Palos Verdes Peninsula Land Conservancy

Photo: Barry Schirm

January -- December 2013
PALOS VERDES NATURE PRESERVE REPORT

FOR THE

RANCHO PALOS VERDES NATURAL COMMUNITY CONSERVATION PLAN

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Restoration

In 2013, Palos Verdes Peninsula Land Conservancy (PVPLC) installed plants on 5 acres (Phase 3) at Portuguese Bend Reserve NCCP site, in accordance with the Portuguese Bend Habitat Restoration Plan. An additional 4 acres of restoration at Abalone Cove Reserve were funded from the National Fish and Wildlife Foundation, California Trails and Greenways Foundation, Santa Monica Bay Restoration Commission and Coastal Conservancy. Three acres were installed in 2013 and one more acre will be restored in 2014.

Monitoring

At Alta Vicente, Phase 1 (Year 4), native plant cover in coastal sage scrub (CSS) was 29%; Palos Verdes Blue butterfly (PVB) habitat was 34%, but less than 1% host plant cover. PVPLC will install more plants in the fall to compensate for low seed germination rates in the CSS. For the PVB habitat, intensive host plant seeding will be done. Phase 2 (Year 3) native plant cover in CSS meets success criteria for year 3 (40%). Native plant cover in the PVB habitat was low (4%), due to low adult host plant survival. Restoration in fall 2014 will focus on seeding the area, with the expectation that plants germinating from seed may be more successful at this site. Cactus scrub cover was 22%, slightly lower than the three-year goal of 30%, but cactus plant cover (4%) was close to the goal (5%).

Portuguese Bend, Phase 1 and 2 were installed the same year, to allow for an additional year of weed control at the site. Therefore, they both represent Year 1 after plant installation. The native cover in the CSS ranged from 9 to 13%. Native plant cover in the cactus scrub was 6%. Plants were healthy, and recruitment from seed was observed at the site.

Targeted Exotic Removal Program for Plants (TERPP)

In 2013, PVPLC treated 28 populations of invasive plants. PVPLC treated 17 populations of the highly invasive *Euphorbia terracina.* Euphorbia seeds can persist in the soil for 3 to 5 years, and treatment needs to be repeated for several years to successfully control this species on the Preserve. Euphorbia is a very serious invasive, and PVPLC thinks that every effort must be made to control its expansion in the Preserve. Therefore, many of the TERPP sites are the same as in the previous years. The 2012 experimental mulch treatment of 0.5 acre at San Ramon Reserve has successfully reduced Euphorbia germination at the site, and is an option for treatment of large infestations.

Another high priority TERPP in 2013 was the control of *Coronilla valentina* ssp. *glauca* at Abalone Cove. PVPLC discovered three populations of this invasive species at Abalone Cove. Its

presence on the Peninsula indicates a range expansion for this invasive species. Follow-up treatments will be necessary as seeds germinate.

Three populations of *Acacia cyclops* were controlled: one at Vicente Bluffs, and one at Three Sisters Reserve, and one at Portuguese Bend Reserve. Acacia removal at Portuguese Bend Reserve enhanced cactus scrub that was being invaded by acacia.

At Vicente Bluffs, a 0.5 acre site was cleared of the following invasive species: *Cortaderia selloana, Foeniculum vulgare, Acacia cyclops* and *Schinus molle*.

Other treatments in 2013 included the removal of a large *Schinus molle* tree at Abalone Cove, and removal of one population of *Pistacia chinensis* at Portuguese Bend Reserve.

Trail Management and Monitoring

The Preserve Trails Plan approving trail locations and designations in the Preserve was approved by the RPV City Council in March 2013. The City Council recommended quarterly public meetings to discuss trail concerns and inform the public about past and future trail projects. Quarterly meetings began in May 2013.

PVPLC staff continues to maintain trail markers, and provide trail brochures. PVPLC conducted trail monitoring to observe conditions such as erosion, and track unauthorized trails. In 2013, PVPLC continued to work on closing unauthorized trails throughout the Preserve. Many unauthorized trails have been established for many years, and represent trails that were not included in the Preserve Trails Plan. However, new unauthorized trails have also developed. PVPLC prioritizes closure of newly developed unauthorized trails. In 2013, focal areas were Portuguese Bend (at Ishibashi, Peppertree, Eagle's Nest trails) and Abalone Cove.

Increased use of the Preserve and drought conditions that reduced vegetation cover has led to an increase in new and in the visibility of older unauthorized trails. The presence of the Volunteer Trail Watch, beginning in the fall of 2013, is expected to improve trail etiquette in the Preserve. Rangers, who help enforce trail designations, dogs on leash, and other Preserve rules, have large areas to patrol, and issued only a small number of citations in 2013. PVPLC and the City are currently reviewing tactics for improving public adherence to Preserve Rules.

