observed to the preserve.

In September of 2020, the city of RPV planned to install a gate at the Burma Road preserve entrance. PVPLC coordinated to do a bird survey and assess if any impacts would occur to the surrounding biological features. No impacts were recorded.

In September of 2020, McGee Surveying planned to do its annual surveys in the preserve. Since the locations would be the same as previous years, it was determined that no new impacts would occur on the preserve.

In November of 2020, SCE/Davey Tree met with PVPLC and RPV staff to inspect areas of annual line clearance along power poles. PVPLC educated the contractor about minimization measures and it was concluded that no impacts would occur from the project.

In November of 2020, a water main belonging to Cal Water broke and drained onto Vanderlip Trail. The trail was heavily eroded and closed. Various site visits worked out the best solution to the project with minimal impacts to the preserve. The impacts were documented pre and post work. Since the project was finished in 2021, any impacts will be reported in the 2019 – 2021 Comprehensive Annual Report.

In December of 2020, PVPLC coordinated directly with Express Sign & Neon Company to fabricate and install two preserve signs at Malaga Cove and Ocean Trails. Locations of installation and staging were marked and flagged. It was determined that no impacts would occur from the project.

In December of 2020, Bellfree Contractors was contracted to work on water diversion features along Burma Road and Water Tank Trail. Areas of concern were flagged and the locations of water diversion swales were adapted to minimize any impacts to the preserve. Since the project was finished in 2021, any impacts will be reported in the 2019 – 2021 Comprehensive Annual Report.

Table 1. Habitat Impacts in the PVNP in 2020

Date	Project	Impact	Location and Vegetation Type	Size
July – September	PVIC Trail Coastal Bluffs fence replacement	Native plants were removed or trimmed. No host plant was impacted	Vicente Bluffs along Seascapes Trail; Coastal Sage Scrub	.001
December	Burma Road Erosion Project	Will be reported in 2021 Annual Report		-
December	Vanderlip Water Main Break Repairs	Will be reported in 2021 Annual Report		-

APPENDIX D

2020 TARGETED EXOTIC REMOVAL PROGRAM FOR PLANTS (TERPP)

1.0 INTRODUCTION

The Palos Verdes Peninsula Land Conservancy (PVPLC), as manager of the Palos Verdes Nature Preserve (PVNP), conducts strategic weed control activities throughout the year as part of the Targeted Exotic Plant Removal Plan for Plants (TERPP). As directed in the draft Rancho Palos Verdes Natural Communities Conservation Plan (NCCP), PVPLC selects five acres or 20 small sites of invasive plants for removal each year. The overall goal of this program is to systematically target invasive species throughout the PVNP to increase the success of native plant growth and create greater habitat opportunities for wildlife.

The TERPP is an element of the NCCP that includes a specific protocol for ranking exotic species populations and strategically removing those species over time (Appendix D1-D7). The 2020 TERPP Report documents PVPLC's effort over the past year to remove exotic plant species that threaten native vegetation in the PVNP. It details the methods of assessing the threat of individual exotic species to native vegetation, field methods for removal and provides site-specific documentation related to every completed removal site.

2.0 SITE ASSESSMENT

Invasive species control is included in PVPLC's annual conservation planning strategy where Stewardship staff prioritize potential TERPP sites and assess best practice methods for removal. PVPLC staff locate TERPP sites to target for the calendar year, assess the best method for eradication, photo document and map the population/s, and conduct weed removal accordingly.

The PVPLC weighs potential areas for exotic species control based on several criteria:

1. Threat to native vegetation, particularly populations of NCCP-covered species;
2. Feasibility of eradication, which includes limiting disturbance to native habitat and ease of access, and;
3. Invasiveness of exotic species, using a synthesized rating system drawn from plant invasiveness rankings from both the California Invasive Plant Council (Cal-IPC) and the California Department of Food and Agriculture (CDFA).

Through regular property reviews and viewing fine scale imagery through the Geographic Information System (GIS), ArcGIS, PVPLC plans for invasive species control across the entire Preserve area.

A sample of the TERPP field data collection form is in Appendix D1. The forms provide basic information about the species targeted, including site identification number and property, approximate location, removal methods used, and general comments related to the removal

activities. PVPLC also includes photo documentation: staff photographs the sites before work takes place and after the removal of the individual or population of exotic species. Photo documentation not only confirms completion of the work, but also provides a snapshot of the surrounding environment at the time of the TERPP-related activities. This record helps to create a historical record of the presence of non-native plant species on the sites, which may inform future restoration efforts. Beginning in 2017, PVPLC began using the GIS based application, Survey 123, to track the TERPP sites. Using this application has assisted with efficiency and accuracy in data collection and reporting.

Each TERPP site is tracked via GIS, a tool that aids planning and monitoring efforts. PVPLC has treated 1130 individual TERPP sites since 2006. As *Euphorbia terracina* is a high priority invasive and may take multiple treatments to control, these populations are treated in numerous years. In 2020, invasive species focus was centered on the large perennial, *Acacia* (*Acacia cyclops*) with 6 removals sites which totaled approximately 14 acres as well as mowing of 10.8 acres of mustard at 3 sites.

3.0 FIELD METHODS

PVPLC staff uses best practice, the most effective and least intrusive, methods at all times when conducting TERPP-related activities. High priority areas may occur near rare or endangered biological populations. Care is taken to minimize soil erosion, fire risk, disturbance to surrounding native vegetation and further dispersal of the exotic species. PVPLC utilizes a combination of methods to conduct exotic species removal, generally limited to the following:

- Mechanical removal - staff may use tools with motorized blades to fell larger species;
- Hand removal - staff conduct most removals by hand pulling and/or with small hand tools for pruning and cutting;
- Chemical control - trained staff applies herbicides at the appropriate phase of vegetative growth;
- Growth and seed maturation, and;
- Disposal - City of Rancho Palos Verdes staff coordinate with waste companies to supply green waste and trash containers.

Qualified Licensed Applicator(s) develop all recommendations for chemical pest control and senior staff supervises field staff and contractors in sensitive areas. Additionally, field staff has an integral role in the TERPP and often have crucial, site-specific knowledge related to the sites.

4.0 2020 TREATMENTS

In 2020, PVPLC treated 6 populations of *Acacia* which totaled approximately 14 acres and mowed an additional 10.8 acres of mustard at 3 locations.

Table I. 2020 TERRP Sites and Treatment Description

Stand ID	Reserve	Name	Stand Size	Number Individu als	Treatment	Percent Treated
PB_AcCy_14	Portuguese Bend	<i>Acacia cyclops</i>	>1000 ft ² 4 acres	50-100	Tree Removal	75 - 100%
PB_AcCy_15	Portuguese Bend	<i>Acacia cyclops</i>	>1000 ft ² 1.5 acres	50-100	Tree Removal	75 - 100%
PB_AcCy_16	Portuguese Bend	<i>Acacia cyclops</i>	>1000 ft ² 2 acres	50-100	Tree Removal	75 - 100%
VB_AcCy_04	Vicente Bluffs	<i>Acacia cyclops</i>	>1000 ft ² 4 acres	50-100	Tree Removal	75 - 100%
FO_AcCy_01	Forrestal	<i>Acacia cyclops</i>	>1000 ft ² 1 acre	10-25	Tree Removal	75 - 100%
SR_AcCy_01	San Ramon	<i>Acacia cyclops</i>	>1000 ft ² 1.5 acres	50-100	Tree Removal	75 - 100%
FI_BrNi_01	Filiorum	<i>Black Mustard</i>	>1000 ft ² 4.2 acres	100+	Mowing	75 - 100%
TS_BrNi_01	Three Sisters	<i>Black Mustard</i>	>1000 ft ² .8 acres	100+	Mowing	75 - 100%
SR_BrNi_02	San Ramon	<i>Black Mustard</i>	>1000 ft ² 5.82 acres	100+	Mowing	75 - 100%

5.0 REFERENCES

- California Invasive Plant Council 2006. California Invasive Plant Inventory. February. California Invasive Plant Council: Berkley, CA.
- Palos Verdes Peninsula Land Conservancy 2007a. 2007 Targeted Exotic Removal Plan for Plants for the Portuguese Bend Nature Preserve For the Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan. April.
- Palos Verdes Peninsula Land Conservancy 2008. 2008 Annual Report for the Targeted Exotic Removal Program for Plants for the Portuguese Bend Nature Preserve For the Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan. September.
- State of California 2007. Department of Food and Agriculture Division of Plant Health & Prevention Services Noxious Weed Ratings. Retrieved September 2007, from: <http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/pdfs/noxiousweed_ratings.pdf>.
- URS 2006. City of Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan. June 9.

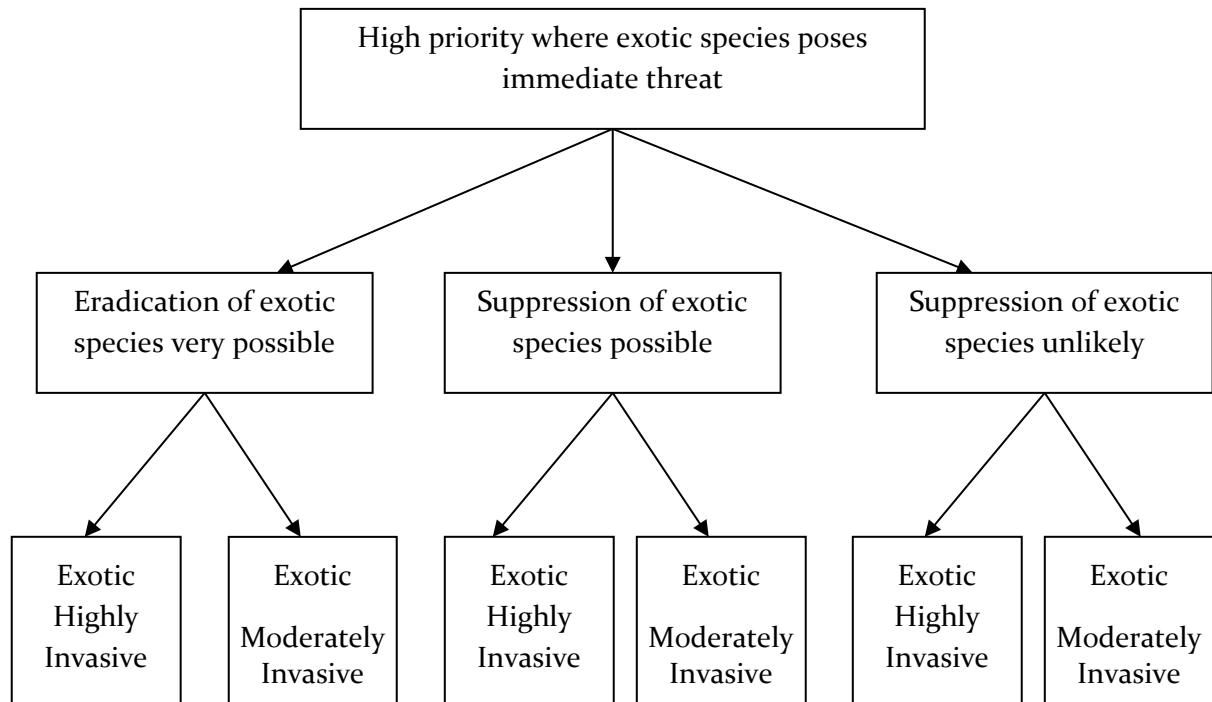
APPENDIX D1: SAMPLE TERPP FORM

Invasive Weed Mapping Field Datasheet

Survey Type New Infestation Assessment Treatment			Surveyor's Name		
Date			Location Description:		
Species					
Preserve					
Stand ID			Surrounding Vegetation Type: cactus scrub coastal sage scrub riparian bluff grassland non-native plants trail non-native annual grass (NNAG) Other		
Stand Size 1 ft ² - 10 ft ² 10 ft ² - 100 ft ² 100 ft ² - 300 ft ² 300 ft ² - 600 ft ² 600 ft ² - 1000 ft ² > 1000 ft ²			Stand Comments:		
No. Individuals 1-10 10-50 50-100 100-200 200-500 500-1000 >1000					
Percent Canopy Cover 1-5% 5-10% 10-25% 25-50% 50-75% +75%					
Plant Phenology Flowering Non-Flowering Fruiting					
Plant Age Seedling Juvenile Mature Dead					
Treatment Type Hand pull Herbicide Hand-pull/Herbicide Weed-whip Mulch Tree removal Other			Treatment Comments:		
Area Treated 1 ft ² - 10 ft ² 10 ft ² - 100 ft ² 100 ft ² - 300 ft ² 300 ft ² - 600 ft ² 600 ft ² - 1000 ft ² > 1000 ft ²					
Percent of Infestation Treated 0-25% 25-50% 50-75% 75-100%					
Photo Image Numbers:			Additional Comments:		
Stand ID Example: AC_EuTe_01_YYYY.MM.DD.jpg Preserve abbreviations: AA - Agua Amarga AC - Abalone Cove AV - Alta Vicente CP - Chandler Preserve DF - DFSP GF - George F FI - Filiorum FO - Forrestal OT - Ocean Trails PB - Portugeuese Bend SR - San Ramon TS - Three Sisters VB - Vicente Bluffs VN - Vista del Norte WP - White Point OR - Other					

Rev 3/13

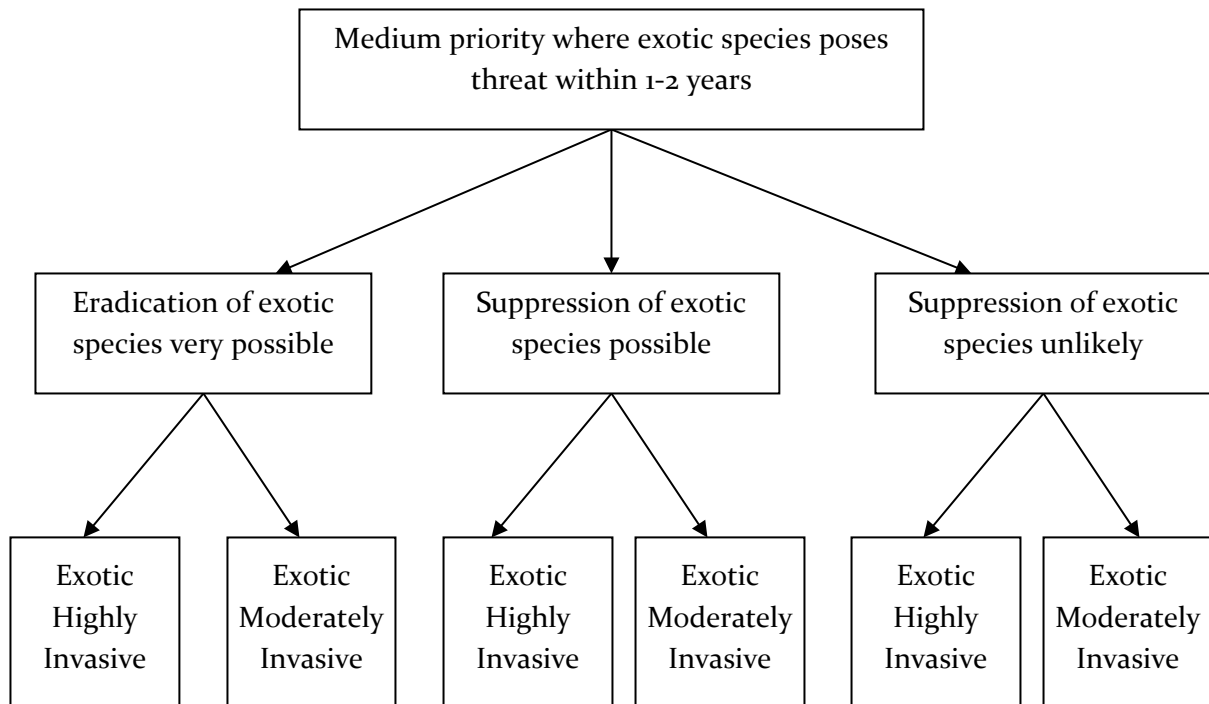
APPENDIX D2: FLOWCHART FOR HIGH PRIORITY THREAT TO NATIVE VEGETATION



Priority Ranking For Control of Exotic Species

1-3= Low priority 4-7= Medium priority 8-10= High priority

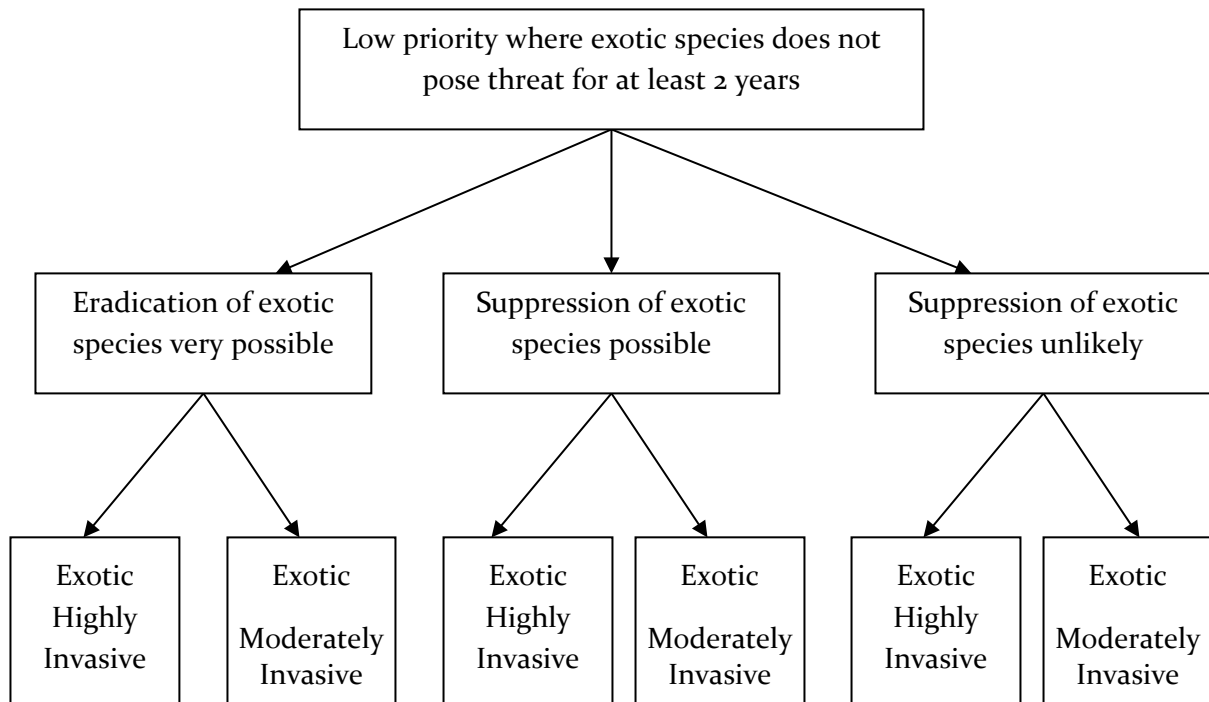
APPENDIX D3: FLOWCHART FOR MEDIUM PRIORITY DEGREE OF THREAT TO NATIVE VEGETATION



Priority Ranking For Control of Exotic Species

1-3= Low priority 4-7= Medium priority 8-10= High priority

APPENDIX D4: FLOWCHART FOR LOW PRIORITY DEGREE OF THREAT TO NATIVE VEGETATION



Priority Ranking For Control of Exotic Species

1-3= Low priority 4-7= Medium priority 8-10= High priority

APPENDIX D5: HIGHLY INVASIVE SPECIES

<u>Genus species</u>	<u>Common name</u>
<i>Aegilops triuncialis</i>	Barbed goatgrass
<i>Alternanthera philoxeroides</i>	Alligatorweed
<i>Ammophila arenaria</i>	European beachgrass
<i>Arundo donax</i>	Giant reed
<i>Brassica tournefortii</i>	Sahara mustard
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome
<i>Bromus tectorum</i>	Cheatgrass
<i>Carpobrotus edulis</i>	Highway iceplant
<i>Carthamus lanatus</i>	Woolly starthistle
<i>Centaurea solstitialis</i>	Yellow starthistle
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Spotted knapweed
<i>Cortaderia jubata</i>	Jubatagrass
<i>Cortaderia selloana</i>	Pampasgrass
<i>Cytisus scoparius</i>	Scotch broom
<i>Delairea odorata</i>	Cape-ivy
<i>Egeria densa</i>	Brazilian egeria
<i>Ehrharta calycina</i>	Purple veldtgrass
<i>Eichhornia crassipes</i>	Water hyacinth
<i>Elymus caput-medusae</i>	Medusahead
<i>Euphorbia virgata</i>	Leafy spurge;
<i>Genista monspessulana</i>	French broom

<i>Hedera canariensis</i>	Algerian ivy
<i>Hedera helix</i>	English ivy
<i>Hydrilla verticillata</i>	Hydrilla
<i>Lepidium latifolium</i>	Perennial pepperweed
<i>Limnobiium spongia</i>	South American spongeplant
<i>Ludwigia hexapetala</i>	Creeping waterprimrose
<i>Ludwigia peploides</i>	Floating water primrose
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Myriophyllum aquaticum</i>	Parrotfeather
<i>Myriophyllum spicatum</i>	Spike watermilfoil
<i>Onopordum acanthium</i>	Thistle
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Salvinia molesta</i>	Water fern
<i>Sesbania punicea</i>	Scarlet wisteria
<i>Spartina alterniflora</i> x <i>S. foliosa</i>	Smooth hybrid cordgrass
<i>Spartina densiflora</i>	Dense-flowered cordgrass
<i>Spartium junceum</i>	Spanish broom
<i>Tamarix chinensis</i>	Chinese tamarisk, fivestamen tamarisk
<i>Tamarix gallica</i>	French tamarisk
<i>Tamarix parviflora</i>	Smallflower tamarisk
<i>Tamarix ramosissima</i>	Tamarisk
<i>Ulex europaeus</i>	Common gorse

APPENDIX D6: MODERATELY INVASIVE SPECIES

<u>Genus species</u>	<u>Common Name</u>
Acacia dealbata	Silver wattle
Acroptilon repens	Russian knapweed
Ageratina adenophora	Sticky eupatorium
Ailanthus altissima	Tree-of-heaven
Alhagi maurorum	Camelthorn
Arctotheca calendula	Fertile capeweed
Arctotheca prostrata	Capeweed
Asparagus asparagoides	Bridal creeper
Asphodelus fistulosus	Onion weed
Atriplex semibaccata	Australian saltbush
Avena barbata	Slender oat
Avena fatua	Wild oats
Brachypodium distachyon	Annual false-brome
Brachypodium sylvaticum	False-brome
Brassica nigra	Black mustard
Bromus diandrus	Ripgut brome
Carduus nutans	Musk thistle
Carduus pycnocephalus	Italian thistle
Carpobrotus chilensis	Iceplant
Carrichtera annua	Ward's weed
Centaurea calcitrapa	Purple starthistle