Ability to Accomplish Resource Management Goals

PVPLC has been successful at completing restoration under the NCCP, and meeting the goals for targeted invasive plant removal. However, because *Euphorbia terracina* has been difficult to eradicate, and has required treatment over several years, many of the same areas have been treated since 2009.

Concerns about Preserve management in the future include the ability to successfully close unauthorized trails, and to prevent new trails from being created. Closing these trails is time consuming and expensive because of continuous vandalism. PVPLC has been collaborating with the rangers to help determine which areas need more ranger attention. PVPLC has also been collaborating with RPV Public Works to ensure that best management practices are used when completing projects within the Preserve.

Funding Needs

PVPLC would benefit from continued funding to control highly invasive species on the Preserve. PVPLC continues to apply for funding to increase the amount of acreage restored for the species listed under the plan.

1.0 INTRODUCTION

The 2013 Palos Verdes Nature Preserve Report for the Rancho Palos Verdes Natural Community Conservation Plan provides annual submittal requirements by the Palos Verdes Peninsula Land Conservancy (PVPLC) on the status of the Palos Verdes Nature Preserve (Preserve). Additionally this report details stewardship activities, research, funding, and community involvement in the Preserve during the period January 1, 2013 through December 31, 2013.

PVPLC provides habitat management for the Palos Verdes Nature Preserve (Preserve) for the City of Rancho Palos Verdes (RPV). 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 a Draft Natural Community Conservation Plan (NCCP) to "maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the City of Rancho Palos Verdes and region pursuant to the requirements of the NCCP Act and Section 10(a) of the ESA (URS 2004a)." As a primary component of the NCCP, 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 Preserve under an operating agreement with RPV.

The primary focus of management for the Preserve is to maintain or restore habitat for the covered plant and animal species listed in the draft NCCP. A Habitat Management Plan was adopted in 2007 that outlines the restoration of 5 acres per year for a total of 15 acres over a 3-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. The plan outlined restoration of 15 acres at Alta Vicente Reserve. However, after the 2009 fire at Portuguese Bend, restoration focused on this reserve, and a restoration plan was developed for 15 acres at Portuguese Bend Reserve. PVPLC attempts to seek additional funding when possible, to perform restoration on more than the minimum 5 acres per year required in the NCCP. Several opportunities of this nature occurred during the reporting period that enabled PVPLC to conduct additional restoration.

PVPLC also facilitates scientific research and trail maintenance projects in the Preserve. Volunteers make up a large component of the management strategies for the Preserve. They assist in monitoring the properties, wildlife, and habitat as well as help restore habitat and maintain trails. Partnering with regional high schools and colleges allows for scientific research that expands our understanding of the Preserve.

The Management Agreement with RPV requires that PVPLC submit an annual report to the RPV City Council describing management activities with respect to habitat enhancement and restoration, property maintenance and monitoring, vegetation and wildlife monitoring, and

efforts on targeted exotic plant removals. This report provides annual submittal requirements on the status of the Preserve for the period of January 1, 2013-December 31, 2013. It is accompanied by a status report for the Targeted Exotic Removal Program for Plants (TERPP). Volunteer involvement and support and student-based scientific research are also described in this report.

The NCCP Implementing Agreement has not been signed by the regulatory agencies, and therefore, the NCCP is technically not officially executed. However, because it is anticipated that this agreement and federal/state permits will be signed in the near future, this annual report is intended function as the framework management and monitoring plan for the upcoming federal/state NCCP and has been provided to satisfy the requirements the Management Agreement between PVPLC and the City. Annual reporting requirements for the Draft NCCP are detailed below and will be updated once the final NCCP is approved. Additionally, once every three years, a Comprehensive Report is required under the NCCP. To date, two Comprehensive Reports have been completed, covering the periods 2007 through 2009, and 2010 through 2012.

Annual Submittals (Included in This Report)

1. A monitoring report on habitat restoration areas using standard monitoring protocol as detailed in the Preserve Habitat Restoration Plan
2. Report on Targeted Exotic Plant Removal Efforts
3. Report on trail maintenance projects.

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 ten areas referred to as Reserves (Figure 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 to approximately 1,300 feet above mean sea level at the northern most parcel, vista del Norte. 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.

Table 1
Reserve Names of the Palos Verdes Nature Preserve. See Figure 1 for locations.

Abalone Cove Reserve	Portuguese Bend Reserve
Agua Amarga Reserve	San Ramon Reserve
Alta Vicente Reserve	Three Sisters Reserve
Filiorum Reserve	Vicente Bluffs Reserve
Forrestal Reserve	Vista del Norte Reserve

2.0 FIRES IN THE PRESERVE

2012 Three Sisters Fire Status

On January 9, 2012, the Crest Fire burned approximately 12.7 acres of the 99-acre Three Sisters Reserve, as well as some habitat in McCarrell's canyon, outside of the Preserve. The wildfire burned native and non-native vegetation and known habitat of the threatened coastal California gnatcatcher (*Polioptila californica californica*) and the special status cactus wren (*Campylorhynchus brunneicapillus*). PVPLC wrote a Fire Report and Restoration Plan for the site. The report recommends cactus planting in key areas, weed control and monitoring. The burn area weeded and large cactus was planted in 2012. Surveys in 2013 showed that burned cactus and other native vegetation were recovering; weed cover was low; and there remains a high amount of bare ground. Monitoring results from 2013 are located in the Monitoring report (Appendix A).

3.0 HABITAT RESTORATION PLAN

The initial Preserve Habitat Management Plan (PHMP) for the Draft NCCP was created in 2007. A component of the PHMP was the Habitat Restoration Plan for the restoration of 5 acres per year for a total of 15 acres over the first 3-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. The Habitat Restoration Plan for Alta Vicente Reserve outlines appropriate revegetation locations and methodology to adequately comply with the Preserve Management requirements of the Rancho Palos Verdes NCCP.

The Habitat Restoration Plan for Alta Vicente Reserve provides 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. However, since a fire occurred at Portuguese Bend Reserve in August 2009, plans were adapted to focus immediate restoration at Portuguese Bend, and only Phase 1 and 2 (10 acres) were implemented at Alta Vicente.

The Restoration Plan for Portuguese Bend covers restoration of 25 acres over 5 years (2010 to 2015) (in 2010-2012 Comprehensive Report). This report contains an updated plant palette based on wildlife agency recommendations (Appendix B). The following provides a brief description of work done to fulfill the NCCP during the reporting period. Table 2 provides the implementation schedule for Phases 1 and 2 at Alta Vicente and Phase 1 through 5 at Portuguese Bend.

Figure 1. Map of the Palos Verdes Nature Preserve with associated Reserves locations.

3.1 ALTA VICENTE RESERVE RESTORATION

The habitat restoration at the Alta Vicente Reserve consists of two 5-acre phases, with one phase initiated each year. The first 5 acres of restoration (Phase 1) 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 5). 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. In 2012 and 2013, additional container plants were installed to fill in areas with low native cover.

Draft NCCP annual reporting requirements include a monitoring report on habitat restoration areas using a standard monitoring protocol for years 1, 2, 3 and 5 during the 5-year maintenance and monitoring period that follows plant installation. Monitoring at Alta Vicente began in 2010.

Table 2
Restoration Project Schedule for Alta Vicente Reserve Phases 1 and 2. This table has been modified from its original content in the 2007 Habitat Restoration Plan to reflect activities only in Phase 1 and 2.

	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	Spring 2010-Spring 2014
	Phase one completion	2014, 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	Spring 2011-Spring 2015
	Phase two completion	2015, end of Year 5