<i>Centaurea diffusa</i>	Diffuse knapweed
<i>Centaurea jacea</i> ssp. <i>pratensis</i>	Meadow knapweed
<i>Centaurea melitensis</i>	Tocalote
<i>Centaurea virgata</i> var. <i>squarrosa</i>	Squarrose knapweed
<i>Chondrilla juncea</i>	Skeleton weed
<i>Chrysanthemoides monilifera</i> ssp. <i>monilifera</i>	Boneseed
<i>Cirsium arvense</i>	Canada thistle
<i>Cirsium vulgare</i>	Bull thistle
<i>Clematis vitalba</i>	Old man's beard
<i>Colocasia esculenta</i>	Taro root
<i>Conium maculatum</i>	Poison-hemlock
<i>Cotoneaster franchetii</i>	Orange cotoneaster
<i>Cotoneaster lacteus</i>	Milkflower cotoneaster
<i>Cotoneaster pannosus</i>	Silverleaf cotoneaster
<i>Cynara cardunculus</i>	Artichoke thistle
<i>Cynodon dactylon</i>	Bermuda grass
<i>Cynoglossum officinale</i>	Dog bur
<i>Cynosurus echinatus</i>	Hedgehog dogtail
<i>Cytisus striatus</i>	Portuguese broom
<i>Dipsacus fullonum</i>	Common teasel
<i>Dipsacus sativus</i>	Fullers teasel
<i>Dittrichia graveolens</i>	Stinkwort
<i>Ehrharta erecta</i>	Ehrharta

<i>Elaeagnus angustifolia</i>	Russian olive
<i>Emex spinosa</i>	Devil's thorn
<i>Fallopia japonica</i>	Japanese knotweed; Mexican bamboo
<i>Fallopia sachalinensis</i>	Giant knotweed
<i>Festuca arundinacea</i>	Kentucky fescue
<i>Festuca myuros</i>	Rat-tail fescue
<i>Festuca perennis</i>	Italian ryegrass
<i>Ficus carica</i>	Edible fig
<i>Foeniculum vulgare</i>	Fennel
<i>Gazania linearis</i>	Gazania
<i>Genista monosperma</i>	Bridal veil broom
<i>Glyceria declinata</i>	Mannagrass
<i>Halogeton glomeratus</i>	Halogeton
<i>Hirschfeldia incana</i>	Short-pod mustard
<i>Holcus lanatus</i>	Common velvet grass
<i>Hordeum marinum</i>	Mediterranean barley
<i>Hordeum murinum</i>	Foxtail
<i>Hypericum canariense</i>	Canary Island St. Johnswort
<i>Hypochaeris radicata</i>	Rough cat's-ear
<i>Isatis tinctoria</i>	Dyer's woad
<i>Lepidium chalepense</i>	Whiteweed
<i>Lepidium draba</i>	Heart-podded hoary cress
<i>Leucanthemum vulgare</i>	Ox-eye daisy

<i>Limonium duriusculum</i>	European sea lavender
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax
<i>Linaria vulgaris</i>	Yellow toadflax
<i>Lythrum hyssopifolium</i>	Hyssop loosestrife
<i>Mentha pulegium</i>	Pennyroyal
<i>Mesembryanthemum crystallinum</i>	Crystalline iceplant
<i>Myoporum laetum</i>	False sandalwood
<i>Nicotiana glauca</i>	Tree tobacco
<i>Oxalis pes-caprae</i>	Bermuda buttercup
<i>Pennisetum setaceum</i>	Purple fountain grass
<i>Phalaris aquatica</i>	Harding grass
<i>Potamogeton crispus</i>	Curly-leaved pondweed
<i>Rumex acetosella</i>	Sheep sorrel
<i>Saccharum ravennae</i>	Ravennagrass
<i>Salsola soda</i>	Glasswort
<i>Schinus terebinthifolius</i>	Brazilian pepper tree
<i>Senecio glomeratus</i>	Australian fireweed
<i>Spartina anglica</i>	English cordgrass
<i>Stipa capensis</i>	Cape ricegrass
<i>Tanacetum vulgare</i>	Common tansy
<i>Torilis arvensis</i>	Hedgeparsley
<i>Triadica sebifera</i>	Chinese tallow tree
<i>Vinca major</i>	Periwinkle

Washingtonia robusta

Mexican fan palm

Zostera japonica

Dwarf eelgrass

APPENDIX D7: WATCH LIST

<u>Scientific Name</u>	<u>Common Name</u>
Acacia baileyana	Cootamundra wattle
Acacia cyclops	Cyclops acacia
Acacia latifolia	Sydney golden wattle
Acacia paradoxa	Kangaroothorn
Acacia pycnantha	Golden wattle
Acacia saligna	Orange wattle
Acaena novae-zelandiae	Biddy-biddy
Aegilops cylindrica	Jointed goatgrass
Alopecurus pratensis	Meadow foxtail
Alyssum corsicum	Yellowtuft
Alyssum murale	Yellowtuft
Ambrosia trifida	Giant ragweed
Araujia sericifera	Bladderflower
Berberis darwinii	Darwin barberry
Berteroa incana	Hoary alyssum
Buddleja davidii	Butterfly bush
Carex pendula	Hanging sedge
Casuarina equisetifolia	Beach sheoak
Catharanthus roseus	Madagascar periwinkle
Cenchrus echinatus	Southern sandbur

<i>Cenchrus longispinus</i>	Mat sandbur
<i>Centaurea diluta</i>	Spotted knapweed
<i>Cestrum parqui</i>	Willow jessamine
<i>Chasmanthe floribunda</i>	African cornflag
<i>Cytisus multiflorus</i>	White Spanish broom
<i>Cytisus proliferus</i>	Tagasaste
<i>Datura inoxia</i>	Pricklyburr
<i>Dipogon lignosus</i>	Okie bean
<i>Dipsacus laciniatus</i>	Cutleaf teasel
<i>Dittrichia viscosa</i>	False yellowhead
<i>Echium plantagineum</i>	Patterson's curse
<i>Eucalyptus cladocalyx</i>	Sugargum
<i>Euphorbia lathyris</i>	Caper spurge
<i>Fallopia bohemica</i>	Bohemian knotweed
<i>Galega officinalis</i>	Professorweed
<i>Genista linifolia</i>	Mediterranean broom
<i>Geranium lucidum</i>	Shining geranium
<i>Grevillea robusta</i>	Silkoak
<i>Gunnera tinctoria</i>	Chilean gunnera
<i>Gypsophila paniculata</i>	Baby's breath
<i>Helianthus tuberosus</i>	Jerusalem artichoke
<i>Heliotropium amplexicaule</i>	Clasping heliotrope
<i>Heracleum mantegazzianum</i>	Giant hogweed

Hyparrhenia hirta	Tambookie grass
Hypericum androsaemum	Sweet-amber
Hypericum grandifolium	Large-leaved hypericum
Ipomoea indica	Blue morningglory
Kniphofia uvaria	Redhot poker
Lantana camara	Lantana
Lathyrus latifolius	Perennial sweet pea
Leptospermum laevigatum	Australian tea tree
Malephora crocea	Coppery mesembryanthemum
Maytenus boaria	Mayten
Myoporum laetum	False sandalwood
Nardus stricta	Matgrass
Nothoscordum gracile	False garlic
Oncosiphon piluliferum	Globe chamomile
Onopordum illyricum	Illyerian thistle
Orobanche aegyptiaca	Egyptian broomrape
Paraserianthes lophantha	Plume acacia
Parthenium hysterophorus	Santa Maria feverfew
Paspalum urvillei	Vasey's grass
Paspalum vaginatum	Seashore paspalum
Passiflora tarminiana	Banana passionfruit
Peganum harmala	African-rue
Pennisetum villosum	Feathertop

<i>Persicaria wallichii</i>	Himalayan knotweed
<i>Pittosporum undulatum</i>	Victorian box
<i>Plecostachys serpyllifolia</i>	Petite-licorice
<i>Polygala myrtifolia</i>	Myrtle-leaf milkwort
<i>Pyrus calleryana</i>	Callery pear
<i>Rhamnus alaternus</i>	Italian buckthorn
<i>Romulea rosea</i> var. <i>australis</i>	Rosy sandcrocus
<i>Rytidosperma caespitosum</i>	Wallabygrass
<i>Salpichroa organifolia</i>	Lily of the valley vine
<i>Salsola ryanii</i>	Ryan's Russian thistle
<i>Scabiosa atropurpurea</i>	Pincushion flower
<i>Scolymus hispanicus</i>	Goldenthistle
<i>Senecio linearifolius</i>	Fireweed groundsel
<i>Solanum aviculare</i>	New Zealand nightshade
<i>Solanum carolinense</i>	Carolina horsenettle
<i>Sphaerophysa salsula</i>	Alkali swainsonpea
<i>Stipa brachychaeta</i>	Punagrass
<i>Stipa tenuissima</i>	Mexican feathergrass
<i>Thinopyrum junceiforme</i>	Russian wheatgrass
<i>Ventenata dubia</i>	North Africa grass
<i>Verbena bonariensis</i>	Tall vervain
<i>Zygophyllum fabago</i>	Syrian beancaper

APPENDIX D8

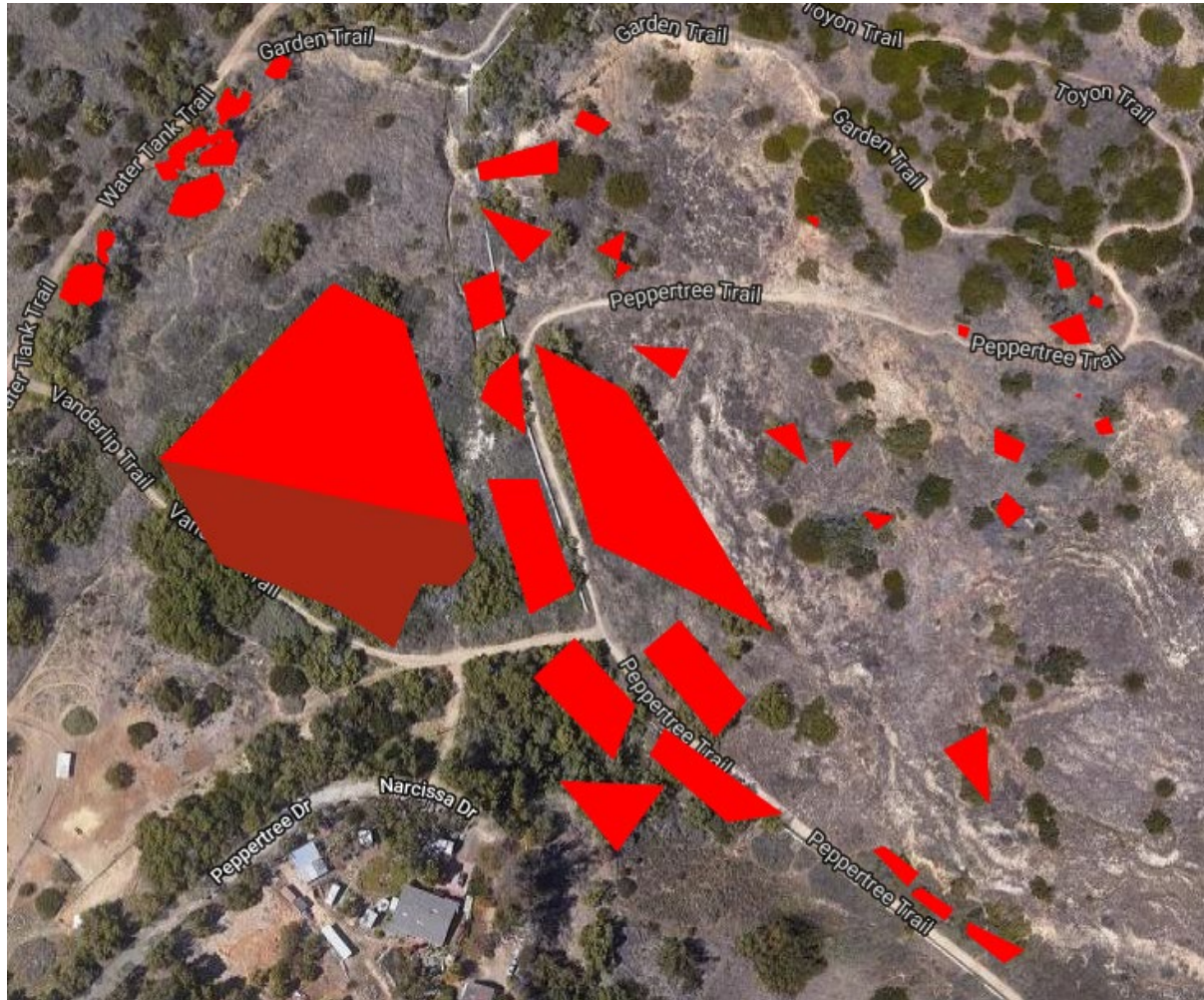
2020 TARGETED EXOTIC REMOVAL PROGRAM FOR PLANTS (TERPP) PHOTOS and Maps

PB_AcCy_I4





PB_AcCy_15





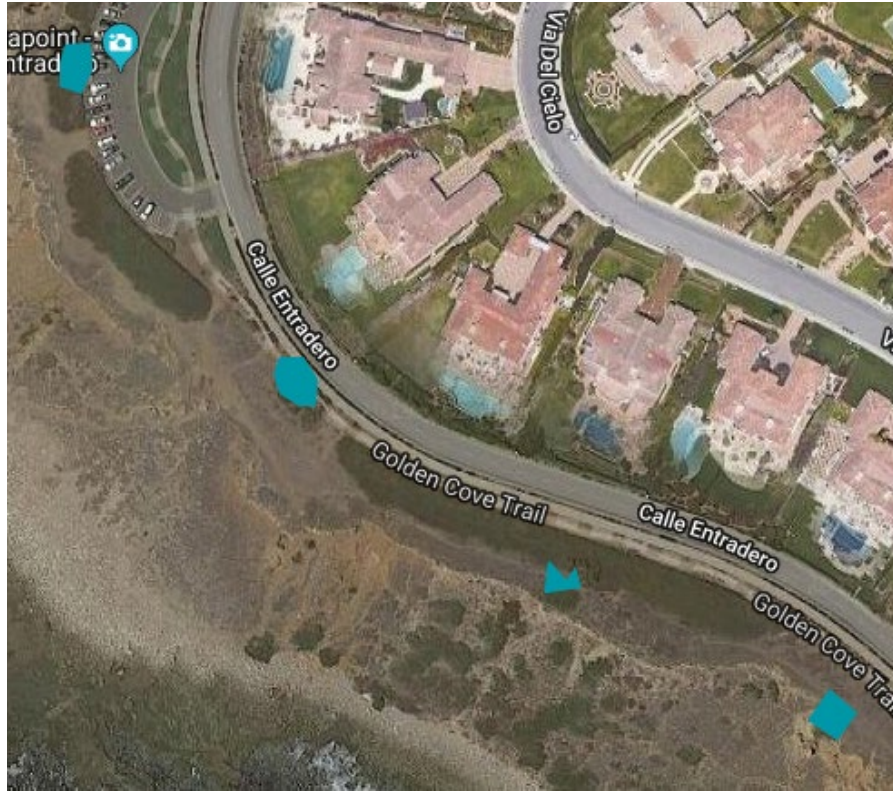
PB_AcCy_I6





VB_AcCy_04







FO_AcCy_01





SR_AcCy_01









FI_BrNi_01



TS_BrNi_01



SR_BrNi_02



APPENDIX E

COMMUNITY SCIENCE AND EDUCATION PROGRAMS

1.0 INTRODUCTION

PVPLC implements an integrated approach to stewardship by involving students and community volunteers in programs that addresses specific conservation issues related to the management of the Palos Verdes Native Preserve. In 2020, high school and university students as well as community members participated in research that not only satisfied their educational and/or personal goals, but also contributed to informing PVPLC land management activities. The Community Science Program, initiated in fall 2013, has brought volunteers to PVPLC for focused studies in the preserves. Community Science projects completed in 2020 include the Cactus Wren Monitoring Program and the Wildlife Tracking Program.

University professors are crucial for the success of research, as they provide expertise and technical guidance in managing several research projects. Land Conservancy staff provides access to the preserve as well as technical support and local knowledge to participants.

This report covers the Research and Education Program's activities via the major categories:

- High School Research
- University Researchers
- Non-student Research conducted
- Community Science Programs

2.0 HIGH SCHOOL RESEARCH

High school students are important to PVPLC's field research. By participating in PVPLC's research program with professionals and university researchers, high school students obtain field and analytical skills in the natural science fields. Additionally, students increase their appreciation of nature while expanding their awareness of opportunities that the natural science fields have to offer. As a result, PVPLC students often win honors in science fairs and are able to leverage their experience for gaining entrance into top universities, satisfying course credits, or obtaining paid internships.

Table I. 2020 High School research conducted

Student	Project Title	Academic Institution
Aurora Khatibi Garriety	The Effects of COVID-19 on Native Habitat Restoration by Volunteers	<i>PV High School</i>

3.0 UNIVERSITY STUDENTS

College students from local universities participate in research under the umbrella of the Conservancy's Intern and Community Science programs (Table. 1). Students participate in activities integral to land management and conservation, which provides the students valuable hands-on experience. PVPLC's stewardship staff conducts a variety of surveys throughout the preserves for assessing habitat quality as well as documenting the progress of our restoration efforts.

In addition to gaining work experience, many students leverage their internships for entrance into a professional job or graduate school. While the Conservancy benefits from their work, the students benefit from experience and training that will benefit them in future careers.

Table 2. 2020 Collegiate research conducted

Student	Project Title	Academic Institution
CSULB GIS Cohort	Fire probability model using drones to high spectral imagery	CSU Long Beach
Sarah Hood	A Genomic Survey of Sedentary Allen's Hummingbirds in Southern California	San Diego State University
Breanna Stoll	Metamorphosis: Evolving Relationships in Humans + Nature	Colorado State University College of Agriculture

3.0 NON-STUDENT RESEARCH CONDUCTED

The Land Conservancy facilitates non-student research as much as possible, including creating our own research studies to assist in our management goals. These projects are managed by staff and largely done by Land Conservancy interns.

Table 3. 2020 Non-student research conducted or facilitated

Researcher	Project Title	Academic Institution
Elizabeth Ryan	Landscape genetics of California poppy and adaptability to climate change	UC San Diego
Cooper Powers (PVPLC Intern)	PVB Host plant Phenology long term study	PVPLC
USGS	Regional California Gnatcatcher Monitoring	USGS

4.0 COMMUNITY SCIENCE PROGRAMS

Volunteers are important for PVPLC, not only helping with growing plants, habitat restoration, guiding walks, and special events, but also with science research and education. Our volunteers travel from throughout the Peninsula and surrounding areas to help out.

The Community Science program blossomed in 2013 with the initiation of the Cactus Wren Program along with the ongoing Wildlife Tracking Program. The initial Cactus Wren Program resulted in detailed analysis of how the birds utilize mature cactus scrub habitat and newly-restored habitat at Alta Vicente Reserve. In addition, the volunteers were able to

obtain detailed documentation of a single pair of cactus wrens as the wrens built a nest, incubated eggs, and successfully fledged three chicks. Monitoring work in 2020 focused on cactus wren occupancy of specific delineated cactus patches within the Palos Verdes Nature Preserve. This information described varying levels of cactus wren occupancy across the Preserve and made possible the inference of breeding activity based on a number of criteria. Results can be found in the attached Cactus Wren Monitoring report.

The 2020 Wildlife Tracking Program started in the fall of 2020, beginning with training the volunteers for tracking coyotes, red fox, and gray fox, among many other species in the Preserve. Due to Covid-19 restrictions, this training occurred via Zoom. Further training and practice were available for volunteer throughout the program duration. Once volunteers were confident in identifying tracks and scat of a particular species, they individually conducted regular surveys along specific routes. The data were submitted to the Conservancy for use in its management using a program called Survey123 for ArcGIS allowing for more efficient data analysis and reporting. A map was also created to illustrate the location of scat or track observations, results can be found in the attached wildlife tracking report.

Motion-sensor cameras were captured both images and video of wild canid species. High quality videos allowed for the identification of individual coyotes providing insight into wildlife population's dynamics and movement throughout the Preserve. With a donation of four cameras, and the associated equipment, the Land Conservancy was able to increase the reach of the wildlife camera program. A team of interns were recruited to implement and manage these camera traps and organize and analyze the resulting data. This program is ongoing and results will be shared in the 2021 annual report.



Volunteers learn the basics of cactus wren observations before starting the first Community Science Cactus Wren monitoring

Coastal Cactus Wren (*Campylorhynchus brunneicapillus*) Community Science Monitoring 2020



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Report by: Austin Parker.

PVPLC Community Science Volunteers:

INTRODUCTION

The coastal cactus wren (*Campylorhynchus brunneicapillus*) (CACW) on the Palos Verdes Peninsula is a special status species that lives exclusively in coastal sage scrub habitat areas. They prefer areas of at least one acre in size containing 30% prickly pear cactus (*Opuntia spp.*) and large specimens of coastal cholla (*Cylindropuntia prolifera*). Habitat preferences for nesting are strict, with nesting substrate almost entirely restricted to prickly pear and cholla (Rea and Weaver 1990). Ninety percent of their foraging time is spent on the ground, feeding on insects year-round, and feeding on fruit and plants during cooler months. Adult birds are highly sedentary and tend to return to the same breeding territory each year. In a 1993-1997 study on the Palos Verdes Peninsula, ornithologist Jon Atwood found that 65% of the juveniles dispersed less than one kilometer from their natal territory (Atwood 1998). The wren's natural tendency to stay close to its natal territory and not move great distances underscores the importance of having quality habitat throughout the preserves.

Following the formal establishment of the Community Science Cactus Wren Program in 2014, volunteer work focused on assessing how CACW utilize their habitat. The goal was to obtain data that would inform the Conservancy how to better manage cactus habitat for the bird and to build new habitat. Those years were quite successful in meeting that goal, as we now have a better understanding of how close the wrens stay to their habitat and how much they explore developing habitat (infrequently, unless they are feeding growing chicks and need to expand their forage area).

Despite the ability of previous surveys to identify the CACW behavior relating to dispersal, locating areas of CACW inhabitation has proven challenging. As shown by biologist Dan Cooper, who conducted comprehensive triennial cactus wren surveys in 2009, 2012, 2015 and 2018, the numbers of CACW has varied over time, counting the same number of territories in 2009 and 2015 (25) and more counted in 2012 (48) and a precipitous decrease in 2018 (5). (Cooper Ecological Monitoring 2018) Because of the triennial frequency of the surveys, it is difficult to determine whether or not these trends are true or an artifact of sampling.

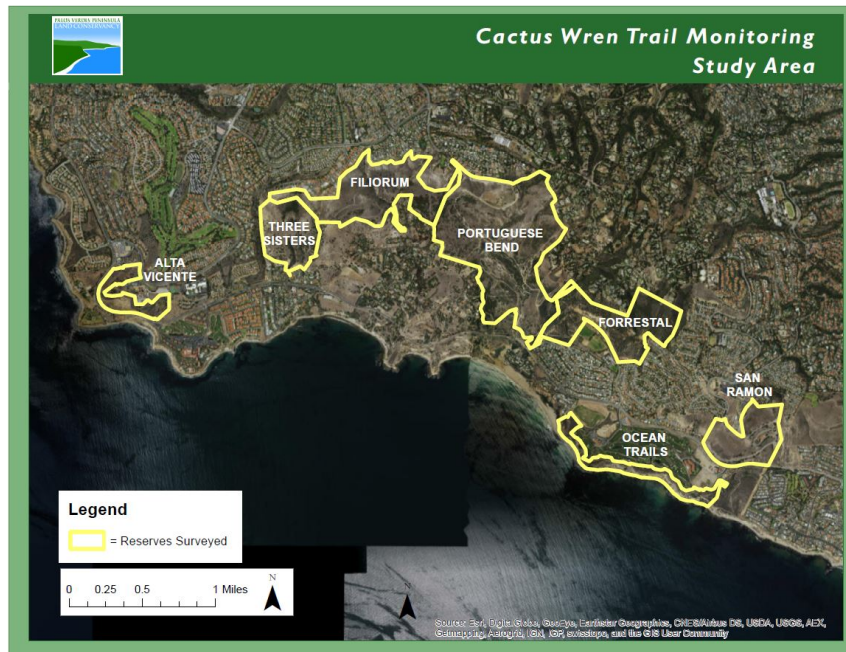
Participants in the Community Science Cactus Wren Program can help answer the question: Where are cactus wrens found in the preserves year-to-year? To address this question, teams of volunteers regularly hike the trails, noting when CACW are heard and/or seen, beginning in April and continuing through July. This period coincides with the more active period for the wrens when they are nesting and caring for newly fledged chicks, as they are more inconspicuous in the non-breeding season. These repeated visits provide data that indicates where birds are likely to be, and the variation of their distribution year-to-year to augment the triennial surveys conducted by the Conservancy's biologist.