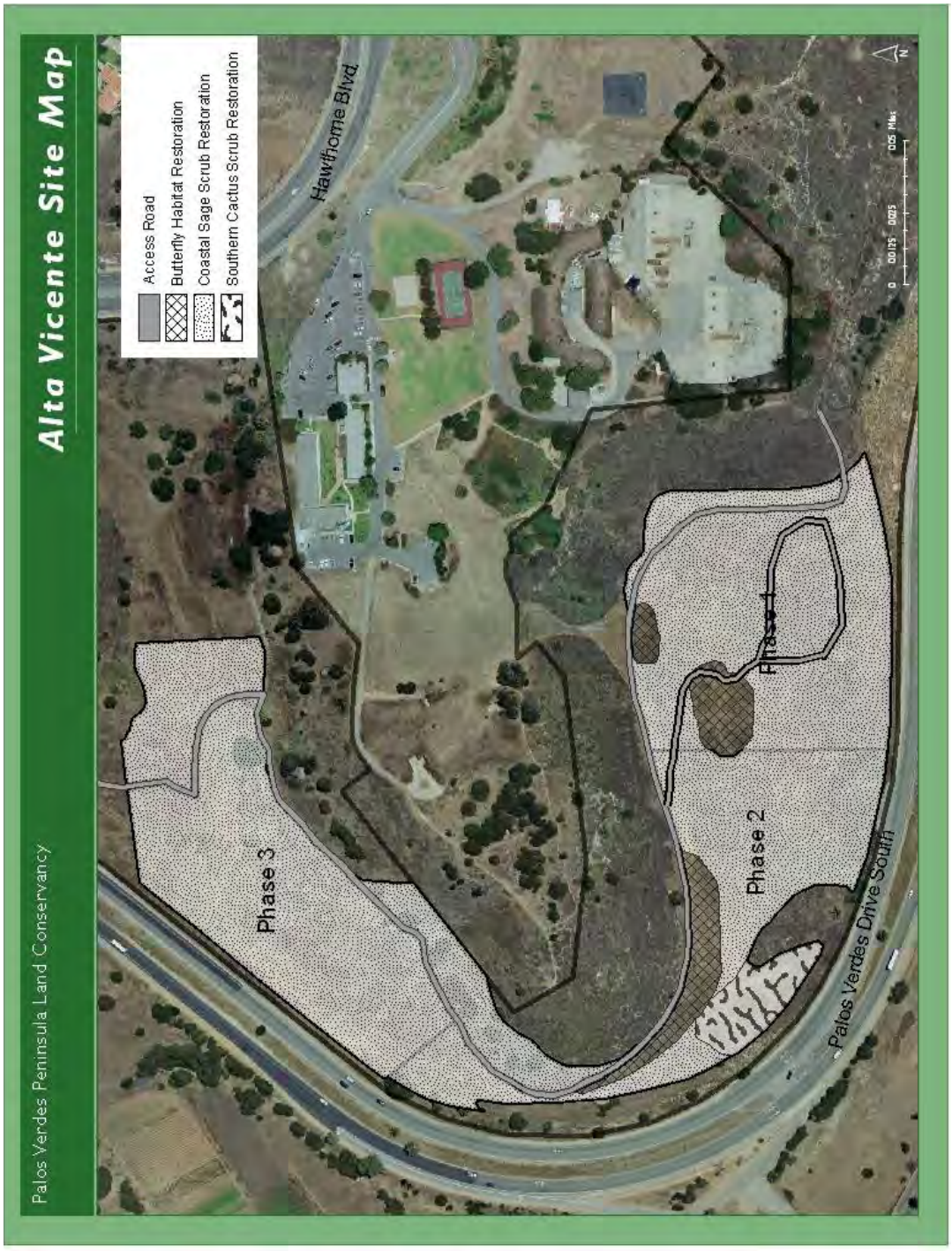


Figure 2: Map of Restoration Areas at Alta Vicente Reserve. Phase 3 has been postponed to implement burn recovery at Portuguese Bend.

3.2 PORTUGUESE BEND RESERVE RESTORATION

The restoration plan for Portuguese Bend is to complete 25 acres in five phases (Figure 3, Table 3).

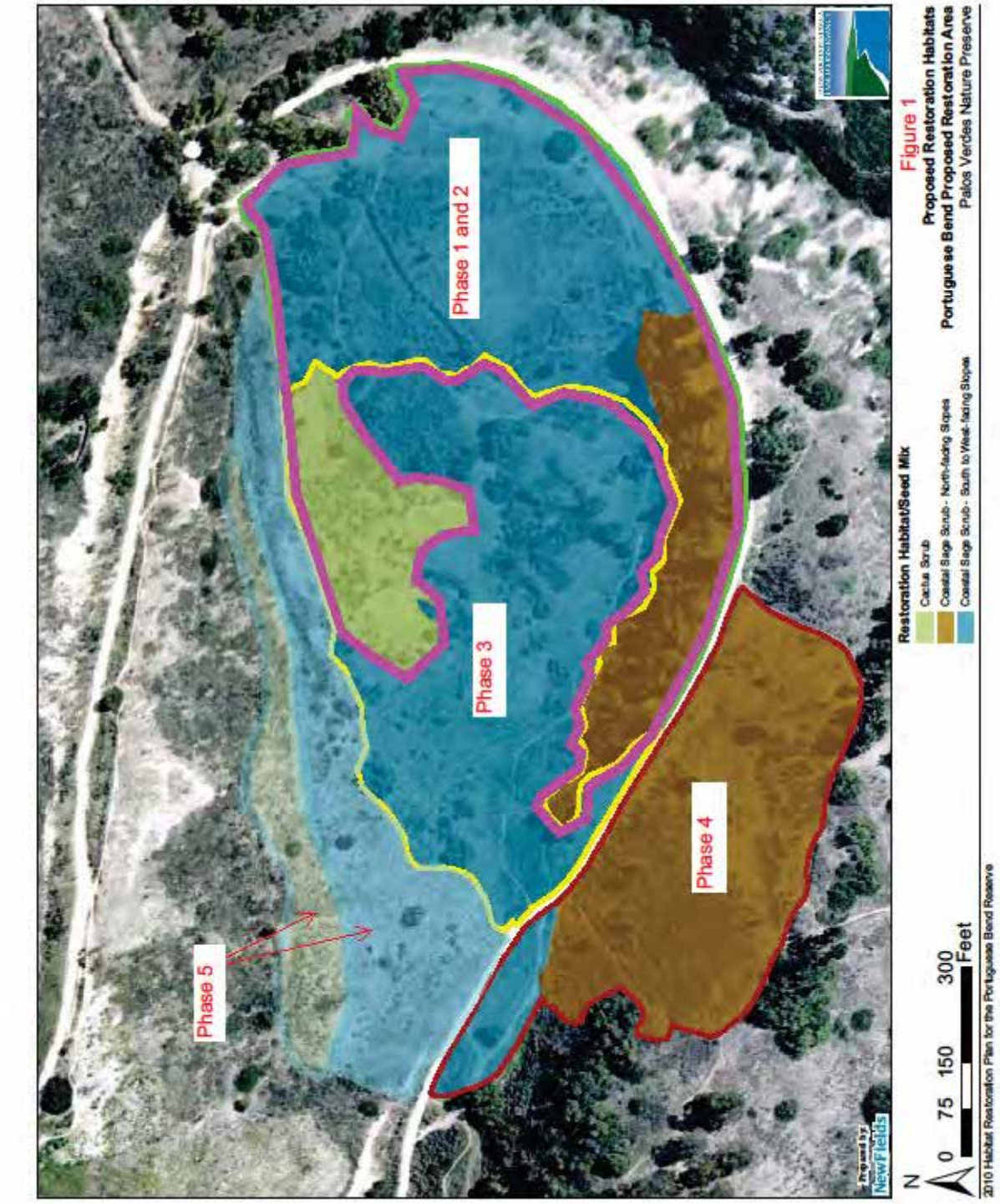
Site preparation at Portuguese Bend began in February 2010. Field staff weeded (hand/herbicide) the burn area in 2010. In February, 2011, goats were deployed to clear vegetation. Due to the high density of weeds, an additional year of weeding was implemented, and plants were installed on 10 acres in fall 2012 (Phase 1 and Phase 2).

PVPLC obtained permission from the City of RPV to irrigate eight acres to enable "grow and kill" prior to plant installation, and improve seed and plant survival after planting. Two acres of cactus scrub will not be irrigated.

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
PHASE1 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 3. Map of restoration areas at Portuguese Bend Reserve.



4.0 ADDITIONAL RESTORATION IN 2013

PVPLC attempts to seek additional funding, to perform restoration on more than the minimum five acres per year required in the NCCP. Several opportunities of this nature occurred during the reporting period. Table 4 shows the timeline for each additional restoration project.

4.1 ABALONE COVE

Funding from the National Fish and Wildlife Foundation (NFWF), the Santa Monica Bay Restoration Commission, the Coastal Conservancy, the U.S. Fish and Wildlife Service Coastal Program, and the California Trails and Greenways Foundation provided funding to restore and enhance five acres of coastal sage scrub and coastal bluff scrub at Abalone Cove Reserve. Three acres were planted in 2013, and an additional two acres will be restored and enhanced in 2014.

4.2 AGUA AMARGA

In September 2011, Los Angeles County Sanitation Districts (LACSD) provided funding to conduct 0.25 acre of riparian scrub restoration at the Lunada Canyon portion of the Agua Amarga Reserve as part of mitigation for one of their projects. A restoration plan was completed in 2011. In 2012, the PVPLC implemented weed and invasive plant removal (castor bean, ice plant, fennel). In Fall 2012, 362 container plants were installed. In Fall 2013, 185 additional plants were installed.

In 2012, an additional mitigation project (D&M Eight LTD) funded the planting of 147 riparian plants at Lunada Canyon. The plants were planted in fall 2013 and irrigated with a drip irrigation system.

4.3 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 continues to maintain this restoration area, weeding as necessary.

4.5 PORTUGUESE BEND

In March 2010, the City of El Segundo provided funding to conduct 9.5 acres of coastal sage scrub and perennial grassland restoration at Portuguese Bend as part of mitigation for the Plaza El Segundo Development. The restoration site is on the upper portion of the Ishibashi Trail. In Fall 2010, the 9.5 acre-site was seeded with native grasses and coastal sage scrub. In Fall 2011, container plants were installed in 5 foot-wide strips, separated by 10-foot buffers because germination rates were low. In 2012 PVPLC controlled weeds in the buffer zones and maintained container plants.

One acre of coastal sage scrub has been installed within the Ishibashi, Peppertree and Eagles Nest areas as part of ongoing unauthorized trail closures thanks to funding from the Habitat Conservation Fund.

Figure 4 provides a site map for each restoration project active in 2013, including the restoration at Alta Vicente and Portuguese Bend Reserves that fulfills the requirements of the NCCP Habitat Restoration Plan.

Figure 4. Site map for ongoing 2013 restoration projects in the Palos Verdes Nature Preserve.