METHODS

Study Area:

The study area was within eight reserves (Abalone Cove, Alta Vicente, Filiorum, Forrestal, Ocean Trails, Portuguese Bend, San Ramon, and Three Sisters) of the Palos Verdes Nature Preserve located in the city of Rancho Palos Verdes, CA. The reserves surveyed were those which had been documented to support CACW activity or extensive patches of prickly pear (*Opuntia littoralis* and *O. oricola*) and coastal cholla (*Cylindropuntia prolifera*) (Cooper Ecological Monitoring 2013).

Figure 1. Study area within the Palos Verdes Peninsula Nature Preserve.



Data Collection:

Volunteers for the Community Science Program met prior to the start of the monitoring season to learn how to identify CACW in their habitat, how to record field observations on the mobile app Survey123. The use of this app was new to the program in 2020. This app streamlines the data collection, analysis and organization process and allows for real time QA/QC by PVPLC. If any nests were found, the volunteers were asked to estimate the location on a map and send it to the PVPLC Biologist to digitize either via ArcGIS Collector in the field or ArcGIS Pro. If necessary, teams were formed for the monitoring season, pairing more experienced volunteers with those having little or no birding experience. The volunteers then took to the field outfitted with binoculars, a spotting scope, or cameras equipped with telephoto lenses.

The volunteers conduct at least two surveys for each month of the survey period (April through July). Volunteers walked their predetermined trail route documenting visual or audial observations of CACW. This information was recorded on field data sheets. Additionally, weather and wind observations were included because the birds' presence is impacted unduly by weather. No surveys were conducted during rainy days and high winds greater than 19 mph (30 km/hr). Surveys were typically conducted during late morning. All electronic field observations were archived in the Conservancy's database, and maps depicting wren inhabitation were archived in PDF format on the Conservancy's server.

Data Analysis:

Collected data were analyzed on the basis of four criteria that describe the level of CACW inhabitation specific to each cactus patches surveyed. These criteria allowed each cactus patch to receive a rating category reflecting the level of CACW inhabitation observed. These ratings assist in the interpretation of survey data and specifically allow for the inference, in general terms, of potential CACW behavior, habitat quality, and other factors relative to inhabitation. Categorization is also helpful in providing a

scale of inhabitation for each cactus patch that can be mapped. Subsequent ratings associated with each patch were mapped using ArcGIS Software which allowed for a color gradient to describe the various inhabitation ratings throughout the surveyed reserves as well as a map depicting the highest rating found within each reserve (Appendix A).

Inhabitation Rating Categories

Categories were developed to assist in the interpretation of survey data and to infer in general terms potential CACW behavior, habitat quality, and other factors related to CACW inhabitation. This categorization is also helpful in providing a scale of inhabitation that can be mapped such that different levels of inhabitation may be compared to each other. Categorical ratings based on four descriptors were extracted from the data:

Inhabitation Descriptors (4):

1) **Observation Rate**

of visits with a CACW observation / total number of visits

2) **Multiple Month Observation**

Sighting of a CACW in more than one month of the survey period

3) **Multiple CACW Observation**

Sighting of multiple CACWs during a single survey or site visit.

4) **Nest**

Sighting of a nest that appears to have been used by CACW within the survey period.

Inhabitation Rating Categories (5):

RARE

Indicates rare habitation of a cactus patch, which is defined by an observation rate below 25% and a lack of any additional inhabitation descriptor. Rare habitation is expected to include behaviors associated with short term inhabitation such as foraging or dispersal and suggests a lack of nesting. A patch categorized as “rare” may also indicate poor habitat quality or the presence of residence inhibiting factors (i.e. competition, predation, or disturbance).

OCCASIONAL

Indicates occasional habitation of a cactus patch, which is defined as an observation rate below 25% and having one or more additional inhabitation descriptors associated with that patch. Occasional habitation is expected to include behaviors associated with short term inhabitation (i.e. foraging or dispersal) and suggests a lack of nesting. A patch categorized as “occasional” may also indicate poor habitat quality or the presence of residence-inhibiting factors.

PERIODIC

Indicates periodic habitation of a cactus patch, which is described by an observation rate of 26-50% and one or more additional inhabitation descriptors. Periodic habitation is expected to include behaviors such as repeated visitation for foraging and/or dispersal. This rating could be considered a weak indicator of nesting. A patch categorized as “periodic” may also indicate higher quality habitat and a

decrease in residence inhibiting factors in compared to un-ranked or patches ranked patches or those ranked as “rare” or “occasional”.

REGULAR

Indicates regular habitation of a cactus patch, which is defined as an observation rate of 50-75% and at least two additional inhabitation descriptors. A patch categorized as “regular” may indicate CACW nesting, high quality habitat, and a lack of residence-inhibiting factors.

CONSISTENT

Indicates consistent habitation of a cactus patch, which is defined as an observation rate of 75-100% and at least two additional inhabitation descriptors. A patch categorized as “consistent” may be a strong indicator of CACW nesting, high quality habitat, and a lack of residence-inhibiting factors.

RESULTS

Table 1. Inhabitation criteria and rating of cactus patches where CACW were observed in 2020.

Green rows indicate the high likelihood of cactus wren breeding within associated cactus patch.

Reserve	Cactus Patch ID	Total # of Surveys	Surveys w/ CACW Observations	Observation Rate* (%)	Multiple CACW Observation	Multiple Month Observation	CACW Nest	Inhabitation Rating
Alta Vicente	AV2	29	21	72	x	x	x	Regular
Alta Vicente	AV3	29	7	24	x			Occasional
Alta Vicente	AV7	29	1	3				Rare
Alta Vicente	AV9	29	5	17				Rare
Filiorum	Fi1	15	12	80	x	x	x	Consistent
Filiorum	Fi3	15	1	7				Rare
Filiorum	Fi4	15	10	67	x	x	x	Regular
Filiorum	Fi5	15	1	7				Rare
Ocean Trails	OT2	13	1	8				Rare
Ocean Trails	OT8	17	5	30	x	x	x	Periodic
Ocean Trails	OT11	17	6	35	x	x	x	Periodic
Portuguese Bend	PB1	9	1	11				Rare
Portuguese Bend	PB5	9	2	22				Rare
Portuguese Bend	PB7	9	3	33				Occasional
Portuguese Bend	OP1	9	2	22		x	x	Occasional
Three Sisters	TS1	7	2	29				Occasional
Three Sisters	TS2	7	1	14				Rare
Three Sisters	TS7	7	3	43	x	x	x	Periodic
Three Sisters	TS8	7	7	100	x	x		Consistent
Three Sisters	TS9	7	2	29	x	x		Periodic
Three Sisters	TS10	7	1	14	x			Occasional

DISCUSSION

Over the last decade the cactus wren population of the Palos Verdes Nature Preserve have been experiencing a decline in observed territorial breeding behavior with similar declines being expected in their actual population size.

The 2020 breeding season for cactus wren was monitored the Community Science Cactus Wren Monitoring Program coordinated by the Palos Verdes Peninsula Land Conservancy. The cactus wren were found in fewer reserves and in lower abundance within each reserve since monitoring began in 2006. In recent years the volunteer program also noted a reduced number of cactus wren breeding territories as well as overall observations of the species. In 2020, we saw a slight increase in observations as well as potential breeding territories. The “core” areas were occupied by CACW in 2020 but Portuguese Bend also saw some Rare and Occasional rated territories for the first time in years.

The cactus wren was exclusively found in reserves providing the highest quality habitat with large expanses of cactus (*Opuntia littoralis*, *O. oricola*, and *Cylindropuntia prolifera*) and specifically mature cactus plants. These locations, Alta Vicente, Filiorum, Three Sisters and Ocean Trails are considered “core habitat” or locations of central importance to cactus wren breeding in previous years. Species retractions back to core habitat often signals a population under stress. The observed cactus wren absence of previously occupied marginal habitat areas, such as Forrestal, and San Ramon reserves, and exclusive use of core habitat areas may signal the presence of highly stressful conditions under which persistence and successful breeding is difficult.

Several causes of cactus wren decline have been identified as potential and likely drivers of declining regional presence and nesting success of cactus wren. These include: invasion by non-native plant species, heightened predation pressure in urban areas, unfavorable weather conditions (drought, seasonal shifts in rainfall, and cool early spring temperatures), and human disturbance. This program has found evidence to support each of these factors as present in the Preserve. It is expected that these issues are working synergistically creating a complex set of overlapping challenges.

Although 2020 saw an increase in breeding activity and observations, these challenges still exist and management efforts will still be necessary to ensure the validity of the CACW in the Palos Verdes Peninsula. In 2019 and 2020 the conservancy worked on opening up the vegetation around core habitat areas and previously inhabited patches to enhance the existing core populations and avoid a further decline in population.

To meet or mitigate challenges faced by cactus wren in the preserve, conservancy staff has determined several management activities to improve the viability of the PV cactus wren population.

Recommended activities include:

- Continued removal of invasive non-native plants from cactus rich areas
- Continued installation of new cactus plantings
- Continued creation of foraging habitat (bare ground) surrounding cactus patches
- Possible implementation of nesting boxes

LITERATURE CITED

Atwood, J.L. 1998. "Studies of California gnatcatchers and cactus wrens in southern California." Monument Center for Conservation Sciences and the University of California Irvine.

Cooper Ecological Monitoring, Inc. ("CEM") 2013. Palos Verdes Nature Preserve survey for the California gnatcatcher and the cactus wren (2012), Palos Verdes Peninsula Land Conservancy, Los Angeles County. Final report to the PVPLC. January 3, 2013.

Cooper Ecological Monitoring, Inc. ("CEM") 2018. Palos Verdes Nature Preserve survey for the California gnatcatcher and the cactus wren (2018), Palos Verdes Peninsula Land Conservancy, Los Angeles County. Final report to the PVPLC. August 9th, 2018.

<http://www.la Almanac.com/weather/we10a.php>

Rea, A. M. and K. Weaver. 1990. "The taxonomy, distribution, and status of coastal California Cactus Wrens." Western Birds 21: 81-126.

APPENDIX A

Mapped results of cactus inhabitation per cactus patch surveyed.

Community Science Cactus Wren Monitoring - Abalone Cove Reserve



Palos Verdes Peninsula Land Conservancy

2020 Cactus Patch Ranking

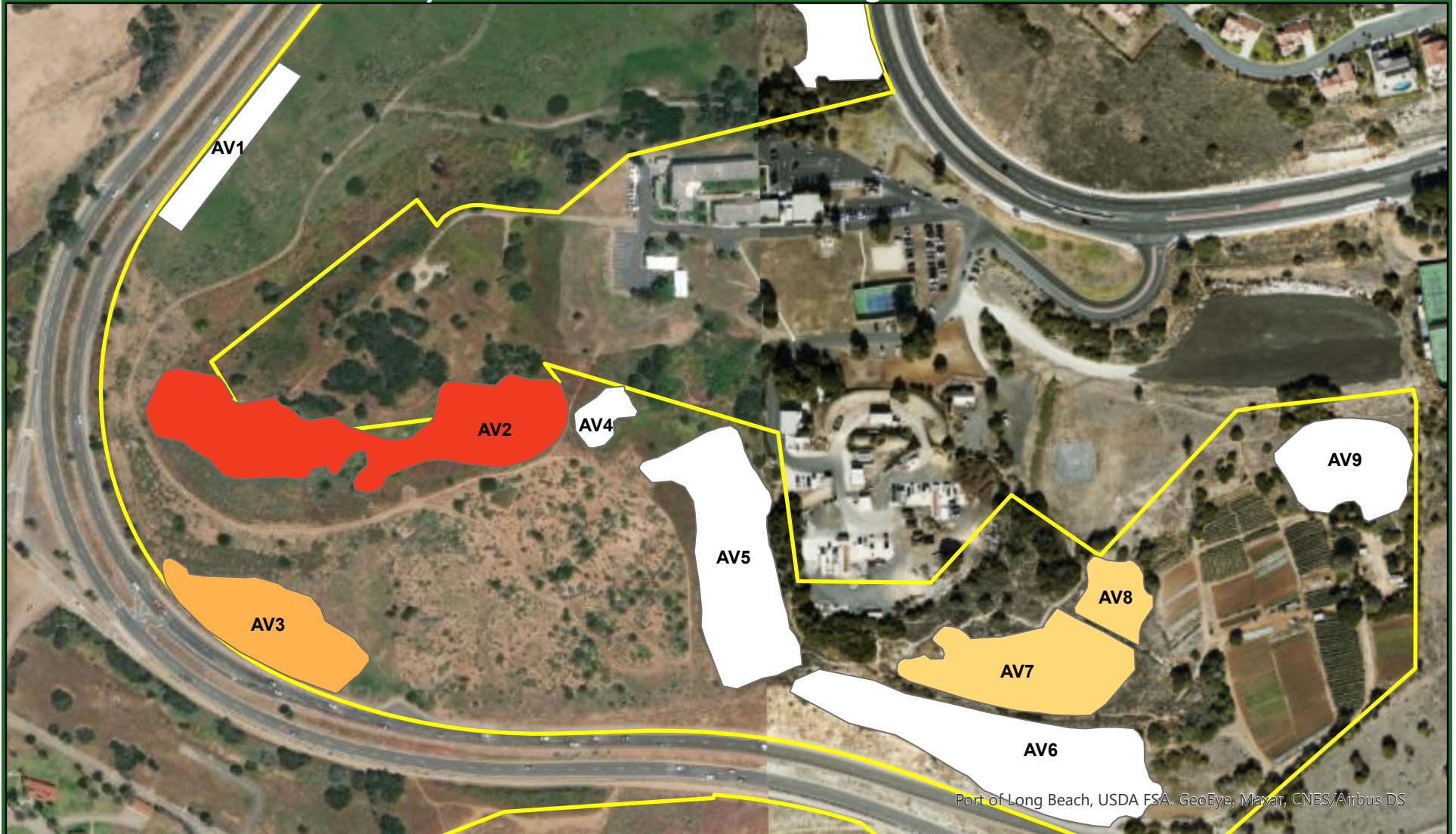
 Rare	 Regular
 Occasional	 Consistent
 Periodic	 Preserve Boundary

Occupancy Score

None



Community Science Cactus Wren Monitoring - Alta Vicente Reserve



Palos Verdes Peninsula Land Conservancy

2020 Cactus Patch Ranking

Rare	Regular
Occasional	Consistent
Periodic	Preserve Boundary

Occupancy Score

None



Community Science Cactus Wren Monitoring - Portuguese Bend Reserve



Port of Long Beach, GeoEye, Maxar, Microsoft, CNES/Airbus DS

Palos Verdes Peninsula Land Conservancy

2020 Cactus Patch Ranking

 Rare	 Regular
 Occasional	 Consistent
 Periodic	 Preserve Boundary

Occupancy Score

None



Community Science Cactus Wren Monitoring - Portuguese Bend Reserve



Port of Long Beach, GeoEye, Maxar, Microsoft, CNES/Airbus DS

Palos Verdes Peninsula Land Conservancy

2020 Cactus Patch Ranking	Rare	Regular
Occupancy Score	Occasional	Consistent
None	Periodic	Preserve Boundary



Community Science Cactus Wren Monitoring - Palos Verdes Nature Reserve



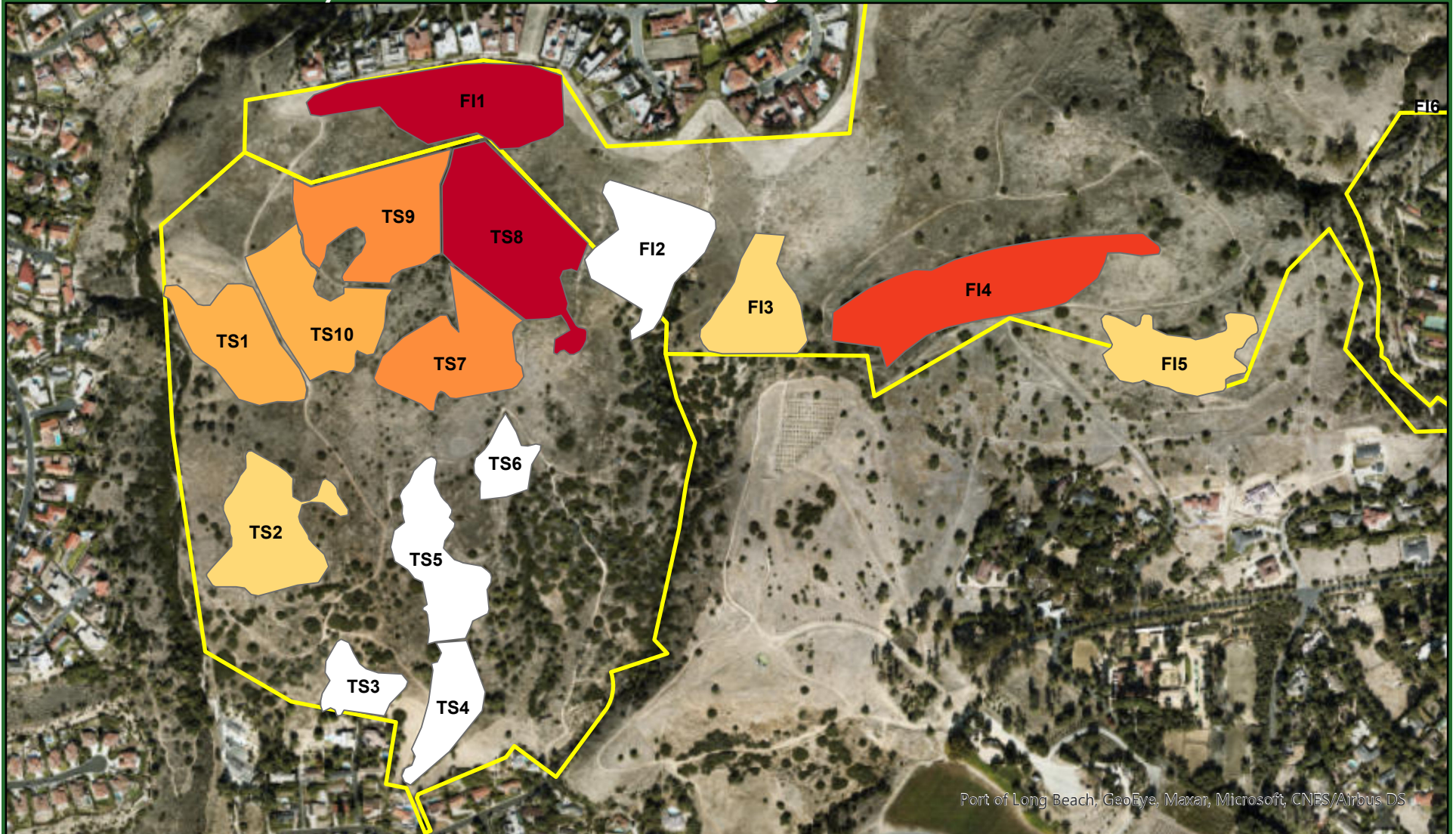
2020 Cactus Patch Ranking

 Rare	 Regular
 Occasional	 Consistent
 None	 Periodic
	 Preserve Boundary

Palos Verdes Peninsula Land Conservancy



Community Science Cactus Wren Monitoring - Filiorum and Three Sisters Reserves



Port of Long Beach, GeoEye, Maxar, Microsoft, CNES/Airbus DS

Palos Verdes Peninsula Land Conservancy

2020 Cactus Patch Ranking

Rare	Regular
Occasional	Consistent
Periodic	

Occupancy Score

None	Preserve Boundary
------	-------------------



Wildlife Tracking
Community Science Monitoring
2020-2021



INTRODUCTION

Top predators are an important ecological component of natural ecosystems. In the Palos Verdes Nature Preserve Coyotes are apex predators, where they control the population of several food web members. The regulation of intermediate predators is important to maintaining healthy populations of other wildlife species including protected songbirds such as the California gnatcatcher *Polioptila californica californica* (FT). The Rancho Palos Verdes Natural Communities Conservation Plan describes the need for collecting new biological data on wildlife movements and the importance of monitoring predator presence within the reserve.

The Community Science Wildlife Tracking program is a monitoring project that surveys the Preserve for the presence of coyotes and other species. Volunteer participants walk trail segments in search of tracks or scat which are mapped and photographed. Results of this survey are compiled to create maps of areas used by coyotes and foxes within each reserve. Mapped observations of track and scat work to describe locations of high and low coyote and fox activity.

The wildlife camera project was designed to complement the Community Science Wildlife Tracking Program and further investigate findings of the Tracking Program such as areas of exclusion or territorial boundaries. Results will be presented in the 2021 wildlife tracking report.

METHODS

Study Area:

The study area was within 5 reserves (Abalone Cove, Alta Vicente, Filiorum, Forrestal, Portuguese Bend, Vicente Bluffs) of the Palos Verdes Peninsula Nature Preserve located in the cities of Palos Verdes and Rolling Hills, CA. Two reserves outside of the PVNP were also surveyed.



Figure 1. Wildlife Tracking Study Area Map

Data Collection:

The monitoring is conducted when the animals are most active, November through March by walking along specific trail routes in the preserves. While walking along marked trails, surveyors search for evidence of coyotes, gray fox, and red fox which is usually in the form of scat or track imprints. This year the Land Conservancy started tracking all species observed. Scat is the most frequent observation made, with tracks a distant second. When tracks are found, the length and width of the track is observed and a ruler or other size reference is placed in the photo of the track or scat.

Training is required for participants to develop the necessary skills for optimal accuracy in identifying scat and tracks. At minimum, initial training requires three 2-3 hour sessions, which are conducted on Saturdays in October. Additionally Community Science participants are encouraged to accompany advanced trackers to enhance their skills. Photographs of observations are an important tool for confirming the accuracy of observations. The Conservancy provides additional support as needed to the wildlife tracking volunteers. This year, due to Covid-19 training was reduced to one Zoom meeting where the principles of tracking were taught and volunteers were allowed to ask questions and engage in discussion. Follow up training sessions via zoom and in small groups in the field were also offered to create confidence in the volunteers and in the tracking observations.

Recorded data are submitted electronically to the Conservancy using a mobile app called Survey123. This app streamlines the data collection and submission process by allowing all volunteers to save observations on their phones, including photos, notes, and geolocation. This data is then downloaded into an Excel sheet and analyzed. The points recorded at each observation are downloaded as a shapefile and mapped and analyzed using ArcGIS Pro.

As volunteers record observations throughout the season, they were able to write in the notes of the survey their confidence in the species, if necessary. The Land Conservancy Biologist was able to confirm or contest each observation, and ultimately update the observation data if necessary.