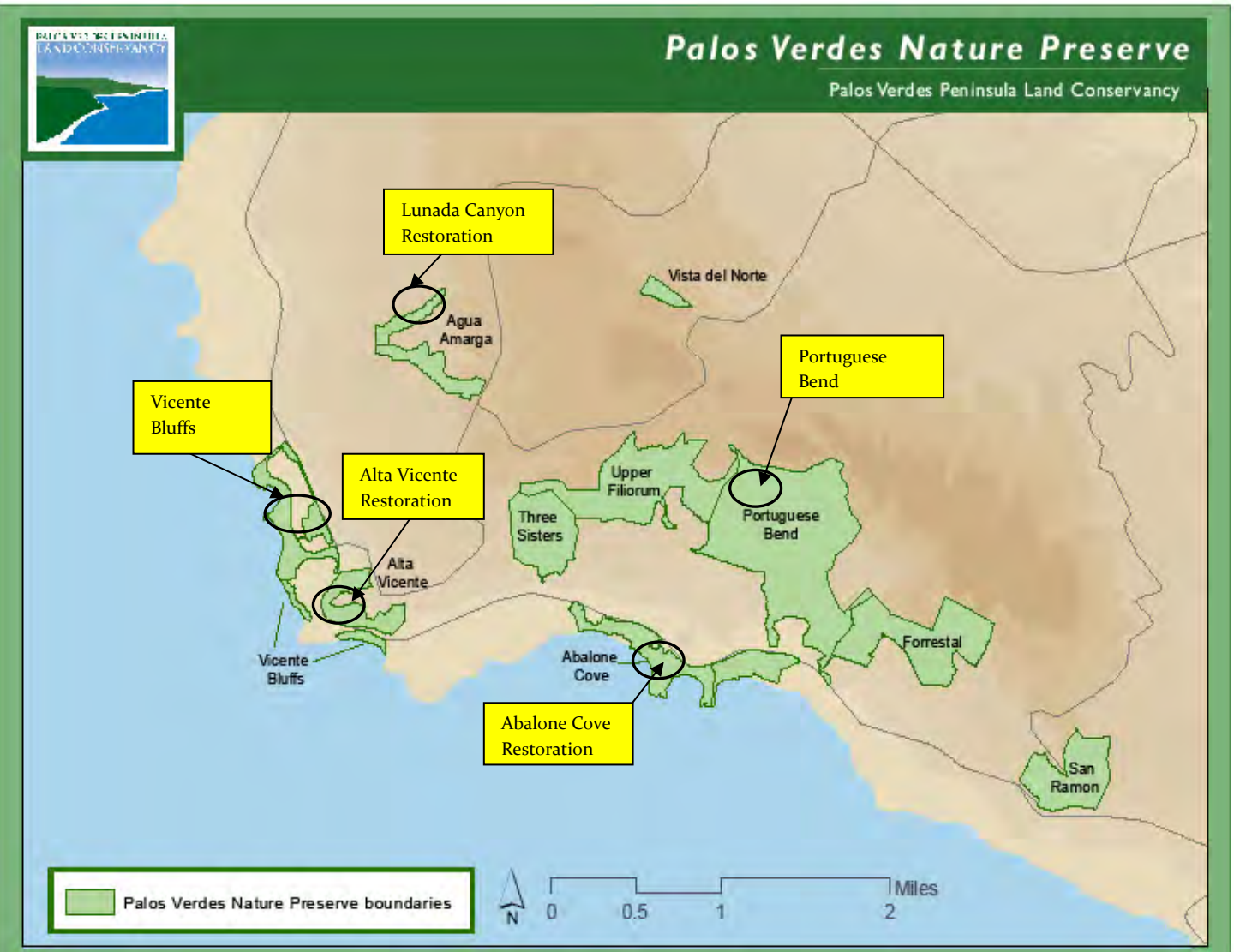


Table 4
Restoration Project Schedule for Additional Restoration in Palos Verdes Nature Preserve.

	Task	Date
Portuguese Bend El Segundo Grant 9.5 acres	Site preparation and weed control	Spring 2010-Fall 2010
	Seeding	Winter 2010/2011
	Fill-in plant installation	Winter 2013/2014
	Completion of installation/assessment of site installation	Following completion of installation and seeding and 120 day maintenance period.
	3-year monitoring and maintenance	To begin upon installation of restoration
Portuguese Bend HCF Grant (1 acre)	**Task**	**Date**
	Spur trail restoration: Ishibashi area	Fall 2012-Winter 2014
	Spur trail restoration: Peppertree area	Winter 2012 – Winter 2014
	Spur trail restoration: Eagle's Nest	Fall 2013-Winter2015
Abalone Cove NFWF Grant (5 acres)	**Task**	**Date**
	Remove invasive plants	Spring 2013-Fall 2013
	Install plants	Fall 2013, Fall 2014
	Weed and maintain site	Through December 2015

4.4 COMPLETE LIST OF RESTORATION PROJECTS

A complete summary of all restoration work completed in the Preserve, along with maps of restoration sites, can be found in Appendix C.