RESULTS

	Survey Days	Total Observations	Coyotes Observations	Coyote rate of Obs.	Fox sp. Observations	Fox Rate of Obs
Abalone Cove	16	161	18	1.125	1	0.05
Alta Vicente	12	56	18	1.5	15	1.25
Linden H Chandler	21	65	63	3	1	0.047
Filiorum	24	274	161	6.7	12	0.5
Forrestal	33	485	225	6.8	65	1.97
GFC	20	88	19	0.95	14	0.7
Portuguese Bend	32	286	210	6.56	29	0.9
Vicente Bluffs	17	15	5	0.3	0	0
Total	175	1430	719		137	

Table 1. Number of observations per reserve.

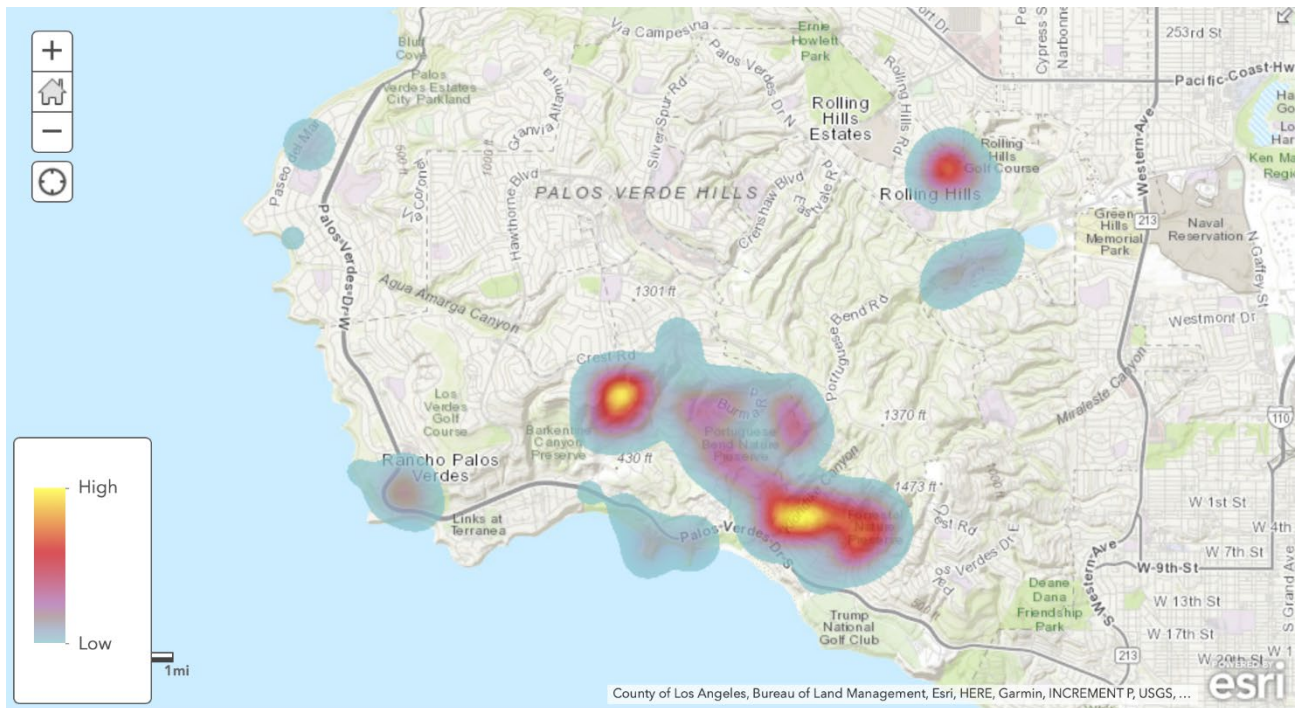


Figure 1. Coyote observations Heat Map

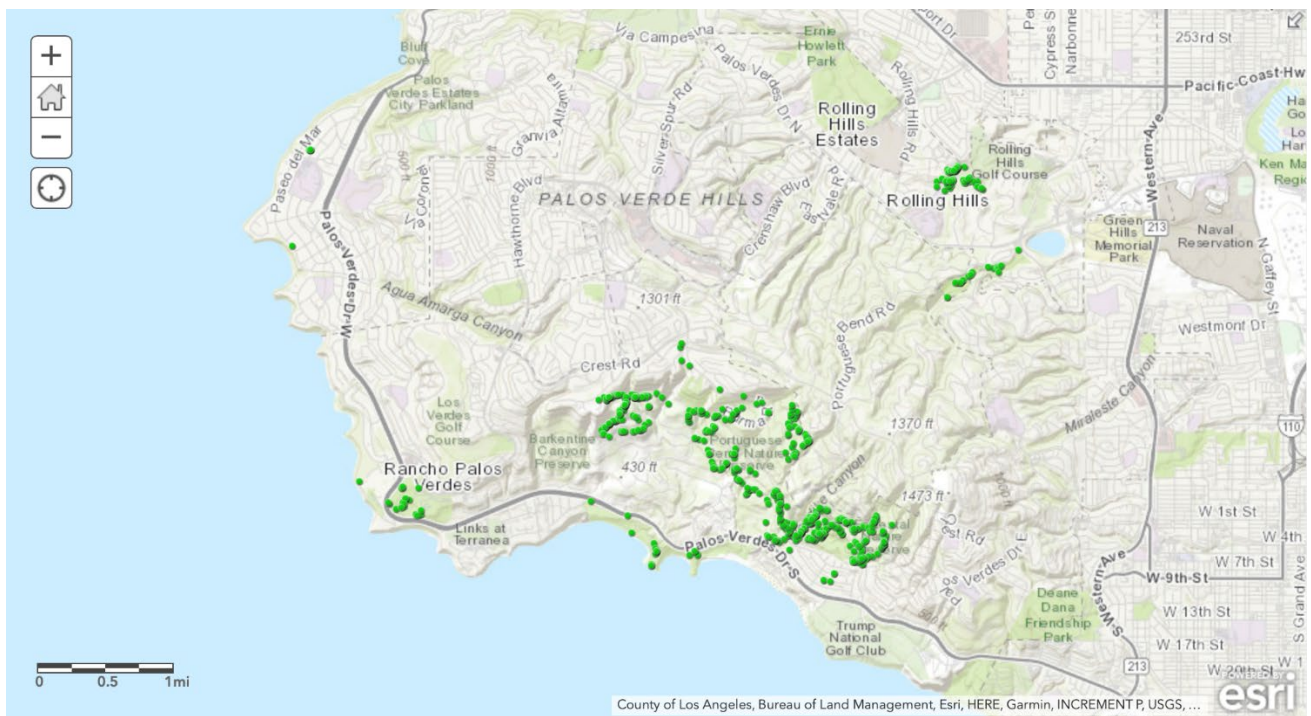


Figure 2. Coyote Observations Point map

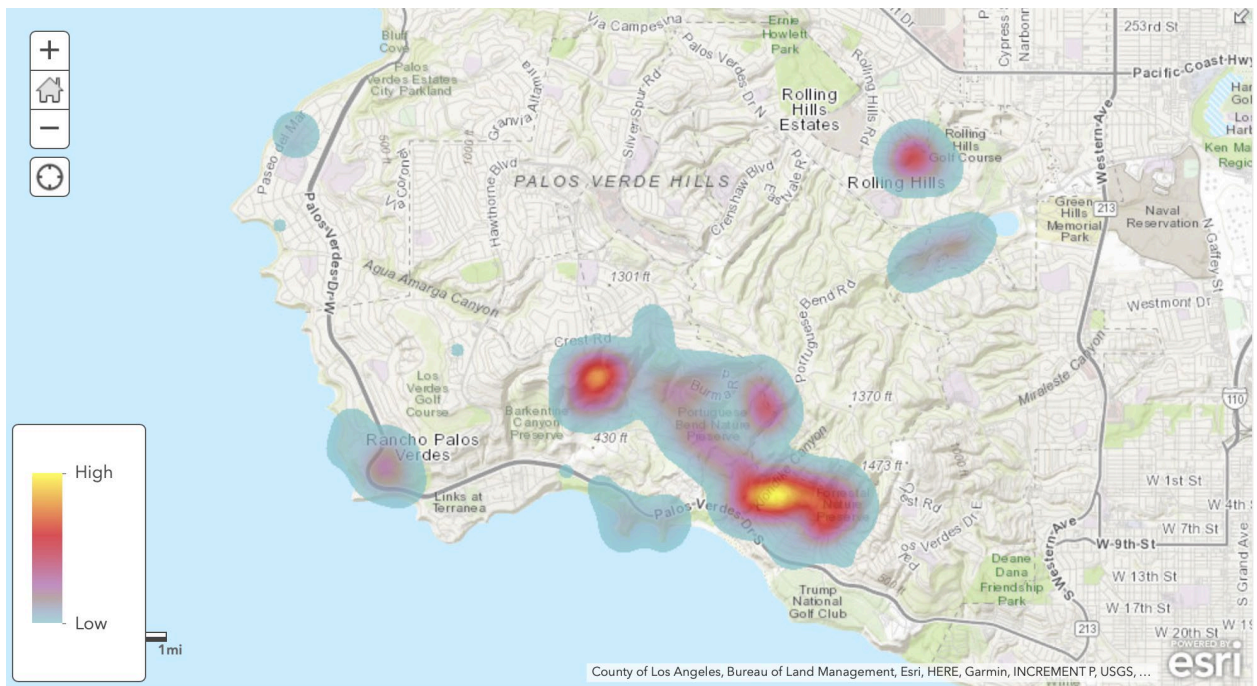


Figure 3. Canid species observations heat map

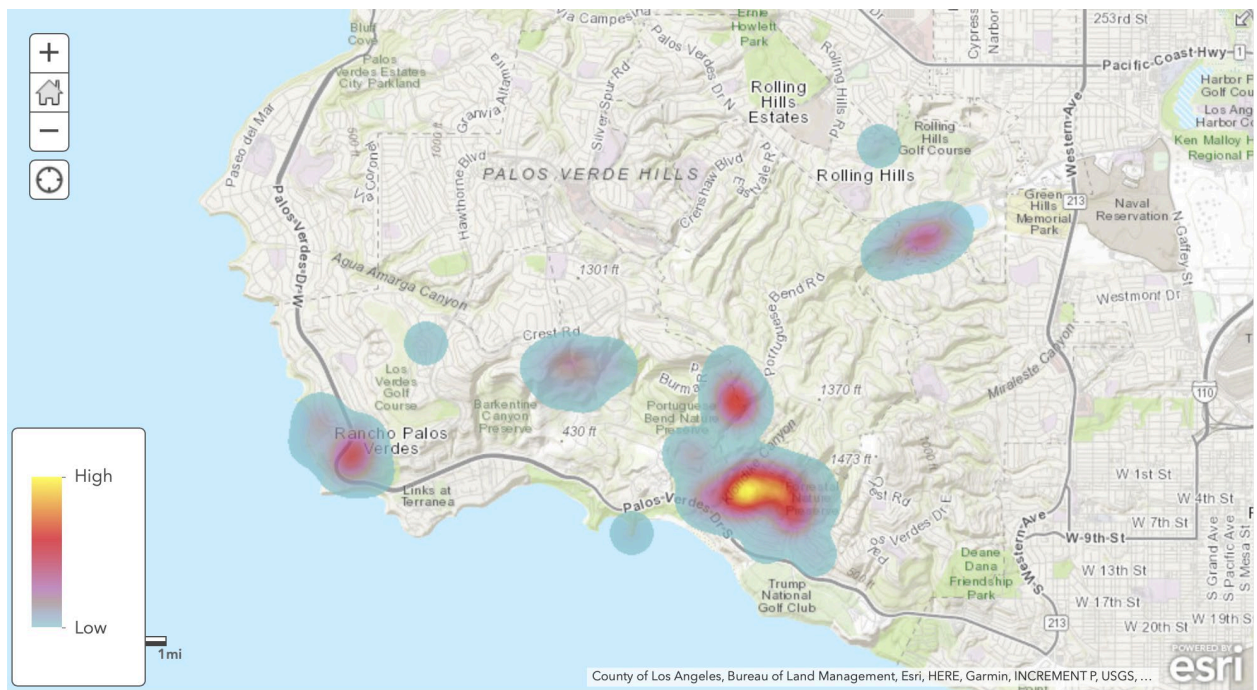


Figure 4. Fox Sp. observations heat map

The 2020-21 wildlife tracking survey identified a total of 856 wild canid observations in the survey area. Coyote observations were the most common found with 719 scat and tracks being identified, while the Fox, both species, tracks and scat were totaled at 137. Coyote observations were found across all reserves studied. The maps above, figures 1 and 2, show that the highest frequency of coyote observations were in Filiorum (6.7 average observations per survey), Forrestal (6.8 average observations per survey), and Portuguese bend (6.56 average observations per survey). Table 1 and Figure 4 show us that, while much less frequent overall as compared to Coyotes, Fox species observations were most frequent in Forrestal (1.97 average observations per survey) and Alta Vicente Reserves (1.25 average observations per survey). Figure 3 shows the heat map of all fox species observations as well as coyote observations.

Appendix A shows the locations and distribution of all species observed throughout the program.

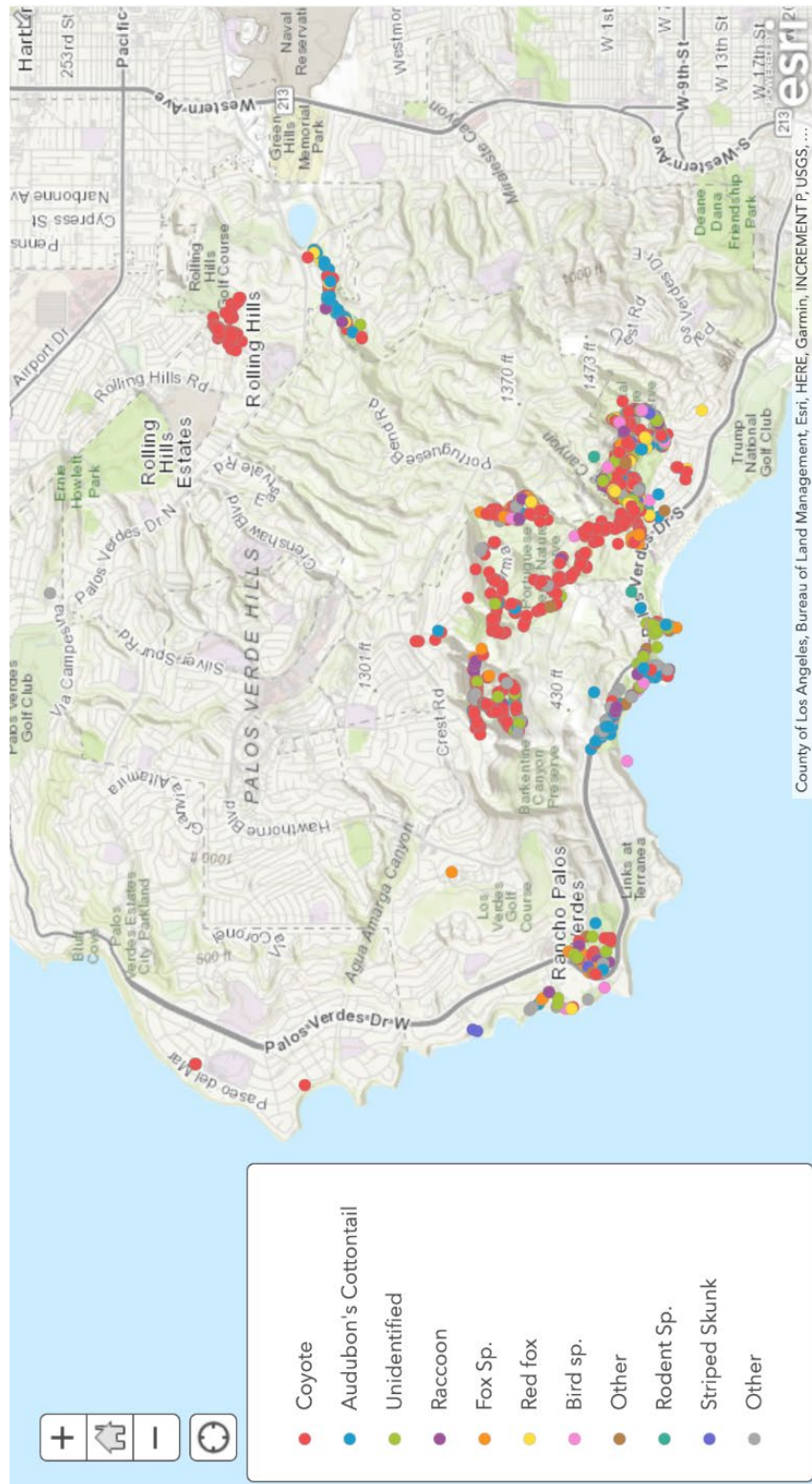
DISCUSSION

The presence of canid predators within wildlife habitats has been documented as crucial to ensuring healthy ecosystem function. In the Palos Verdes Nature Preserve the success of nesting songbirds, namely the federally protected California gnatcatcher and state protected coastal cactus wren, can be positively influenced by the presence of predators through their control of lower predator (i.e.: striped skunk, raccoon, domestic cats, etc.) populations. The presence of coyotes is specifically indicated by the Rancho Palos Verdes Natural Community Conservation Plan as an important ecological element necessary for successful nesting conditions. Considering the presence of coyotes in these terms, the broad range of the coyote observed within the Palos Verdes Nature Preserve indicates the existence of an important meso-predator control dynamic.

The Land conservancy also undertook a wildlife camera remote monitoring project in the end of 2020. The results of which will be recorded in the 2021 annual report.

Appendix A

All Species Point Map




Appendix I-A. All Species Observations Point Map

APPENDIX F


TRAIL MANAGEMENT AND SIGNAGE ACTIVITIES

2020 UNAUTHORIZED TRAIL CLOSURES


Abalone Cove Reserve



Vicinity of Spur Trail Closures




Reserve Boundary




Parking Lot



Restrooms




Trailhead




Vista Point



Multiuse Trail



Pedestrian Trail



Pedestrian & Bike Trail



0

0.1

0.2

Miles




Alta Vicente Reserve



 Vicinity of Spur Trail Closures
RPV City Hall

 Parking

 Restrooms

 Trailhead

 Multiuse Trail

 Pedestrian & Equestrian Trail

 Road

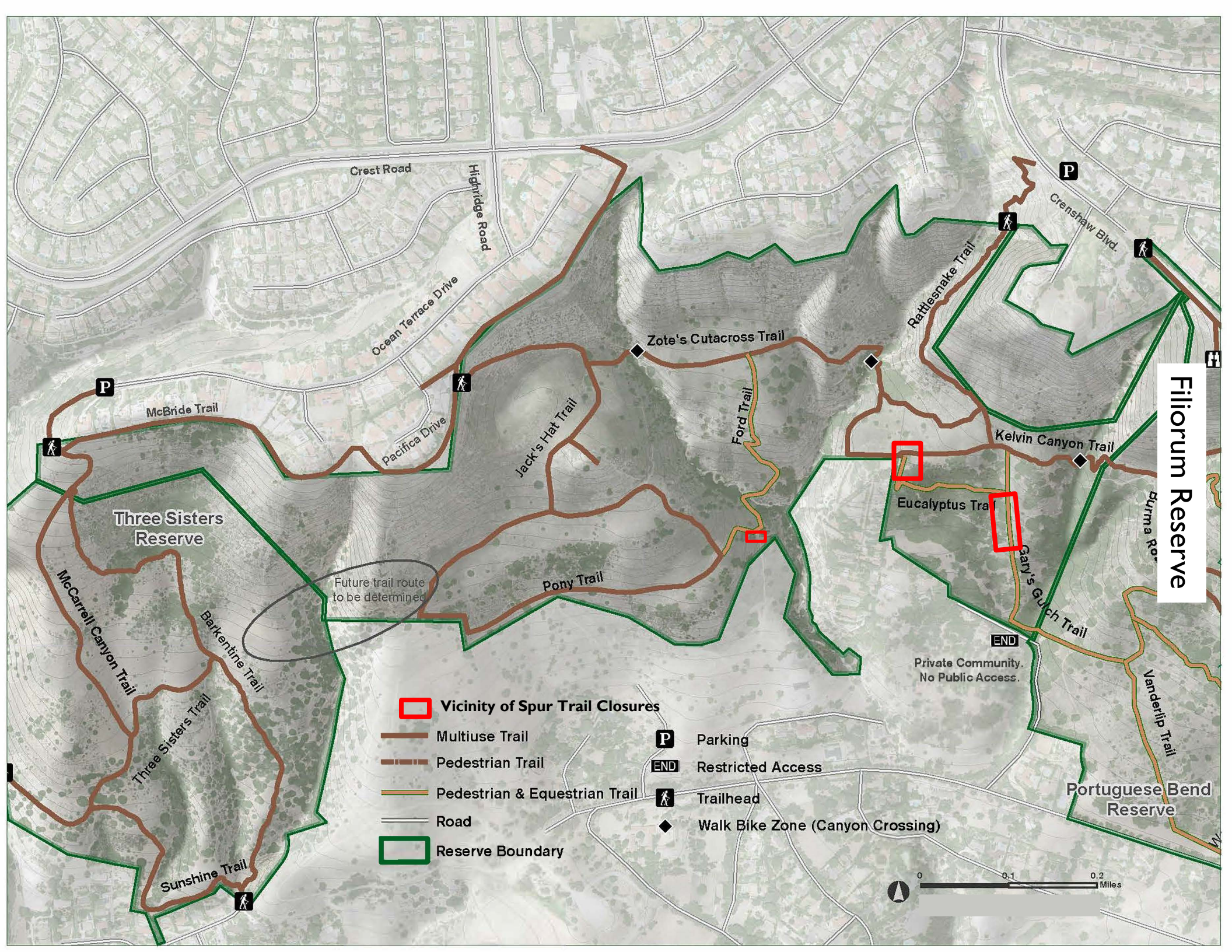
 Reserve Boundary



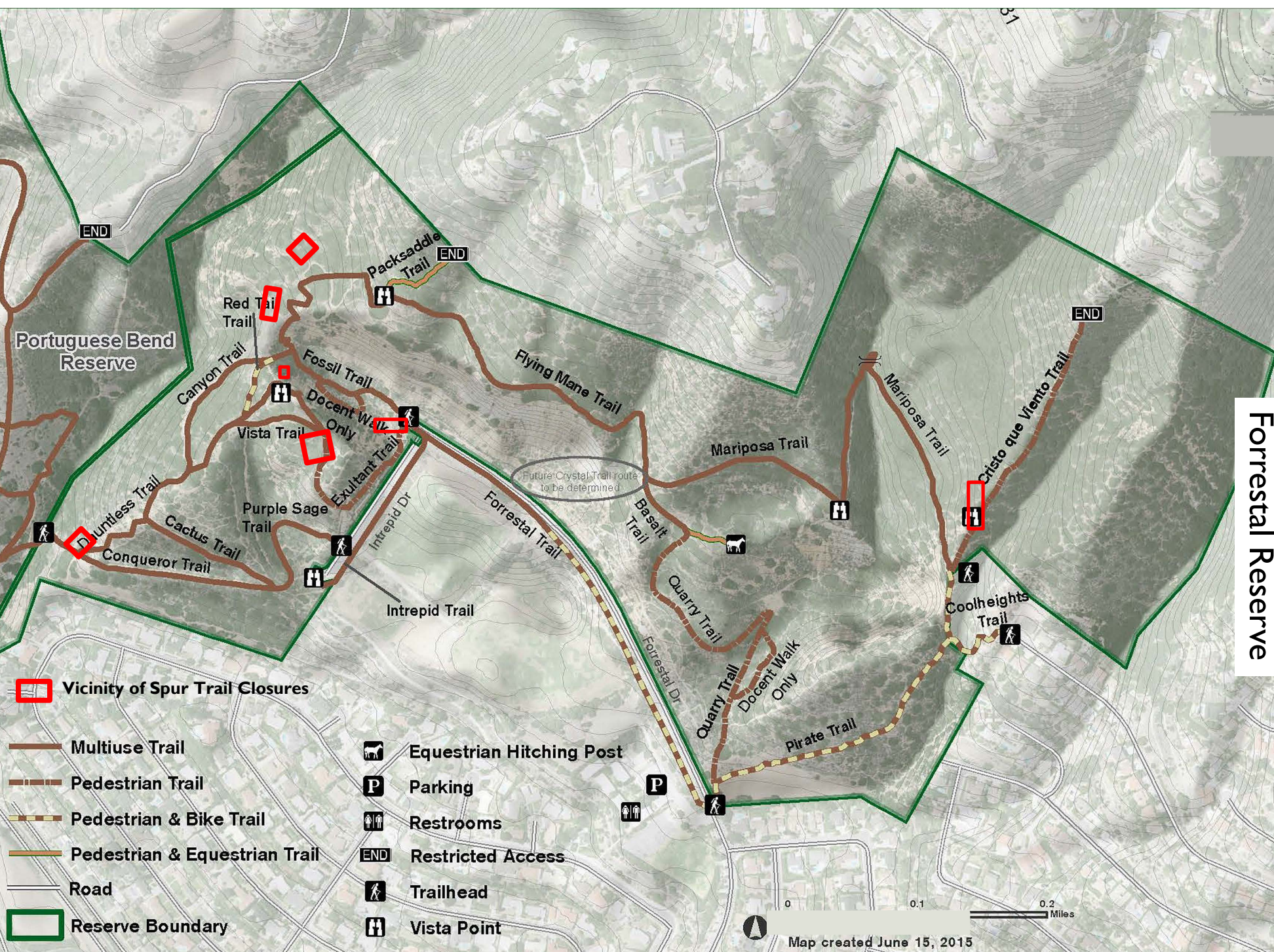
Map created June 15, 2015

0.2
Miles

Filiorum Reserve



Forrestal Reserve



 Vicinity of Spur Trail Closures

-  Multiuse Trail
-  Pedestrian Trail
-  Pedestrian & Bike Trail
-  Pedestrian & Equestrian Trail
-  Road
-  Reserve Boundary