5.0 MONITORING

5.1 RESTORATION MONITORING

PVPLC's stewardship staff conducted surveys at the restoration sites throughout the preserves, including photo point monitoring and vegetation transects. Vegetation transect surveys were conducted using standardized methods (line intercept, CNPS Rapid Vegetation Assessment) that provide data on the cover of native and non-native plants in the habitat. In 2013, restoration monitoring as per NCCP requirements was conducted at Alta Vicente and Portuguese Bend Reserves. The plants in the restoration area are healthy, but there are large gaps in native vegetation due to low seed germination. PVPLC will add plants in 2014 to increase native cover. Detailed results are in Appendix A.

5.2 COVERED SPECIES MONITORING

The NCCP/HCP requires updated surveys for covered plants and animals on the Preserve every three years. Surveys conducted for the 2007-2009 and 2010-2012 survey periods are located in the Comprehensive Management and Monitoring reports.

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 desertthorn (*Lycium brevipes* var. *hassei*) and woolly seablite (*Suaeda taxifolia*).

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 Draft NCCP that requires the annual removal of exotic plant species of twenty individual populations or five acres found 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. The 2013 TERPP Report documents PVPLC's effort during the reporting period to fulfill the requirements of the TERPP plan. 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. The complete 2013 TERPP Report can be found in Appendix D of this report.

7.0 BRUSH CLEARANCE

Brush clearance is the clearing or minimizing of vegetation in areas that occur immediately adjacent to residential structures and roads. RPV is responsible for ongoing maintenance of brush clearance within the Preserve, to provide an appropriate level of fire protection, emphasizing the protection of life, public safety, and property values in the urban-wildlife interface areas while minimizing environmental impacts of fire suppression and control. PVPLC recommends that RPV develop clear protocols to ensure that all Best Management Practices associated with fuel modification activities are consistently followed. In 2013, RPV staff successfully collaborated with PVPLC to ensure that bird surveys were completed prior to fuel modification activities.

A portion of the Agua Amarga Reserve is owned by PVPLC and falls under our responsibilities to maintain brush clearance requirements. All of these requirements were met in May and June 2013. No other fuel modification areas within the Preserve fall under the responsibility of PVPLC.

8.0 SCIENTIFIC RESEARCH AND WILDLIFE MONITORING

The Preserve is an ideal setting for an outdoor laboratory, because it provides scientists and students with access to a variety of habitat. A report of 2013 research is located in Appendix E. Two studies requiring scientific permits are taking place in the Preserve. Barbara Kus with the USGS Western Ecological Research Station requested a permit to study the genetics of cactus wrens and california gnatcatchers on the Preserve. Gregory Pauly from the Natural History Museum of Los Angeles requested permission from PVPLC to survey reptiles in the Preserve.

9.0 TRAIL MANAGEMENT AND MONITORING

9.1 PRESERVE TRAILS PLAN

Preserve trails fall under the City's Public Use Master Plan (PUMP), which is a NCCP-covered activity, and must follow certain avoidance measures and guidelines to protect covered species. City Council approved the updated Preserve Trails Plan in October 2012. The RPV City Council approved the PUMP in March 2013.

9.2 TRAIL MANAGEMENT

PVPLC continues to update maps and place maps at major trailheads, and post them on PVPLC's website. PVPLC has placed QR codes at major trailheads for people to access maps via smart phones. In 2013, Preserve Rules signs with standardized language were installed at all Preserve entry points.

9.3 UNAUTHORIZED TRAIL CLOSURES

Implementing the Preserve Trails Plan involves closing many trails that were previously in use and no longer authorized. In 2013, PVPLC focused its attention at Portuguese Bend Reserve, primarily thanks to an HCF grant that provided funding. Figure 5 shows the unauthorized trail closures that were implemented at Portuguese Bend Reserve. Unauthorized trails were also closed at Abalone Cove Reserve as part of the restoration funded by the National Fish and Wildlife Foundation, Coastal Conservancy and Santa Monica Bay Restoration Commission.