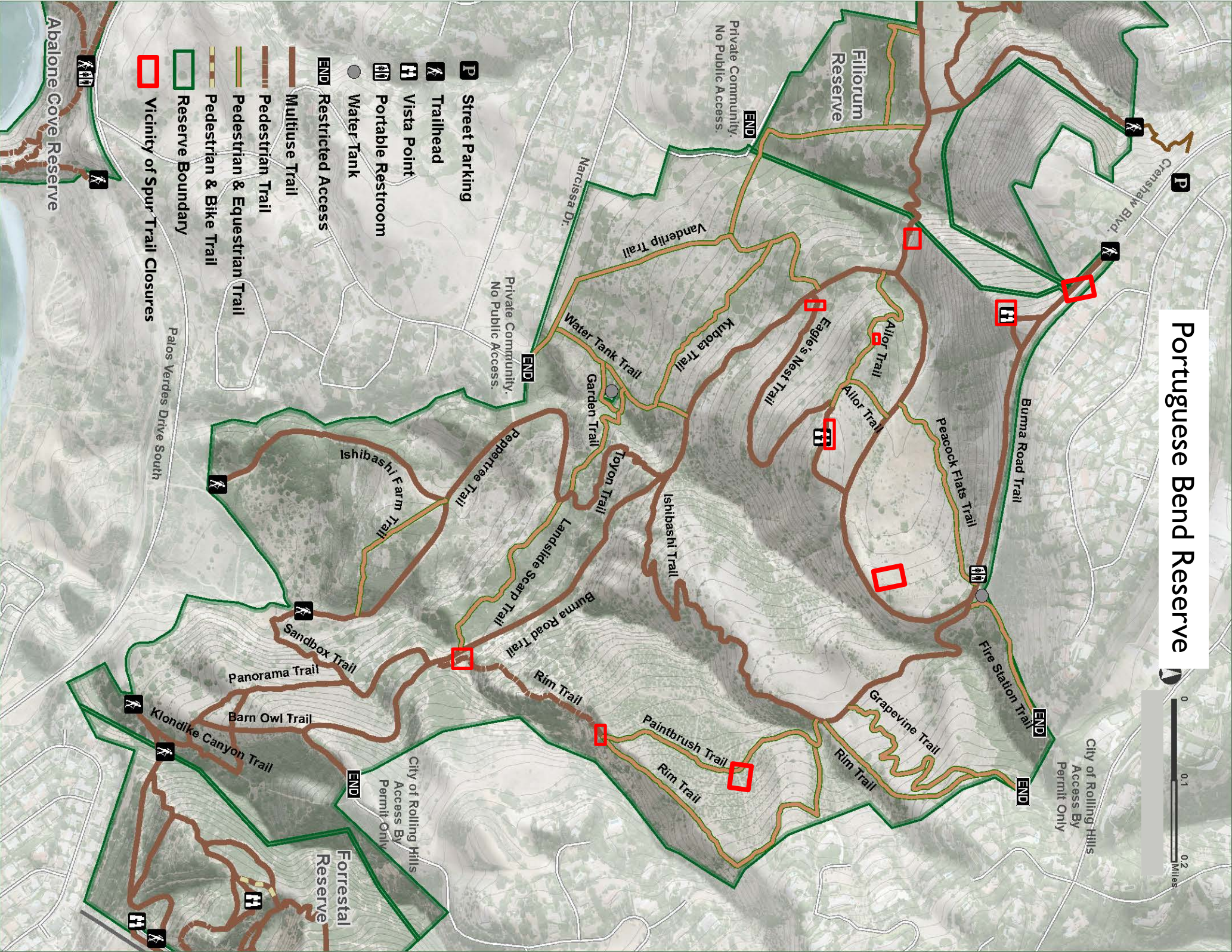
-  Equestrian Hitching Post
-  Parking
-  Restrooms
-  Restricted Access
-  Trailhead
-  Vista Point

0 0.1 0.2 Miles
Map created June 15, 2015

Portuguese Bend Reserve



0 0.1 0.2
Miles

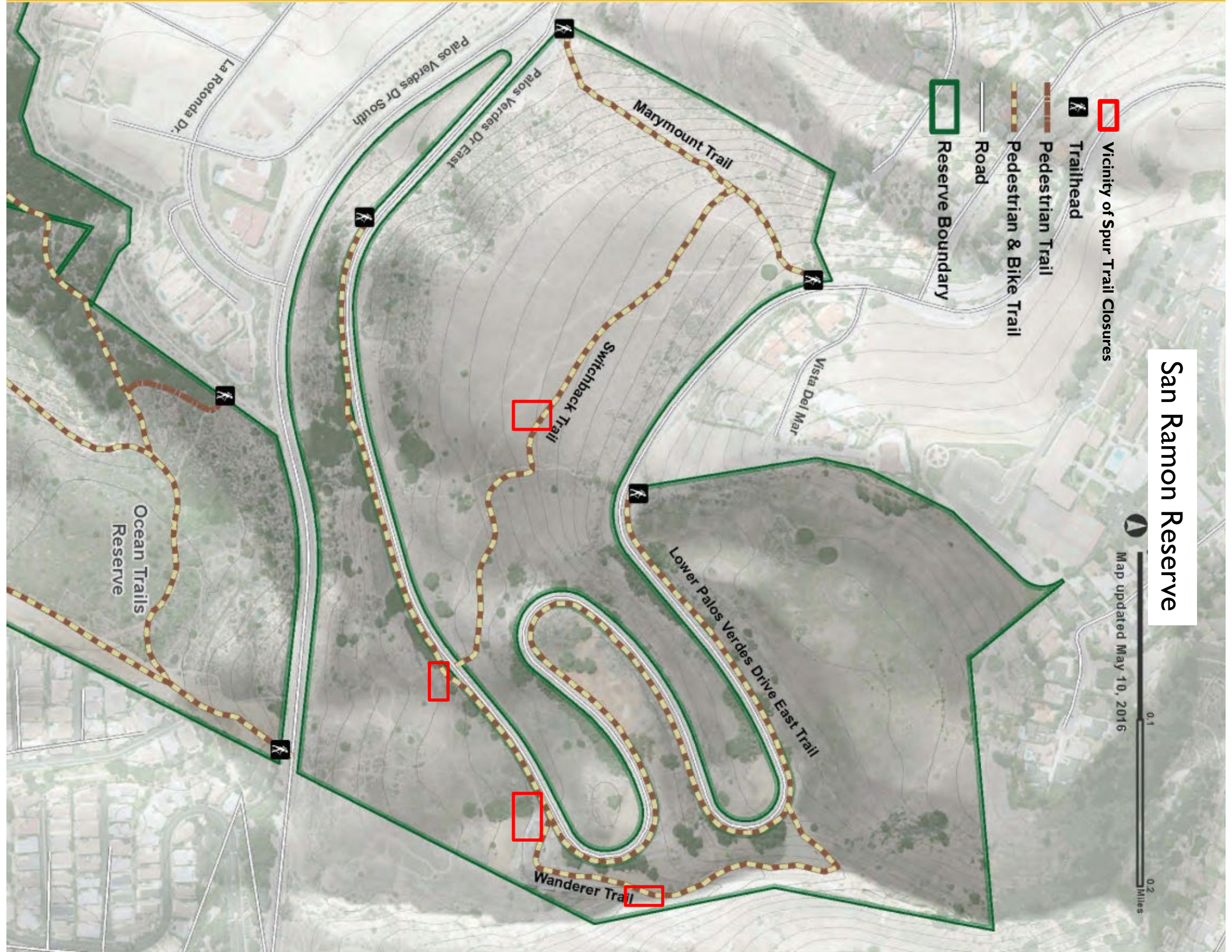


San Ramon Reserve

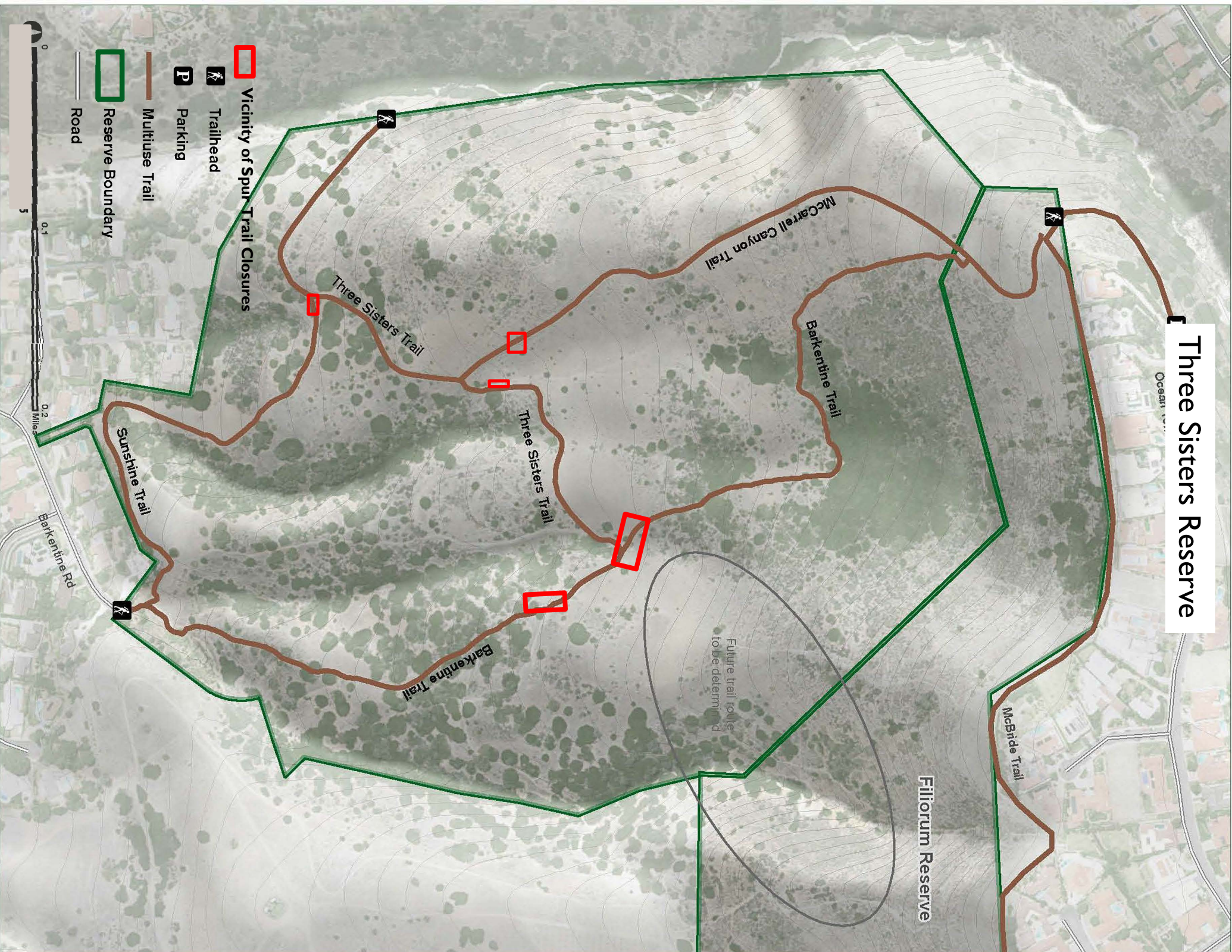
Map updated May 10, 2016

0.1 0.2 Miles

- Vicinity of Spur Trail Closures
- Trailhead
- Pedestrian Trail
- Pedestrian & Bike Trail
- Road
- Reserve Boundary



Three Sisters Reserve



FUTURE TRAIL PROJECTS LIST

2021 Trail Projects List

The following is a list of trail projects planned for the year based on priority and funding opportunities. This list is intended to outline project needs including trail repairs, spur trail closures and signage improvements but may be amended as conditions may change. Projects not completed will carry over to the following year and projects may be added to the list on an ongoing basis. In addition to the list below, smaller-scale projects including spur trail closures, signage repairs, tread repairs, etc. may be accomplished by the Volunteer Trail Crew, PVPLC Staff or City of Rancho Palos Verdes staff on an as-needed basis.

Priority Ranking:

The following projects are ranked low to high with consideration of impacts to habitat, user safety, severity of damage and other issues. These rankings also take other considerations such as funding, feasibility, availability of staff or volunteers to accomplish project, and other factors into account.

High = poses immediate safety concern, significant impact to habitat, trespassing, etc.

Medium = spur trails and erosion issues that affect trail quality, may cause user dissatisfaction, or mildly impact habitat

Low = spur trails and erosion issues that are minor and may not impact habitat, but may not meet user satisfaction

Reserve Name	Trail Name	Issues	Priority
Abalone Cove			
	Smugglers Trail	Spur trail Closures	High
	Cave Trail	Trail erosion. Closed until fixed	High
	Olmstead Trail	Spur leading to heritage castle	High
	Portuguese Bend Loop Trail	Spur leading to Olmstead	High
	Sacred Cove (West to beach)	Trail erosion. Closed until fixed	High
	Sea Dahlia Trail	Erosion at stairs. Closed until fixed	High
	Olmstead	Drainage needs improvement	Low - ongoing
Agua Amarga			
	Lunada Canyon Trail	Delineate single path	Low – Ongoing
Alta Vicente			
	Prickly Pear Trail	Spur trail closures	High
	Alta Vicente Trail	Spur trail closures	High
Filiorum			
	Ford Trail	Spur trail closures	High
	Jack's Hat Trail	Maintain spur trail closure	High

[Type here]

	Eucalyptus Trail	Spur trail closures	Low
	Gary's Gulch	Delineate single path and close spur trails	Low - ongoing
Forrestal			
	Purple Sage Trail	Spur trail closure	High
	Dauntless Trail	Spur trail closure (upper section) and repair trail erosion	High
	Packsaddle Trail	Spur trail closure	Medium
	Mariposa Trail	Spur trail closure into quarry	Medium
	Cristo que Viento Trail	Spur trail closure	Low - ongoing
	Cool Overlook Trail	Spur trail closure	Low - ongoing
	Conqueror Trail	Spur trail closure	Low - ongoing
	Quarry Trail	Spur trail closure	Low - ongoing
	Vista Trail	Spur trail closure	Low - ongoing
Portuguese Bend			
	Burma Road	Exposed bedrock spur leading to Klondike Canyon Trail	High
	Vanderlip Trail	Spur trail that runs redundant to trail through fuel modification zone	High
	Burma Road	Spur trail running from Burma Road lookout to Kelvin Canyon Trail	High
	Ishibashi Trail	Evaluate measures to improve user safety	High
	Peppertree Trail	Erosion caused by seasonal rains.	High
	Sandbox Trail	Erosion undercutting steps	High
	Ishibashi Trail	Maintain spur trail closures and remove embankments	Medium - ongoing
	Rim Trail	Consider reroute to reopen lower segment of trail	Low
	Barn Owl Trail	Erosion. Need to improve drainage	Low - ongoing
	Fire Station Trail	Maintain closure into private property	Low - ongoing
San Ramon			
	Switchback trail	Delineate single path	High
	Wanderer Trail	West of trail. Network of illegal bike trails needs to be closed	Medium
Three Sisters			
	Barkentine Trail	Spur trail closure that leads to Filiorum	High

[Type here]

	Barkentine Trail	Erosion. Need to improve drainage and close spur trail between McCarrel Canyon Trail	Medium
	Sunshine Trail	Spur trail closure	Low – Ongoing
Vicente Bluffs			
	Seascape Trail	Spur leading to beach	High
	Seascape Trail	Spur leading to beach	High
	Toveemor Trail	Close spur trail	Low -- Ongoing
Vista del Norte			
	Vista Del Norte Trail	Erosion from fuel mod and spur trail closure	Medium
	Indian Peak Trail	Close spur trail	Medium

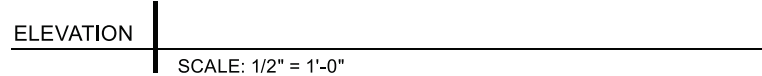
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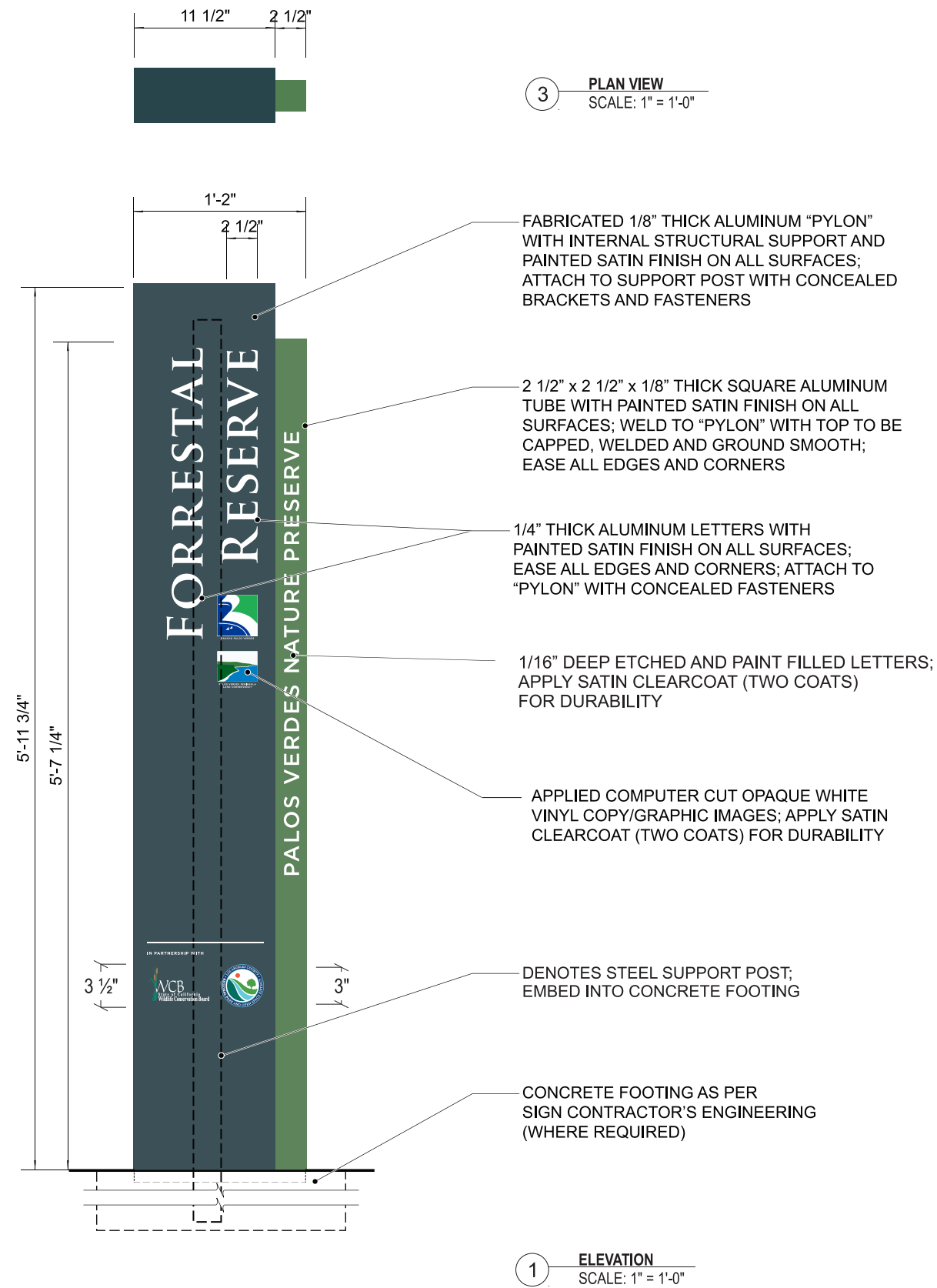
PVNP SIGNAGE DESIGNS



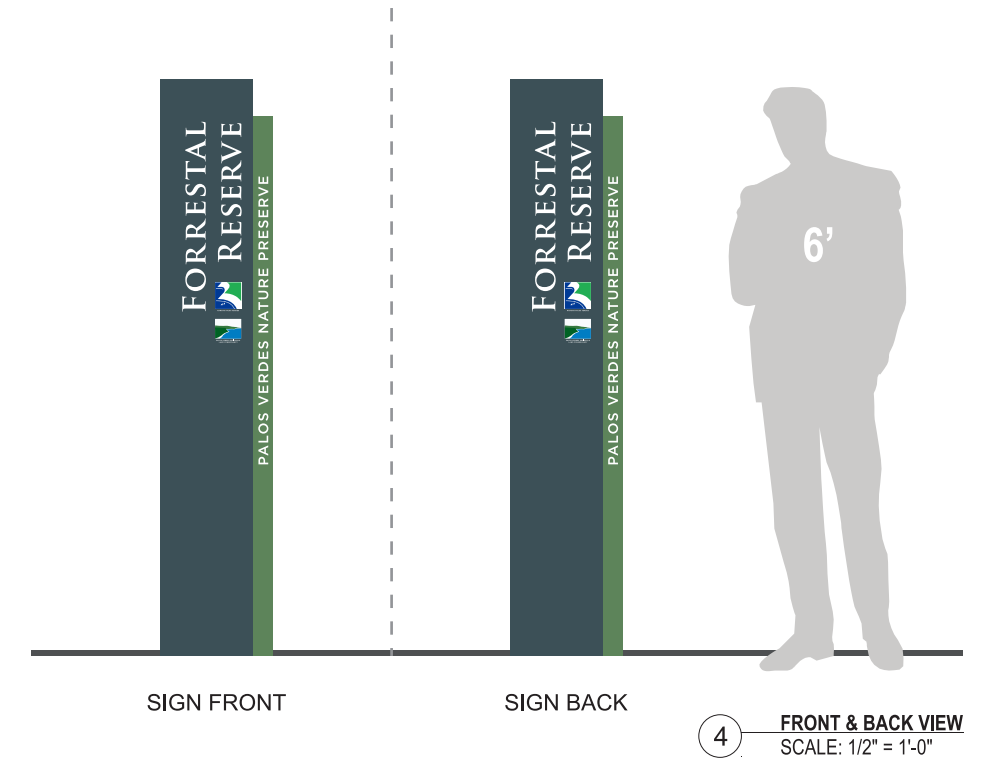
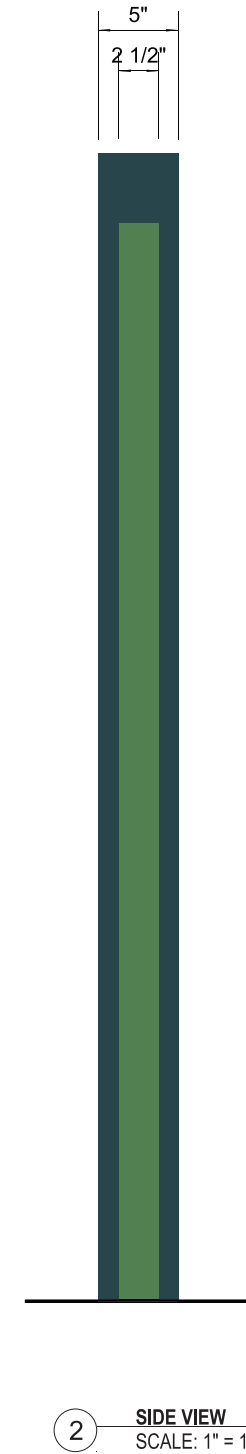
15 - Secondary ID

20 - Orientation Panel





3 PLAN VIEW
SCALE: 1" = 1'-0"

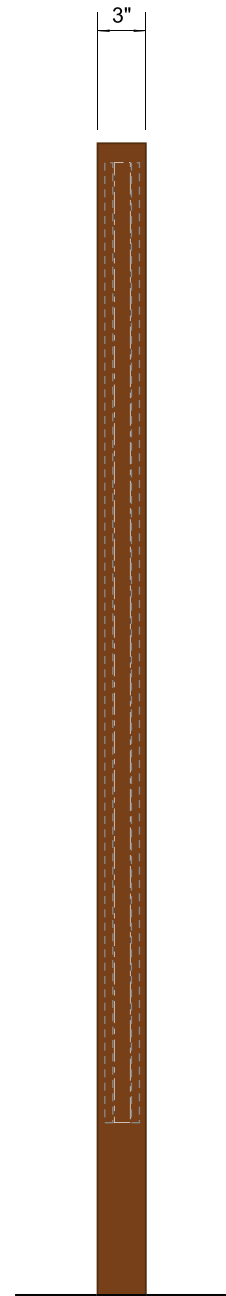


- GENERAL NOTE:
- 1) ALL EXPOSED SURFACES TO HAVE FINAL ANTI-GRAFFITI COATING WITH UV INHIBITORS.
 - 2) SIGN CONTRACTOR TO PROVIDE TO CLIENT A RECOMMENDED COMPATIBLE GRAFFITI REMOVER THAT DOES NOT REMOVE PAINT FINISH OR APPLIED GRAPHICS WHEN USED.

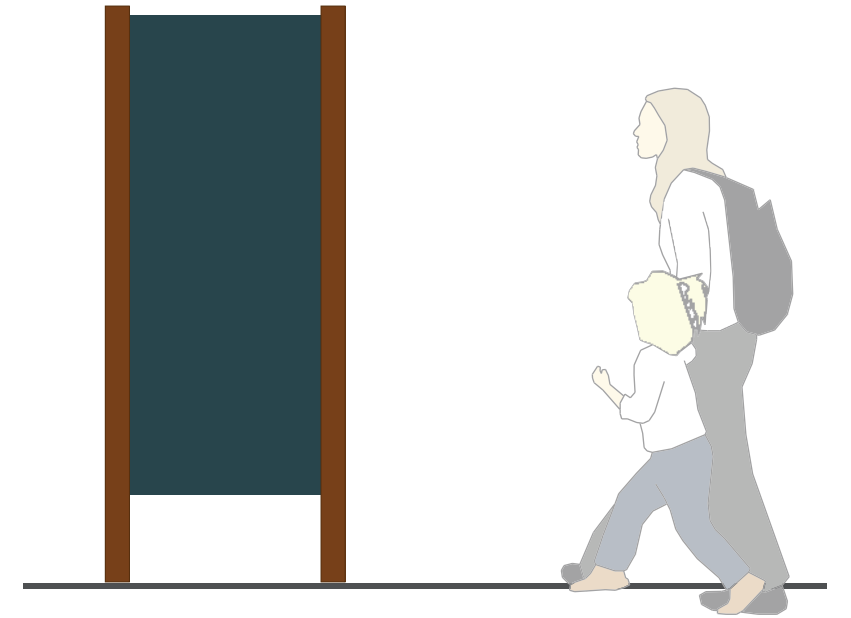




1 ELEVATION
SCALE: 1" = 1'-0"



2 SIDE VIEW
SCALE: 1" = 1'-0"



SINGLE SIDED
SIGN BACK
(BLANK)

4 SIGN BACK VIEWS
SCALE: 1/2" = 1'-0"

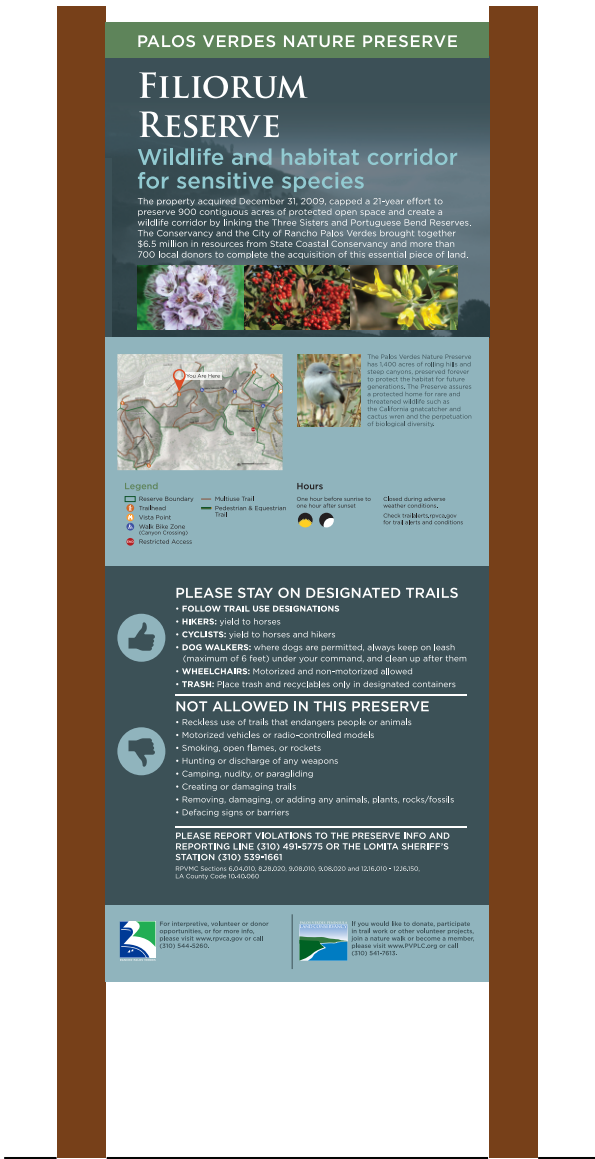
GENERAL NOTE:

- 1) ALL EXPOSED SURFACES TO HAVE FINAL ANTI-GRAFFITI COATING WITH UV INHIBITORS.
- 2) SIGN CONTRACTOR TO PROVIDE TO CLIENT A RECOMMENDED COMPATIBLE GRAFFITI REMOVER THAT DOES NOT REMOVE PAINT FINISH OR APPLIED GRAPHICS WHEN USED.



QTY=3

1 FORRESTAL
SCALE: 1" = 1'-0"



QTY=4

2 FILIORUM
SCALE: 1" = 1'-0"



QTY=3

3 THREE SISTERS
SCALE: 1" = 1'-0"

APPENDIX G

Volunteer Program

I. INTRODUCTION AND SUMMARY

I.1 Volunteer Programs

This report describes the components included within the larger Volunteer Program that serviced the Palos Verdes Nature Preserve. Specific activities are detailed for the reporting period January 1, 2020 to December 31, 2020.

Since 1988, volunteers have played an essential role in fulfilling the Palos Verdes Peninsula Land Conservancy's (PVPLC) mission to preserve land and restore habitat for the education and enjoyment of all. PVPLC is a non-profit organization that relies heavily on the support of community involvement to perform many of the tasks necessary to manage the Nature Preserves. Volunteers donate thousands of hours each year to help with office assistance, event planning, community education, habitat restoration, trail maintenance, and much more. This report divides the various volunteer programs into two categories: Community Involvement Volunteers and Stewardship Volunteers.

The first category, Community Involvement Volunteers, supports volunteer activities that focus on friend making, fundraising, and recommendations to staff on a variety of topics. This category is further divided into four sections which are detailed within the report:

- Committees and Advisory Boards
- Special Events and Office Assistance
- Education Docents and Nature Walk Leaders
- Interns

The second category, Stewardship Volunteers, supports activities that are performed on the land to assist with habitat management of the Preserve. In all, there are seven elements within this category that are described in more detail in the Stewardship Volunteer section of this report. The backbone of the program is our regularly scheduled Saturday Outdoor Volunteer Days that are open to participation by all and require no long-term commitment. Periodically, there are also individuals or groups that complete stewardship projects outside of the normally scheduled outdoor events. Boy Scouts and Girls Scouts interested in obtaining their final awards are two such groups. There are also several Stewardship Volunteer opportunities that require long term commitments. The seven programs are listed below:

- Outdoor Volunteer Days
- Team Leaders
- Scout Projects
- Adopt-a-plot
- Trail Crew

- Volunteer Trail Watch
- Community Science

In 2020, volunteers provided a grand total of **12,391** hours of service to support conservation, restoration and management of the Palos Verdes Nature Preserve. According to the Independent Sector, volunteer time in California is valued at \$27.20 per hour (based on Dollar Value of a Volunteer Hour, by State: 2020, Independent Sector), thus generating a total of \$337,035.20 of in-kind services. The amount of volunteer hours donated at each Nature Preserve or for a specific volunteer category depends on the size of property or specific projects that transpired during the reporting period. 2020 experienced social distancing rules to limit Covid-19 exposure. These social distancing requirements limited certain volunteer programs and the amount of people that could participate. Total volunteer hours saw a 46% decrease from 2019.

2. COMMUNITY INVOLVEMENT

2.1 Committees and Advisory Boards

PVPLC is driven and supported by a thirteen-member volunteer board, which meets on a regular basis to strategize and direct the organization's mission. The PVPLC maintains numerous committees and advisory boards as well for the following purposes:

- To provide review and recommendations regarding organizational plans and policies
- To provide assistance with the operations of the organization
- To provide community input for PVPLC activities
- To provide a training and evaluation ground for potential members of the Board of Directors

This year, the Conservancy's committees contributed 951 hours in serving the Land Conservancy's mission. Hours for committee-involved board members are compiled with their board volunteer time. The committees that were active during the reporting period are listed below:

- Board of Directors
- Audit Committee
- Finance Committee
- Development Committee
- Investment Committee
- Special Events Committee(s)

2.2 Special Events and Office Assistance Volunteers

The PVPLC relies on individual volunteers and community groups, such as the National Charity

League (NCL) to assist PVPLC staff with all major fundraising and friend-raising events. We have built very strong and fulfilling relationships with these groups and strive to provide an environment that lets volunteers know they are indispensable and an integral part of our organization. Special events supported by committees and volunteers this year such as Palos Verdes Pastoral held at Terranea Resort.

2.3 Nature Walks

Nature Walk Leaders donated a total of 349 hours in 2020. PVPLC Board of Directors member Allen Franz and volunteer, Cindy Akiyama co-coordinate this group of dedicated volunteers and each prospective walk leader must have a high level of knowledge the local ecosystem, particularly the native and non-native plants found on the Peninsula. Leaders must go through extensive training and be willing to research and learn about local history, geology, flora and fauna. Continued research and exploration serves to add to a walk leader's knowledge base, preparing them to give accurate and in-depth presentations to the public.

Walks are held all over the Peninsula, from the edge of the coast to deep within the canyons. Each leader designs his or her presentation to include special attributes and stories particular to a site. Nature walks occur once a month every month throughout the year, featuring a different location every time. With the pandemic affecting group gatherings, nature walk opportunities were adapted and many of the walks were held digitally.

2.4 Internships

Interns dedicate much of their volunteer time to helping the Land Conservancy's mission to educate and restore. In 2020, 35 interns dedicated a total of 1346 hours to various projects such as educational outreach, field trips, weed mapping, native plant propagation, wildlife monitoring and much more.

3. STEWARDSHIP VOLUNTEERS

Volunteers play an integral part in helping PVPLC staff exceed our goals for restoring land in the Preserve. Outdoor volunteer days provide an opportunity for public volunteers to contribute to habitat and trail restoration efforts. Team Leaders provide leadership on Saturday events, the Trail Crew class volunteers build skills to maintain the trail system, and Volunteer Trail Watch reports vandalism and trail maintenance needs. The Adopt-a-Plot program, Citizen Science wildlife monitoring, scout projects, local environmental clubs and nursery volunteers are also Stewardship volunteers that support Conservancy conservation efforts within the Palos Verdes Nature Preserve, the native plant nursery and other management areas (PVNP and nursery are the

only metrics outlined for this report).

Palos Verdes Nature Preserve Stewardship volunteer highlights in 2020:

- 12,391 hours of volunteer time, a decrease of 14,714 hours from 2019. (Continued volunteer work is significant despite Covid-19 restriction)
- 862 hours of volunteer Adopt-a-plot stewardship, an increase of 274 hours from 2019 (Volunteer work has focused on this section as a safe alternative to public events during the pandemic)
- Volunteers planted over 700 plants to assist with critical habitat restoration projects such as installing PVBB host plants and removing 21,000 invasive species.
- Hosted 1 organization, Memorial Care, at a special volunteer day to support the conservancy's work restoring lands and maintaining public nature preserves (with Covid-19 safety protocols in place)
- Trained 10 new VTW members and 12 new Trail Crew members
- Grant from Tyler Foundation to support skill-building internships to survey Reserves for invasive species using Esri GIS software.

3.1 Outdoor Volunteer Days

The PVPLC holds outdoor volunteer days nearly every Saturday of the year, held from 9am-12pm, excluding holiday weekends. The focus of these events is to restore native habitat, maintain the trail system, and do general maintenance of lands. We engage and empower young people through these programs to ensure education and stewardship on the Preserves in perpetuity. We work with local schools and colleges to have teachers bring groups of students or give incentives such as extra credit and service-learning hours for students who participate on the Saturday volunteer events. Also included in this summary are events catered for special groups and corporations. Rapid Response is an Outdoor Volunteer Opportunity held almost every Friday and Saturday from 9am to 12pm. During these events volunteers are invited to work alongside staff closing spur trails. Only 16 Rapid Response Volunteer Days (70 in 2019) were held in 2020 due to Covid-19 limited opportunities. Any public events held after April 1st 2020 implemented safety protocols to protect all participants from Covid-19. These protocols include: masks required for the duration of the event, hand sanitizer and extra masks provided, social distancing of a minimum of 6 feet, and group sizes limited to 10 people. Refer to Appendix F for maps of spur trail closures.

3.1.1 Native Plant Nursery

Activities in the Native Plant Nursery include transplanting seedlings from flats into individual containers, removing weeds from the containers. On occasion, groups and scouts help maintain the shade structure, build plant benches and repair the weed barrier cloth. Volunteers help at the nursery during the week throughout the year. A total of 1028 volunteer hours were contributed to nursery efforts in 2020.

3.2 Team Leader Program

The Team Leader program began in 2007 in response to the growing number of volunteers that were attending the Outdoor Volunteer Days. Team Leaders are volunteers, sixteen years or older, who assist in supervising the Saturday outdoor volunteer activities. They ensure that volunteers have adequate instruction and the tools necessary to complete the task. They also assist in educating the public about the PVPLC.

The program requires that interested volunteers go through an application and interview process. Candidates then attend a half-day weekend workshop where they learn the skills necessary to motivate and supervise volunteers during Saturday Outdoor Volunteer Days. Training involves practicing leadership skills and communicating restoration techniques. Team Leaders commit to working at least four volunteer days within one season or half-year.

The Team Leader Program has helped develop leadership skills in participants and has greatly contributed to the success of our Outdoor Volunteer Days. The quality of work from regular volunteers has increased with the guidance of Team Leaders. In addition to adult participants, many of the Team Leaders attend local high schools and universities. During the reporting period, the program has allowed these students to build leadership skills that they will find useful in their future.

The goal of the PVPLC is to hold two Team Leader workshops each year and train a minimum of six new Team Leaders at each one. With Covid-19 restrictions in place for most of 2020, the team leader program was put on hold. It is expected to resume in 2021 as Covid-19 restrictions allow.

3.3 Scout Projects

The PVPLC encourages Boy Scouts and Girl Scouts who are looking for projects to complete their final awards, Eagle Awards for Boy Scouts and Gold Awards for Girl Scouts, by providing them with opportunities to complete their projects on preserves the PVPLC manages. This collaboration is beneficial to the scout groups, the PVPLC, and the public that uses the preserves. Scouts work under the mentorship of one of the PVPLC staff to complete their projects and are steered toward objectives that meet the PVPLC stewardship goals. In 2020, 9 scout projects were completed, including native plant nursery infrastructure improvements, habitat restoration, and trail projects.

3.4 Trail Crew Program

The Volunteer Trail Crew class offered is based on the Basic Trail Maintenance class developed by Frank Padilla, Jr. (retired California State Parks Supervisor), and Kurt Loheit. Originally started in 1992, the class focused on both volunteer and agency skill building. Adopted by the Los Angeles District of California State Parks and later the Southern California Trails Coalition, it became the first step in advanced classes for crew leader training and design and construction classes, allowing a structured path for participants to build skills associated with trails from basic maintenance to highly advanced techniques. The class is a combination of classroom and hands-on training to familiarize the

participants in all aspects of trail maintenance. The course emphasizes safety, assessments, basic maintenance skills, water control, erosion sources, terminology, proper tool use, basic survey skills, resource considerations, and user experience and maintenance value. Volunteers who demonstrate proficiency in each learned skill and fulfill a yearly indoctrination will maintain status as a qualified Trail Crew member.

In 2020, the volunteer Trail Crew contributed a total of 175 hours to maintaining the Preserve's trail system. These hours include the second-Saturday monthly class trainings as described below, as well as additional trail work, such as weed whacking or spur trail closures, executed by Trail Crew members outside of the classes.

Participants must be at least 18 years old and must first take the introductory course. The 50-hour course can be taken at the participant's own pace and it is estimated to take about a year to complete. There are scheduled Trail Crew Skills Classes that coordinate with the trail instructor's availability and the PVPLC Outdoor Volunteer Workday schedule.

Table 1. Trail Crew training classes

Date	# Volunteer Hours	Location	Project/Skill Learned
January 11	17	Filiorum	Zote's Cutacross grade dips and tread repair
February 9	19	PVPLC Office	Trail Crew Introduction Class
March 14	23	Forrestal	Grade dip installation and maintenance. Trail erosion repaired
June 13	24	Abalone Cove	Retaining wall installation. General tread maintenance.
July 18	24.5	San Ramon	Retaining wall installation. General tread maintenance.
September 12	16	Forrestal	Bridge maintenance and erosion repair
October 10	18	Filiorum & Portuguese Bend	Retaining wall installation and tread repair
October 12	14	Portuguese Bend & Forrestal	Water bar installation, rock stairs and brushing.
November 14	33	Portuguese Bend	Installation of grade dips, a rock retaining wall, bench cuts, tread repair, outsloping and brushing

3.5 Volunteer Trail Watch Program

The mission of the Palos Verdes Nature Preserve Volunteer Trail Watch Program is to serve as eyes and ears of the City of Rancho Palos Verdes and the Palos Verdes Peninsula Land Conservancy with a view to 1) protect the natural resources of the Palos Verdes Nature Preserve, including the flora and fauna as well as the geology, topography and scenic landscape, and 2) enhance the safety of, and promote an enjoyable experience for all Preserve visitors. The Volunteer Trail Watch Program was initiated in 2013 to help educate trail users about appropriate trail use and monitor preserve misuse. In 2020, volunteers dedicated 3895 hours to the program through training and field implementation activities, and reporting observations through the web portal for record keeping. A large portion of this year's hours was contributed by the Volunteer Trail Watch co-coordinators, who dedicated much of their time to training and coordinating the program's volunteers in addition to their time as VTW volunteers on the trails.

3.6 Community Science

Volunteers help the PVPLC monitor wildlife on the Preserve in order to document populations and their response to restoration efforts. Community Science volunteers contributed 821 hours to documenting the behavior of cactus wrens and the evidence of mammalian populations like coyotes and foxes through tracking efforts.

4. GRANTS SUPPORTING VOLUNTEER ENGAGEMENT

In 2020, a grant from Tyler Foundation supported skill building internships to survey the Palos Verdes Nature Preserve for invasive species using Esri GIS Software.

APPENDIX H

Quarterly Enforcement Reports and Trail Counter Data

MEMORANDUM

Date: Monday, July 13, 2020

To: Katie Lozano, Senior Administrative Analyst/Open Space Manager

From: Senior Ranger Saldaña

SUBJECT: 2nd Quarter City of Rancho Palos Verdes Ranger Enforcement Report

PRESERVE VISITOR CONTACTS SUMMARY

- April 01, 2020- June 30, 2020
 - 4 Rangers* patrolled the Preserve during this period
- *Approximately 130 hours per week.

This reporting period was an atypical quarter as operations were largely driven by public health mandates from the State and LA County regarding the Covid-19 Pandemic and also public safety needs related to public demonstrations near Preserve properties. Ranger and OSM Staff adjusted continuously to carry out and respond to operational needs during this time.

Operations Under Covid-19 LA County Health Department Regulations

Due to the COVID-19 response measures mandated by the Governor of the State of California and the Los Angeles County Public Health Department, the City of Rancho Palos Verdes closed its parks, open space areas and beaches March 19, 2020. The Palos Verdes Nature Preserve opened in some capacity on May 13th, with phased openings to allow staff to conduct public safety inspections of the Preserve and trail maintenance prior to full trails reopening. During the closure period, many trails had substantial overgrowth and were unpassable. As of July 10th, all Preserve closures associated with the COVID-19 closures were lifted. For approximately half of this reporting period, the majority of Rangers and the City's Open Space Management (OSM) staff time was dedicated to keeping the Preserve closed to comply with state and county orders.

The City reopened the Preserve and beaches in some capacity on May 13th. Rangers and OSM staff, in coordination with PVPLC staff actively coordinated this reopening. Rangers and OSM staff spent the first two weeks post-reopening proactively educating visitors at trailheads on LA County Health mandates regarding trail use, including social distancing, use of face coverings, and group size. Rangers also responded to many calls for service and reports of patrons in non-compliance with these mandates. During patrols, Rangers observed approximately 60% compliance, which was consistent with trail manager observations across LA County. Reports for compliance from the public was significantly lower than those observed by Rangers.

Rangers and OSM staff sit on the Los Angeles County Task Force, which is lead by Los Angeles County Department of Parks and Recreation in close coordination with the Los

Angeles County Health Department. Other task force members include the National and State Park Services, Mountains Recreation and Conservation Authority and trail management agencies throughout Los Angeles County including Malibu, Los Angeles City and many more. The goals of this Task Force are to disseminate LA County Health Department orders to trail managers county-wide, trail manager coordination and cooperative efforts, and for trail managers to share what management practices and public education efforts are most successful, and what challenges experienced.

Demonstrations

Rangers assisted LA County Sheriff's Department during public demonstrations staged near the Ocean Trails Reserve, Forrestal Reserve, and Alta Vicente Reserve on June 6th and 14th.

OVERALL VISITOR CONTACTS:

Total Contacts: 6151

Hikers: 5,441

Dog Walkers: 520

Cyclists: 164

Equestrians: 26

Preserve Information and Reporting Line Calls: 51

COVID-19 Related (including masks, social distancing, one-way signage): 15

Use of Spur Trail: 11

Vandalism: 2

Paragliding: 2

Maintenance: 5

Parking Issues: 2

Trail Status and General Information: 9

Off-Leash Dog: 1

Fishing / Poaching: 4

ENFORCEMENT SUMMARY:

Notice of Parking Citations Issued: 448 Total

By Violation:

Failure to Obey Signs – 160

Posted Temporary No Parking / Fire Lane - 11

Park by Permit – 245

Handicap Zone – 29

Other - 3

By Location:

Abalone Cove Reserve – 184

Alta Vicente Reserve - 1

Crenshaw Boulevard (Portuguese Bend / Filiorum adjacent) – 11
Del Cerro – 224
Seacove Neighborhood – 17
Seaview Neighborhood – 4
Ocean Trails Reserve – 4
Palos Verdes Drive South – 2
Vicente Bluffs Reserve – 1

Notice to Appear Citations Issued: 65 Total

By Violation:

Closed Area – 61
Protection of Flora / Fauna – 2
Dogs off Leash – 2

By Location:

Abalone Cove Reserve – 22
Agua Amarga Reserve – 1
Filiorum Reserve – 2
Forrestal Reserve – 6
Ocean Trails Reserve – 8
Portuguese Bend Reserve – 1
San Ramon Reserve – 1
Vicente Bluffs Reserve – 18
Miscellaneous Parks - 6

ACTIVITY REPORT BY RESERVE

The next section provides information by reserve including ranger public use observations and public observations reported to rangers. Public contacts are the collective sum of the interactions between rangers and Preserve users. Education includes information given which is usually directional or interpretive. Warnings are instances in which a ranger corrected Preserve misuse through voluntary compliance, and enforcement refers to infraction citations or parking citations issued. Numbers do not reflect actual number of individuals in the Reserve, rather public contacts made by rangers to patrons while on foot and/or vehicle patrols.

Dogs off-leash and on the beach, as well as individuals off-trail or in closed areas continue to be common violations observed by Rangers and reported by the public in several Reserves. While not as common, Rangers also receive reports of smoking or BBQs/bonfires in unauthorized areas. Rangers continuously watch for and correct these violations.

Abalone Cove Reserve:

	Public Contact	Education	Warning	Enforcement
Hikers	1,605	138	222	206
Dogs	106	48	1	0
Biker	10	2	2	0
Equestrian	0	0	0	0

Rangers educated and informed patrons of Reserve rules for various violations observed, including dogs off leash, dogs on the beach, entering closed area, and drones prohibited.

A large number of warnings issued were in regards to patrons observed at or near Gorge 1, and Gorge 2. To deter patrons from accessing these areas, that are closed due to falling rock potential, Rangers worked with the Public Works Department to install a 4 ft. by 3 ft. “area closed” sign. Rangers continued to educate and enforce, as necessary, patrons that proceeded into the closed area. See pictures below.



Rangers also responded to three separate reports of homeless individuals and/or homeless encampments in Abalone Cove.

Additionally, upon reopening of Abalone Cove Reserve, Park, and Beach, under the direction of County of Los Angeles Department of Public Health, the parking lot remained at capacity, and closed due to full capacity an average of 10 times per weekend day. OSM staff, with Ranger and LA County Deputy assistance, spent significant resources on traffic control and parking lot management for traffic safety. Staff educated patrons on alternative beach access points, and deterred vehicles from parking illegally on Palos Verdes Drive South adjacent to Annie’s Stand, and from dangerously blocking traffic on Palos Verdes Drive South while waiting for the parking lot to reopen after its numerous closures. To help resolve traffic issues, the Public Works Department painted the curb red in front of the parking lot turn-lane, where “no stopping” signage already exists, and OSM staff placed stanchions to block the turn-

lane during closure. Ranger Fox can be seen in the images below educating patrons about alternative parking locations to access beaches within the City.



Rangers responded to a report of a motorcyclist on Sacred Cove Beach. A violation of City Municipal Code 12.16.020 “No Motor Vehicles.” Rangers attempted to make contact with the individual, when he proceeded to thwart Rangers and drove up Sacred Cove View Trail, as other patrons were on the narrow trail. This made for dangerous and unsafe conditions for all. Rangers alerted the Los Angeles County Sheriff’s Department for assistance, but we were unable to locate the individual.

Rangers have observed, and had several reports from the public of poaching from the tidepools within the Marine Protected Area at Abalone Cove. This is a significant increase in poaching. Rangers and OSM staff are working closely with the Department of Fish and Wildlife Wardens and the Los Angeles Marine Protected Areas Collaborative Team (LAMPACT) to correct violations and to educate visitors about Abalone Cove’s no-take zone. Tools being engaged to correct this behavior are additional enforcement presence from Fish and Wildlife Wardens and the LAMPACT. Rangers are also working with these organizations on additional and more language inclusive signage with less text and clear images in the area.



Rangers have additionally received reports of individuals off trail, and continue to monitor for this unauthorized activity.

Agua Amarga Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	17	3	5	1
Dog	2	0	0	0
Biker	0	0	0	0
Equestrian	0	0	0	0

During this quarter, few patrons were observed during patrols at Agua Amarga Reserve. Most contacts were in regards to trail maintenance and fuel modification site visits. The goats were used in May and June for fuel modification. Residents had reported night use of Reserve at the beginning of the quarter, but no significant issues have arisen since the Reserve remained closed.

Alta Vicente Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	35	2	5	1
Dog	5	0	0	0
Biker	0	0	0	0
Equestrian	0	0	0	0

Rangers educated drone operators at the helipad about Reserve closure related to COVID-19. No significant issues were observed or reported.

Rangers received reports and warned a patron who claimed she was a volunteer authorized to remove non-native vegetation along the southern section of the Reserve adjacent to Palos Verdes Drive South.

Filiorum Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	18	1	3	2
Dog	5	1	0	0
Biker	2	2	0	0
Equestrian	6	4	2	0

Rangers witnessed and warned a patron who released 6 mice near Filiorum Reserve. Mice had been captured from the patrons' home, and were being released onto adjacent open space. No other activity to report.

Forrestal Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	128	5	24	6
Dog	10	1	1	0
Biker	14	2	0	0
Equestrian	4	4	0	0

Forrestal Reserve reopened in May with one-way directional trails on Pirate, Flying Mane, and Quarry Trails. These one-way directional trails were later removed, as more trails within Forrestal and lower Portuguese Bend reopened, providing opportunity for greater dispersal/social distancing. Rangers advised one patron of drone use at the cul-de-sac of Forrestal Drive, and one patron for dog off-leash. All other verbal warnings were related to visitors in areas closed due to state and county orders.

Ocean Trails Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	199	16	15	11
Dog	11	1	1	1
Biker	0	0	0	0
Equestrian	0	0	0	0

Multiple calls were received regarding dogs off leash and dogs in the beach at Ocean Trails Reserve and Beach. Regular patrols were increased to address these calls. On May 23rd, Rangers and OSM staff worked with Trump National Golf Course staff, and the Los Angeles County Fire Department to locate an injured hiker on Dudleya Trail. LA County Fire was unable to extract the injured hiker, and resorted to airlifting her for medical attention.

Rangers received numerous reports of illegal paragliding activity in Ocean Trails Reserve. Rangers patrolled area and OSM staff installed new area closure signage to deter habitat trampling and unauthorized access. Appropriate signage referencing the Municipal Code strengthens the the likelihood an infraction will be upheld in court.



Portuguese Bend Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	2,528	220	13	246
Dog	331	129	12	1
Biker	132	8	1	0
Equestrian	16	2	2	0

Rangers enforced closures and assisted with phased re-openings of trails within the Portuguese Bend Reserve, with an emphasis on educating trail users on new trail guidelines during COVID-19 pandemic. Unlike some Reserves which opened all trails simultaneously, Portuguese Bend Reserve was opened in several stages to allow necessary safety inspections and trail maintenance to take place.

Rangers responded to multiple reports of fireworks in the Reserve near the scenic overlook on Burma Road Trail on June 7th at 7 p.m. Rangers were unable to locate individuals, but did locate a “Billy Club” firework used and discarded on the high brush of mustard.

Rangers spoke to a family seen walking out of Burma Road Trail onto Crenshaw Blvd., with a pile of cacti pads. Rangers educated patrons about Preserve rules, including removal of flora per the City’s Municipal Code. They complied when asked for retrieval, and Rangers were able to return pads to an existing cacti grove.



Rangers also received reports from the Palos Verdes Peninsula Land Conservancy's Volunteer Trail watch (VTW) of unsafe mountain biking activity near Burma intersections with Ishibashi and Barn Owl Trails as well as and E-bike use in Lower Portuguese Bend Reserve. Rangers continuously monitor for this activity.

San Ramon Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	56	17	38	1
Dog	0	0	0	0
Biker	0	0	0	0
Equestrian	0	0	0	0

Rangers received reports from the VTW of individuals smoking in the area, and focused patrols watching for this activity, with no violations observed. Education contacts were related to trail closure status, and goats and fuel modification activity. Verbal warnings issued related to closure of trails, and vehicles parked in closed turnouts during the mandated closure.

Three Sisters Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	2	0	1	0
Dog	0	0	0	0
Biker	0	0	0	0
Equestrian	0	0	0	0

No significant issues to report.

Vicente Bluffs Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	853	63	117	19
Dog	50	0	1	0
Biker	6	0	2	0
Equestrian	0	0	0	0

Rangers responded to multiple reports of people climbing over the fence near the scenic lookout adjacent to the Calle Entradero parking lot. OSM staff assisted Rangers in educating many individuals on public safety concerns regarding steep and unstable cliffs and unauthorized spur trails.

On May 23rd, Rangers responded to a report of a large family gathering at the beach below Vicente Bluffs. The family consisted of 17 individuals and 1 dog that had set up a canopy and barbecue grill. Rangers were able to make contact with the family and informed them, per County Health Department orders only passive use of beaches was permitted at the time. Additionally, Rangers confirmed the family had used an illegal spur trail to access the beach. A verbal warning was issued, as the family was compliant and proceeded to pack up and hauled out all of their trash.

Rangers also contacted Palos Verdes Estates City staff to confirm that there is an authorized access to the beach below Vicente Bluffs from Christmas Tree Cove and Honeymoon Cove. Rangers hiked and verified this authorized alternative to access this beach.



Rangers also received reports of drones at Vicente Bluffs and continue to monitor for this activity.

City Parks

In addition to the 1,400 acres of open space in the Palos Verdes Nature Preserve, and City beaches, Rangers also assisted Recreation and Parks Staff in responding to calls for service and assistance in matters related to enforcement. These calls were related to drone use and policy, paragliders, dogs off-leash, patrons in closed areas (during COVID-19 mandated closure of parks and open spaces), alcoholic beverages, and special event permits / organized events without city's approval.

MEMORANDUM

Date: Tuesday, October 13th, 2020

To: Katie Lozano, City of Rancho Palos Verdes

From: Ranger Saldaña

SUBJECT: 3rd Quarter Rancho Palos Verdes Ranger Enforcement Report

PRESERVE VISITOR CONTACTS SUMMARY

- July 01, 2020 - September 30, 2020
 - 4 Rangers* patrolled the reserves during this period
- *Approximately 130 hours per week.

This reporting period continued to be atypical as operations continued to be driven by public health mandates from the State and LA County regarding the COVID-19 Pandemic.

Operations under COVID-19 LA County Health Department Regulations

Due to the COVID-19 restrictions, group size was limited to no more than 10. Rangers educated patrons about social distancing, facial coverings, and other restrictions as mandated by the Los Angeles County Department of Public Health, and responded to various calls for service for reports of patrons in non-compliance with these mandates. During routine patrols, Rangers saw 70% compliance, and educated users on temporary trail guidelines. Reports for compliance from the public were significantly lower than those observed by Rangers.

Los Angeles County Department of Public Health ordered Los Angeles County beaches closed from July 3rd through July 6th at 5:00am related to COVID-19. OSM assisted in setting barricades, and educating trail users on mandated closures. Rangers patrolled areas to ensure compliance was met.

Lastly, during this quarter, Rangers patrolled and monitored patrons on trails as a result of a series of advisories and warnings issued by the National Weather Service, including: Excessive Heat Watch, Extreme Fire Weather, Heat Advisory and Red Flag Warnings. Smoke Advisory was also in effect due to active wildfires, such as the Bobcat Fire, which began on September 6th, 2020.

OVERALL VISITOR CONTACTS:

Total Contacts: 6,269

Hikers: 5,732

Dog Walkers: 282

Cyclists: 255

Equestrians: 2
Warnings: 378

Calls for Assistance:

Heat exhaustion & heat stress: 24
Dog exhaustion & heat stress: 2
Other (i.e. underlying condition, sprained ankle): 6

Additionally, Rangers patrolled and monitored patrons on trails as a result of a series of advisories and warnings issued by the National Weather Service, including: Excessive Heat Watch, Extreme Fire Weather, Heat Advisory and Red Flag Warnings, a minimum of 17 days affected during this period. As a result, 32 transports were made to patrons exhibiting signs of heat exhaustion or heat stress.

Smoke Advisory was also in effect by the South Coast Air Quality Management District (AQMD) due to active wildfires, such as the Bobcat Fire, which began on September 6th, 2020.

Preserve Information and Reporting Hotline Calls: 73 calls

COVID-19 related (including masks, social distancing, one-way signage): 2
Use of Spur Trail: 17
Vandalism: 1
Paragliding: 4
Maintenance: 0
Parking Issues: 5
Trail Status and General Information: 33
Dog on the beach: 2
Fishing / Poaching: 3
Smoking: 1
Other Violations: 5

ENFORCEMENT SUMMARY:

Notice of Parking Citations Issued: 422 Total*

Number of violations is greater than the number of citations issued

By Violation:

Failure to Obey Signs - 88
Posted Temporary No Parking / Fire Lane – 9
Passenger Loading Zone - 12
Park by Permit – 275
Handicap Zone – 29
Other - 17

By Location:

Abalone Cove Reserve – 140
Crenshaw Boulevard (Portuguese Bend / Filiorum adjacent) – 20
Del Cerro – 258
Ocean Trails Reserve – 1
City of RPV Parks – 1
Vicente Bluffs Reserve – 2

Notice to Appear Citations Issued: 21 Total

By Violation:

Closed Area – 18
Protection of Flora / Fauna – 1
Dogs off Leash – 2

By Location:

Abalone Cove Reserve – 4
Agua Amarga Reserve – 0
Filiorum Reserve – 0
Forrestal Reserve – 1
Ocean Trails Reserve – 2
Portuguese Bend Reserve – 0
San Ramon Reserve – 0
Vicente Bluffs Reserve – 14

ACTIVITY REPORT BY RESERVE:

The next section provides further information on projects, reports, and observations received by Rangers from the public, organized per Reserve. Numbers do not reflect actual number of individuals in the Reserve, rather those spoken to while on foot and/or vehicle patrols.

Abalone Cove Reserve:

	Public Contact	Education	Warning	Enforcement
Hikers	820	103	96	154
Dogs	22	5	6	0
Biker	7	0	1	0
Equestrian	0	0	0	0

Rangers educated and informed patrons of Reserve rules for various violations observed, including dogs off leash, dogs on the beach, entering closed area, and drones prohibited.

Rangers have also worked closely with the Department of Fish and Wildlife Game Wardens, and the Los Angeles Marine Protected Areas Collaborative Team to educate visitors about Abalone Cove and Vicente Bluffs State Marine Protection Areas. Rangers have assisted in reporting, educating, and enforcement aspect to deter poaching in and around Abalone Cove. The City also installed temporary signage to educate patrons about our MPAs. Official signage is still being developed and approved by CDFW.



Since June 28th, 2020, Open Space Management has begun tracking the number of organisms observed and/or deterred. A total of 216 individuals were spoken to regarding MPA violations, and educated on rules, permit process, and alternative locations outside of the MPA zone. Staff confirmed 631 marine organisms deterred from take in the MPA zone, primarily from Abalone Cove SMCA including over 50 reports from the public (i.e. phone calls, or staff being flagged down during patrols). The organisms included mussels, purple sea urchins, sea stars, limpets, turban snails, shore hermits, hermit crabs, as well as rocks, and sea shells.



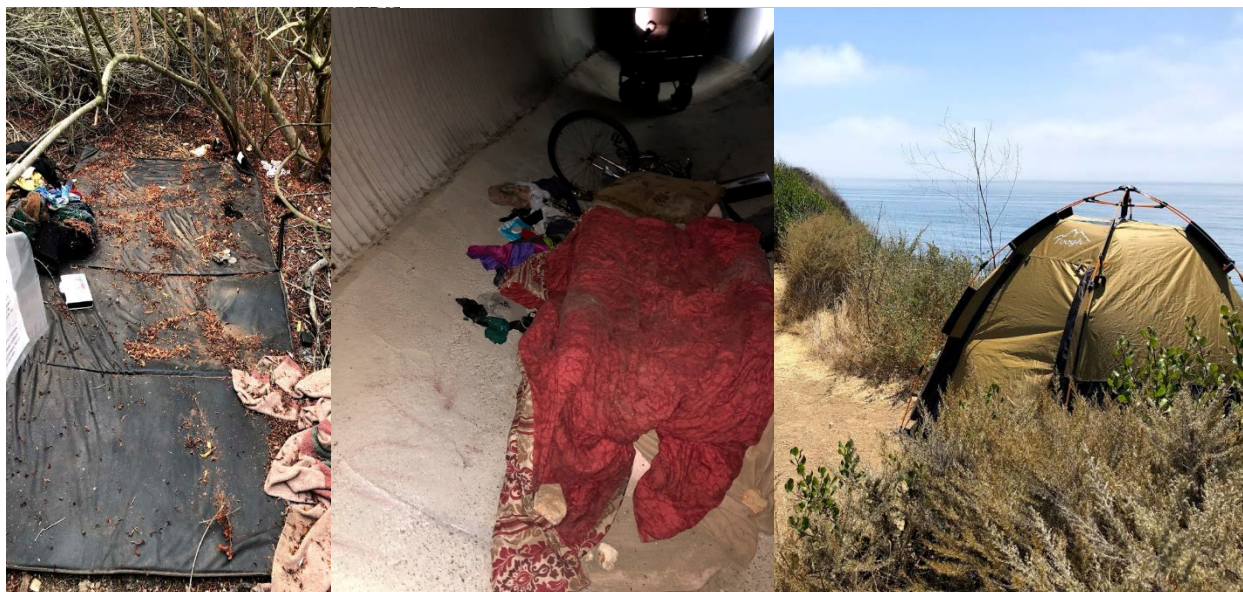
Staff installed an “Area Closed” sign at the bottom of Sacred Cove View Trail West.



During this period, staff received multiple reports from the public regarding injured wildlife. Staff responded to confirm the location and notify the corresponding agencies for assistance. The injured wildlife included seagull with a broken leg, seagull with a hook imbedded in its tongue, deceased dolphin, and a raccoon with visible scarring and partially removed jaw.



Three encampments were found, in Abalone Cove, two of which were vacated. Staff responded and tagged both vacated sites, which requires the posting of a public notice to vacate the property within 72 hours of the notice. After the 72 hour period, staff returned to the site and removed the items. The third encampment was located on Inspiration Point trail, a mere 5 feet away from the cliff. The individuals complied when asked to retrieve and remove their tent from the trail as it is not permissible in the Nature Preserve.



Aqua Amarga Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	5	0	0	0
Dog	1	0	0	0
Biker	0	0	0	0
Equestrian	0	0	0	0

During this quarter, few patrons were observed during patrols at Agua Amarga Reserve. No activity to report.

Alta Vicente Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	27	0	4	0
Dog	7	0	0	0
Biker	0	0	0	0
Equestrian	0	0	0	0

Rangers received reports and spoke with a homeless individual who had been seen in Alta Vicente Reserve and Point Vicente Interpretive Center Park area. The public had reported the individual had chased a group of hikers from the trail with a stick, while yelling at them.

Over this reporting period, ranger continued to monitor Alta Vicente for increased use resulting from the City's public education campaign to encourage visitors to explore new Reserve areas with ample parking and amenities.

Filiorum Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	247	34	0	0
Dog	8	0	0	0
Biker	3	0	0	0
Equestrian	0	0	0	0

No activity to report.

Forrestal Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	187	49	1	0
Dog	19	0	1	1
Biker	12	0	0	0
Equestrian	0	0	0	0

On August 6th, Staff received a report of damage to the wooden bridge on Mariposa Trail. Staff consulted with PVPLC and Trail Crew to restore the bridge.



Staff received reports of two rattlesnakes at Ladera Linda Park. Staff educated patrons about snake behavior, and maintaining a safe distance. Staff monitored the rattlesnakes to ensure they were able to retreat to their burrows. Staff noticed one of the rattlesnakes had an injury from a previous incident. The rattlesnake had tangled itself in plastic netting earlier in its life, and as it grew, the netting began to constrict and cause tearing on the skin and scales. Animal Control was called, but as it posed no immediate health risk, the snake was released.

Rangers educated a group of two regarding hoverboards in the Nature Preserve. Hover boards are considered a motorized vehicle with lithium batteries, and are not permitted in the Nature Preserve.

Rangers are monitoring use levels at Forrestal Reserve to assess whether parking and access changes on Crenshaw Blvd. south of Crest Rd. are impacting use at this location. While Rangers have noticed a slight increase in use, staff will continue to monitor and establish monitoring techniques.



Ocean Trails Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	506	60	18	2
Dog	32	2	10	1
Biker	0	0	0	0
Equestrian	0	0	0	0

Rangers continued to receive numerous reports regarding illegal paragliding / hang glider activity in Ocean Trails Reserve. Rangers patrolled area and ensured closure signage was in place to educate, warn, and cite violators as appropriate. Additionally, with the assistance of Open Space Management, spur trail were closed off to deter activity.

Individuals were contacted by the Sheriff's Department to pursue legal action in the event they are seen paragliding in the City of Rancho Palos Verdes.

Portuguese Bend Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	3,247	161	40	20
Dog	166	5	2	0
Biker	224	5	1	0
Equestrian	0	0	0	0

On July 1st, 2020, a small one acre brush fire, cause unknown broke out into the late hours on Sweetbay Drive. The burned area did not reach Portuguese Bend Reserve.

Starting September 4th, 2020 public parking was restricted on Crenshaw Boulevard south of Crest Road. Signage was posted on affected trailheads to inform the public and request public input.



Rangers found over a dozen deceased coy fish discarded along Narcissa Drive and Water Tank Trail.

On August 8th, Rangers received a call regarding a female and two children with a riffle in the Reserve on Burma Trail. Rangers notified Deputies and confirmed the individual was shooting at aluminum cans along Burma Road.

Rangers also monitored and proactively reached out to Hash House Harriers organizers to remind them of organized activities, and permitted use of the Palos Verdes Nature Preserve. The

San Ramon Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	8	3	1	0
Dog	0	0	0	0
Biker	7	0	0	0
Equestrian	0	0	0	0

On August 30th, staff removed trash from the turnout at San Ramon parking area, including 6 – 30 gallon trash bags, chain link fence, and 3 porcelain figures. After consulting with the habitat land manager, the closed section of Wanderer Trail due to the fire that had burned on July 8th was reopened to the public.



Dirt jumps were illegally installed on Switchback Trail. They will be scheduled for removal.

Rangers received a report of an illegal structure located on the wash at San Ramon. The structure was vacant, with the exception of a few tools, including a shovel head, hammer, hedge trimmer blade, and hand saw.



Three Sisters Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	6	0	0	0
Dog	1	0	0	0
Biker	0	0	0	0
Equestrian	0	0	0	0

No activity to report.

Vicente Bluffs Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	691	155	192	16
Dog	30	0	1	0
Biker	2	0	3	0
Equestrian	0	0	0	0

Rangers responded to multiple reports of people climbing over the fence near the scenic look out adjacent to Calle Entradero Parking Lot. Open Space Management staff assisted Rangers in educating many individuals on public safety concerns regarding steep and unstable cliffs and unauthorized spur trails.

The City also received information regarding high use of drones, which are not permitted in the Vicente Bluffs Reserve, or adjacent areas. The City is working on signage, and is enforcing users with drones.

The Vicente Bluffs Replacement Fence Project began August 10th, 2020 with collaboration from Public Works Department, which included changes to trails at Vicente Bluffs. Initially, sections of Sea Scape Trail were one-way directional trail to allow work to resume during weekdays. Due to delays, and poor product satisfaction, the entire Sea Scape Trail was closed to the public.



City Parks

In addition to the 1,400 acres of open space in the Palos Verdes Nature Preserve, Rangers also assisted Parks and Recreation Staff in responding to calls for service and assistance in matters related to enforcement. These calls were related to homeless individuals and encampments, paragliders, group use (during COVID-19 mandated group size of no more than 10), and unauthorized use of sports / athletic fields (city permit required to use fields).

MEMORANDUM

Date: Wednesday, January 27th, 2021

To: Katie Lozano, Senior Administrative Analyst
Dan Trautner, Deputy Director of Recreation and Parks
Cory Linder, Director of Recreation and Parks

From: Norma Saldaña, Recreation Supervisor

Subject: Park Ranger Enforcement Report: 4th Quarter 2020

PRESERVE VISITOR CONTACTS SUMMARY

- October 1st 2020 – December 31st 2020
 - 4 Rangers* patrolled the Preserve during this period
- *Approximately 130 hours per week.

This reporting period continued to be atypical as operations continued to be strongly influenced by public health mandates from the State and L.A. County regarding the COVID-19 Pandemic and increased use of the Preserve, including more new visitors less familiar with outdoor and hiking safety and trail etiquette.

Welcome Park Ranger Acero!



In October 2020, The Recreation and Parks Department welcomed our 4th Park Ranger, Rosario Acero, to the Open Space Management (OSM) team. Ranger Acero has enforcement and public safety background from her employment with the Torrance Police Department and the City of Commerce lifeguard program. She also has a passion for public service and natural resource management, and we are excited about the talents she brings to the City's Open Space Management team!

Operations under COVID-19 LA County Health Department Regulations

Due to COVID-19 restrictions, group size in the Preserve was limited to no more than 10. Rangers educated patrons about social distancing, facial coverings, and other restrictions as mandated by the L.A. County Department of Public Health. During routine patrols, Rangers saw approximately 70% compliance with mask and social distancing mandates. Reports for compliance from the public were significantly lower than those observed by Rangers.

Trainings and Coordination:

The Open Space Management Division participates in the L.A. County-wide Trails Task Force, which is a group of open space managers throughout L.A. County that coordinate management best practices, including implementation and enforcement of Pandemic-related County Health Orders. Staff attended the October meeting at which the Task Force discussed topics including visitation levels, additional trail re-openings, and public communication and messaging enhancements.

The Open Space Management Division collaborates with the Los Angeles Marine Protected Areas Collaborative Team as well as the Department of Fish and Wildlife Game Wardens to educate visitors about Abalone Cove and Point Vicente State Marine Conservation Area. Staff collects data daily and submits this data on a weekly basis to our partners. Training has been postponed due to COVID-19.

Rattlesnake Safety Workshop: Staff received rattlesnake safety training from Dr. Emily Taylor of Central Coast Snake Services in October. Staff learned about snake identification, mating behaviors, and received hands-on training to be able to safely relocate rattlesnakes. The City will be offering additional information on rattlesnake safety for the public online and exploring options for community trainings in early 2021.

Water Rescue and Cave Training: On October 27th, Rancho Palos Verdes Park Rangers and L.A. County Fire Department firefighters and lifeguards met for training at Abalone Cove. The training included rock entries/exits, and personnel swam inside the sea caves simulating actual gorge rescues. Multi-agency efforts were made so that land-based resources and water-based resources can better coordinate their efforts while reducing risk for personnel.



In case of an emergency, the public should call 911 and know their specific location to share with dispatchers.

Project Coordination

OSM staff help coordinate multiple projects within the Preserve to ensure Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) compliance with PVPLC, to implement trail closures and public safety measures, and to provide public notification. Below are a list of projects OSM staff helped coordinate with PVPLC, the Public Works Department, and public utilities in the 4th quarter.

- Southern California Edison (SCE) infrastructure maintenance (9/25-10/6 at Portuguese Bend Reserve)
- Public Works Dept. Coastal Blufftop Fence Replacement Project (Aug. – Jan. at Vicente Bluffs Reserve)
- LARICS infrastructure installation (October -12/13 at Vista Del Norte)
- California Water Company Vanderlip Trail Repairs (11/3-1/7 at Portuguese Bend Reserve)
- Public Works Dept. Burma Gate Installation (11/9-11/16 at Portuguese Bend Reserve)
- SCE infrastructure maintenance (11/17-11/20 at Portuguese Bend Reserve)
- SCE infrastructure replacement (12/1-12/30 at Portuguese Bend Reserve)
- SCE infrastructure removal (12/1-ongoing at Portuguese Bend Reserve)
- SCE infrastructure maintenance (12/18-12/21 at Portuguese Bend Reserve)

OVERALL VISITOR CONTACTS:

Total Contacts: 6,480

Hikers: 5,582

Dog Walkers: 459

Cyclists: 422

Equestrians: 17

Warnings: 269

Calls for Assistance:

Heat exhaustion & heat stress: 12

Other (i.e. underlying condition, sprained ankle): 3

Preserve Information and Reporting Hotline Calls: 29 calls

COVID-19 related (including masks, social distancing, one-way signage): 2

Vandalism: 1

Paragliding: 3

Parking Issues: 1

Trail Status and General Information: 5

Removal of flora/fauna: 2

Littering: 1

Dog on the beach: 7

Fishing / Poaching: 2

Other Violations (not Preserve-related): 5

ENFORCEMENT SUMMARY:

Notice of Parking Citations Issued: 595 Total

By Violation:

Posted Temporary No Parking / Fire Lane – 36
Passenger Loading Zone - 255
Park by Permit – 198
Handicap Zone – 11
Parking Lot / Preserve / Park Hours: 95

By Location:

Abalone Cove Reserve – 63
Alta Vicente Reserve - 2
Crenshaw Boulevard (Portuguese Bend / Filiorum adjacent) – 301
Del Cerro Park – 183
Forrestal Reserve - 5
Ocean Trails Reserve – 1
San Ramon Reserve - 1
Vicente Bluffs Reserve – 19
City of RPV Parks – 20

Notice to Appear Citations Issued: 32 Total

Number of violations is greater than the number of citations issued

By Violation:

Closed Area – 23
Dogs off Leash – 4
Animals on the Beach – 2
Paragliding (Misdemeanor) – 2
Park Hours - 2

By Location:

Abalone Cove Reserve – 12
Forrestal Reserve – 1
Ocean Trails Reserve – 7
Portuguese Bend Reserve – 4
Vicente Bluffs Reserve – 7

City of RPV Parks - 1

ACTIVITY REPORT BY RESERVE:

The next section provides further information on projects, reports, and observations received by Rangers from the public, organized per Reserve. Numbers do not reflect actual number of individuals in the Reserve, rather those spoken to while on foot and/or vehicle patrols.

Abalone Cove Reserve:

	Public Contact	Education	Warning	Enforcement
Hikers	803	184	116	74
Dog walkers	35	24	23	1
Cyclists	14	2	2	0
Equestrian	0	0	0	0

On Sunday, November 15, a patron reported finding human remains on Abalone Cove Beach. Los Angeles County Sheriff's Deputies were called and after close examination, confirmed they were not human, but were marine mammal.

A patron called the Los Angeles County Sheriff's Department regarding a possible suicidal person on Portuguese Point Loop Trail. Deputies responded and escorted the individual out.

On weekends, holidays, and during low-tide events, staff continued to observe high traffic in the City's two State Marine Conservation Areas, primarily, at Abalone Cove SMCA. Staff continued to educate patrons about Marine Protected Areas (MPA), and shared proper tide pool etiquette for safely viewing but not disturbing marine organisms. During this reporting period, a total of 62 violations were observed, and 111 individuals were contacted and educated by staff, resulting in the return of 92 marine organisms, and an additional 21 violations prevented by providing information and alternative locations where individuals can legally take outside of the MPA zone with a fishing license.

Collection of animals in containers (as seen on the right) even with the intent to return is not allowed in the MPA zones. Containers, including buckets, tubs, and plastic bottles of water are frequently used to collect water and wildlife to observe closely. They are confiscated by staff, and all animals are returned safely to their respective habitats.



Additionally, staff continues to collaborate, and communicate with local agencies, including California Department of Fish and Wildlife, Los Angeles Waterkeeper, and Los Angeles Marine Protected Areas Collaborative Team.

Aqua Amarga Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	41	4	3	0
Dog walkers	2	0	0	0
Cyclists	6	0	0	0
Equestrian	0	0	0	0

Rangers received multiple past reports of an aggressive dog on the trails. One reporting party indicated their dog was bit and wounded. The party was advised to notify Animal Control and consult with their local veterinarian to report and assess the dogs' injuries. Rangers continue to monitor the area and have been unable to locate the dog or owner.

Alta Vicente Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	30	6	3	2
Dog walkers	12	2	2	0
Cyclists	1	1	0	0
Equestrian	0	0	0	0

Rangers received several reports of a potential homeless man in the area verbally threatening hikers in the Alta Vicente Reserve trails. Rangers were unable to locate the man, or any evidence of an illegal encampment. Rangers continue to monitor the area.

Staff has also observed increased use at Alta Vicente Reserve and Upper Point Vicente Park/Civic Center. Violations of dogs off-leash and off-trail use are being observed and addressed. Rangers have additionally received reports of increased dog waste on trails.

Filiorum Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	123	31	9	0
Dog walkers	10	1	2	0
Cyclists	6	0	0	0
Equestrian	0	0	0	0

On October 3rd, staff observed a paraglider fly and land in the Reserve at approximately 3 pm. It is unclear where the paraglider took off from.

Evidence of illegal harvesting of prickly pear cactus was found in the Palos Verdes Nature Preserve, adjacent to the Filiorum Reserve.

Forrestal Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	176	13	11	6
Dog walkers	48	4	5	0
Cyclists	26	0	2	0
Equestrian	0	0	0	0

Rangers received reports of individuals with their dogs off leash. No additional activity reported / observed during this period.

Ocean Trails Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	388	20	3	4
Dog walkers	61	16	18	3
Cyclists	0	0	0	0
Equestrian	0	0	0	0

Rangers have received calls of increased dog use at Rancho Palos Verdes Beach. Animals are not allowed on any beach in the City of Rancho Palos Verdes. Animal fecal matter and urine can cause health risks for humans and affect water quality. Dogs are allowed on the trails, as long as they are on a leash no longer than 6 feet in length. The City is working with Trump National Staff to ensure adequate signage is in place to educate and enforce the City's Municipal Code.



Staff continued to receive reports of individuals in closed areas. Some of these individuals are hiking off trail, and some are individuals illegally paragliding, including launching from and land on City property. When possible, staff educated and informed individuals of habitat loss, compaction, and damage to sensitive species, including the island green dudleya that are found in the area. The City reinforced signage, barricades, and increased patrols to inform, and deter off-trail use.



Portuguese Bend Reserve

	Public Contact	Education	Warning	Enforcement
Hikers	3,498	175	29	3
Dog walkers	253	10	15	1
Cyclists	315	10	2	0
Equestrian	17	2	0	0

Staff approached a patron with an off-leash cat in the Reserve. The man was hiking with his cat and indicated that the cat was startled due to high traffic on Burma Road trail, causing the cat to hide behind nearby brush.

On Thursday, October 8th, Cal Water alerted residents in the Portuguese Bend Community about a main break. Vanderlip trail remained closed throughout the weekend. Rangers closed off Vanderlip, Kubota, and a section of Gary's Gulch Trail while crews worked to bring in dirt, and repair damages. Rangers received several reports of patrons accessing these trails during the closure increasing safety concerns for the public.



On Monday, November 9th, construction began for the installation of the new entry gate at the Burma Rd. trailhead. The trails remained open, however, OSM staff were present to provide information to the public and recommend alternatives to access the Portuguese Bend Reserve during construction. The gate is programmed to lock at sunset, and unlock at 7:00 a.m. every day. When trail closures are in effect, the gate will remain locked. Rangers have increased patrols during the night to ensure the gate is in working condition and patrons are informed of the Preserve hours.

Old Burma Gate



New Burma Gate (Installed November 2020)



“Residential Quiet Zone” signs located at the top of Burma Road trail were vandalized and spray painted with gray colored paint, bent, or removed from their post on several occasions. OSM repaired and replaced signs on a weekly basis, with over 8 counts of vandalism on each sign (24 total). No information is known about the individual(s).

San Ramon Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	9	2	3	1
Dog walkers	0	0	0	0
Cyclists	48	0	0	0
Equestrian	0	0	0	0

Staff has reported at least 2 counts of the City of Rancho Palos Verdes locks cut on both the bottom and top of Wanderer Trail. Rangers continue to monitor activity in the Reserve, including unauthorized vehicle access, and replace locks as needed.

On November 25, Rangers made contact with a male who was harvesting cacti fruit from the native Prickly Pear cacti growing along Palos Verdes Drive East within Reserve boundaries. The individuals returned the fruit to Rangers.

The illegal structure reported to Rangers during in September was dismantled. The structure included several repurposed logs, pipes, and plywood held together by nails, and rope. With the support of OSM, staff was able to haul out all material from the area.

Before



After

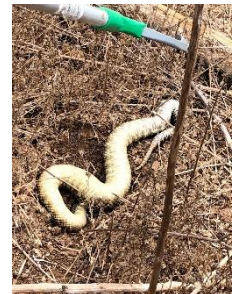


Three Sisters Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	50	0	0	0
Dog walkers	3	1	1	0
Cyclists	3	1	1	0
Equestrian		0	0	0

Residents reported hearing and seeing increased coyote activity at dusk along the lower trails. One such incident included a sighting of a coyote pack within 20 feet of a hiker. Coyotes do reside in the Palos Verdes Nature Preserve. Any coyote sightings should be reported to the City's Code Enforcement Division online from your mobile device or desktop.

Additionally, Rangers received a report of a deceased snake adjacent to Three Sisters Trail. It was unclear how the snake had died, but the reporting party indicated it may have died from blunt force trauma inflicted by a group of hikers that they had encountered on the trail. The rattlesnake was found with its head buried 4 inches into the ground and had no other injuries.



Vicente Bluffs Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	464	48	17	26
Dog walkers	35	6	2	0
Cyclists	3	0	0	0
Equestrian	0	0	0	0

The Bluff Top Fence Replacement Project began in August 2020, and continued through the fourth quarter. The project included temporary closure of trails, and one-way

trails when paths were not wide enough to allow for two-way traffic. As a result of this project, temporary chain link fence was placed, and several concrete shortages stalled the work of the project. Staff saw a decreased in the amount of unauthorized trail use. Upon completion of the fence, staff installed “Do Not Climb Over the Fence” signs to educate and remind visitors of safety hazards/environmental sensitivity on the cliff edge. Staff also stenciled numbers to mark the locations of posts along the Seascapes and Golden Cove trail. These numbers can be used to report maintenance issues and or emergencies with greater precision for location.



On November 7, 2020, staff reported damage to the City’s monument sign located at Terrace Trailhead. It is unknown when or what caused the damage.

Vista del Norte Reserve

	Public Contacts	Education	Warning	Enforcement
Hikers	0	0	0	0
Dog walkers	0	0	0	0
Cyclists	0	0	0	0
Equestrian	0	0	0	0

The Reserve monument sign located on the upper section of Vista del Norte Trail was damaged in August 2020. Rangers are working with the responsible party for signage replacement.

City Parks:

Rangers educated patrons in City Parks regarding the City’s Municipal Code, including use of drones, dogs off-leash, and park hours.

Trail Counter Data from January 2020 – June 2021

Trail Counters are located at Burma Rd. Trail and Rattlesnake Trail

2020

January 2020:	28,978
February 2020:	25,282
March 2020:	20,142 (Preserve closed March 17 per LA County Health Department Orders)
April 2020:	n/a (Preserve remained closed per LA County Health Department Orders)
May 2020:	21,827 (Preserve reopened May 13 per LA County Health Orders)
June 2020:	19,605
July 2020:	27,879
August 2020:	29,937
September 2020:	23,412
October 2020:	26,257
November 2020:	30,315
December 2020:	40,444

2021

January 2021:	38,181
February 2021:	38,913
March 2021:	39,267
April 2021:	31,910
May 2021:	19,398
June 2021:	20,580

APPENDIX I

Financial Reporting

2020 Preserve Expenditures of the Palos Verdes Peninsula Land Conservancy

Costs related to fulfilling Conservation Requirement	
PVPLC Staff and Consultants*** (Conservation Easement monitoring, Planning, Biological Surveys/Reporting, Restoration Implementation, Volunteer Management)	\$ 397,612
Field Supplies and Equipment	\$ 25,106
Irrigation in Abalone Cove Phases 1 and 2	\$ 119,381
Vehicle Expenses (including fuel and mileage)	\$ 49,074
Office Supplies	\$ 23,402
Overhead (insurance, permits, accounting)	\$ 53,644
Subtotal Expenses to fulfill Conservation Requirement*	\$ 668,219
Costs related to Land Ownership and Public Access	
Fuel Modification (PVPLC-owned Lunada Canyon)	\$ 7,590
Trail Maintenance Personnel and Supplies (including trail signage)	\$ 34,388
Subtotal Expenses related to Land Ownership and Public Access**	\$ 41,978
TOTAL PRESERVE EXPENSES	
	\$ 710,197

Additional Preserve Projects	
Fuel Load Reduction (Phase 2, funded by Rancho Palos Verdes)	\$ 307,200
Fuel Load Reduction in Portuguese Bend (funded by Rolling Hills)	\$ 96,000
Preserve Signage @ Abalone Cove (funded by Coastal Conservancy)	\$ 45,985
Preserve Signage @ Malaga Canyon and Ocean Trails (funded by Rancho Palos Verdes)	\$ 19,435
TOTAL ADDITIONAL PRESERVE PROJECTS	\$ 468,620

* This subtotal is compared to PVPLC's funding commitments made in the NCCP/HCP for FY 16/17 totalling \$230,559

** This subtotal is compared to PVPLC's funding commitments made in the NCCP/HCP for FY 16/17 totalling \$19,460

*** Palos Verdes Peninsula Land Conservancy Staff Allocations by Position

Executive Director (60%)
 Conservation Director (50%)
 Biologist (70%)
 Stewardship Manager (25%)
 Stewardship Technicians, 4 (50%)
 Trail Technician (75%)
 Volunteer Program Manager (30%)
 Volunteer Coordinator (30%)

**City of Rancho Palos Verdes
NCCP/HCP Financial Reporting
FY 2019-2020**

DESCRIPTION	FY 2016-2017 NCCP/HCP	FY2019-2020 NCCP/HCP
COSTS RELATED TO FULFILLING CONSERVATION REQUIREMENTS		
Misc. City Restoration Activities**	30,000	472,686
Senior Administrative Analyst (15%)	43,784	19,015
Recreation Specialist (10%)	21,126	9,622
Non-wasting Endowment paid to PVPLC*	10,000	-
PVPLC Contract	144,300	153,618
SUB-TOTAL COSTS RELATED TO FULFILLING CONSERVATION REQUIREMENTS	249,210	654,941
COSTS RELATED TO PUBLIC ACCESS AND LAND OWNERSHIP		
Public Safety**	567,000	301,954
Senior Administrative Analyst (50%)	145,946	63,385
Recreation Supervisor I (70%)	-	67,876
Recreation Specialist (50%)	105,628	67,357
PT OSM Staff Positions	113,900	-
Reporting Line/Phone Service	2,400	1,027
Regulatory Literature	2,500	-
Other - Misc. Supplies	31,000	27,333
Maintenance Superintendent (7%)	16,227	9,616
Maintenance Workers (3) (7%)	20,316	16,889
Vehicles (maintenance and fuel)	2,197	11,375
Brush Management**	108,000	563,001
Bird Surveys	30,000	5,423
Portable Restrooms	15,000	16,171
Landslide Abatement Districts	60,096	122,334
Road Maintenance	25,000	99,626
Trail/Misc. Maintenance**	31,000	195,400
Signage	10,000	6,985
SUB-TOTAL COSTS RELATED TO PUBLIC ACCESS & LAND OWNERSHIP	1,286,210	1,575,752
TOTAL PRESERVE EXPENDITURES	1,535,420	2,230,693

*Habitat Restoration Fund and Non-Wasting Endowment: The FY19/20 balance was \$815,498. Payments, including retroactive payments, will be made to PVPLC in FY 2021/22.

FY 16/17 staff rates are fully burdened rates used for services provided by the City to residents/businesses/private property owners. FY 2019/20 and future reporting of staff rates will be the more appropriate accounting of staff salary plus benefits. Expenditures related to staff time will appear to have decreased because of this reporting change/correction.

Significant Variances between FY 2016/17 and FY 2019/20

**City Misc. Restoration Activities increased due to special acacia removal/fuel load reduction project. Acacia removal project cost: \$472,686. (Increased by \$412,686)

**Public Safety expenditures decreased due to transition from LA County Deputies to City Park Rangers. (Decreased by \$265,046)

**Brush Management expenditures increased due to increased brush management requirements enforced by LA County. (Increased by \$455,001)

**Trail/Misc. Maintenance expenditures increased due to one-time project to replace all trash cans in the Preserve with lidded, wildlife and graffiti proof trash cans. Trash can replacement project cost: \$50,400. (Increased by \$164,400)