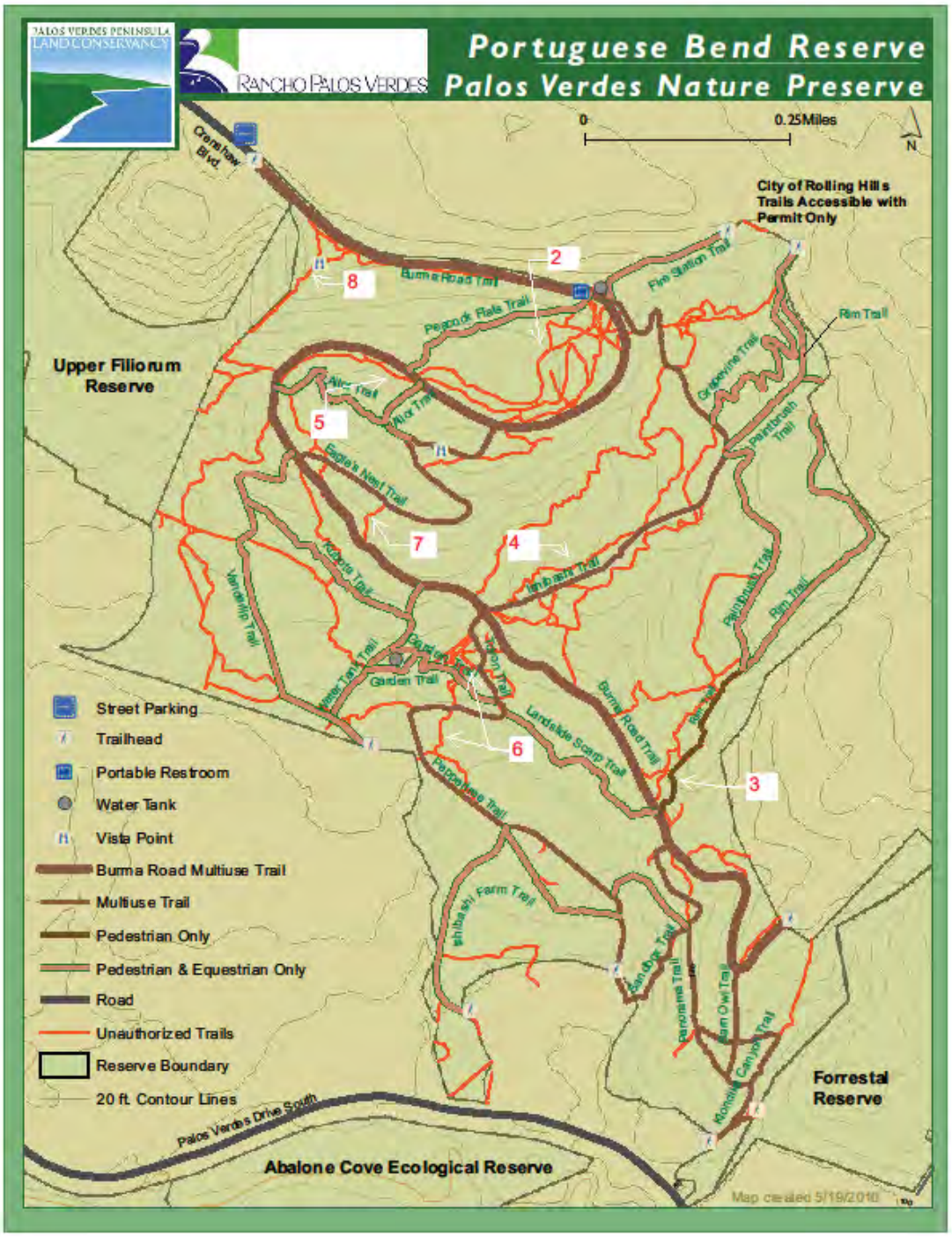
PVPLC's primary focus is to close newly created unauthorized trails, before they become established and damage habitat. This is very intensive work, that requires continuously closing down the trail as signage, branches, and plants are removed.

In 2013 PVPLC installed 28 "Area closed" signs, 6 "Nature's at Work" signs to describe ongoing restoration efforts, and 44 posts for post and cable closures.

9.4 TRAIL MONITORING

PVPLC stewardship staff or volunteers from the Keeping an Extra Eye on the Preserve for Environmental Review and Stewardship (Keepers) Program conducted all trail monitoring during the reporting period. The Keepers program is described in detail in the Volunteer Involvement section of the report (Appendix F). Monitoring was typically limited to overall trail conditions such as erosion, hazards, and vegetation overgrowth.

Figure 5. 2013 Unauthorized Trail Closures at Portuguese Bend Reserve.



9.5 TRAIL MARKERS AND DECALS

In an effort to improve wayfinding, the City of RPV funded the replacement of decals in all of the Preserve. In 2013, PVPLC completed this task at Portuguese Bend, Agua Amarga, and Forrestal, and will replace the remaining decals in 2014. PVPLC installed 686 decals, and 44 carsonite sign posts. PVPLC also removed graffiti on signs throughout the Preserve.

9.6 TRAIL REPAIR

A PVPLC volunteer trail crew assists in much of the trail work on the Preserve. A complete summary of the PVPLC Volunteer Trail Crew Program can be found in the Community Involvement section of the report (Appendix F). PVPLC staff or RPV Public Works department were also involved in trail enhancements.

Two grants have permitted additional trail work on the Preserve in 2013. A grant from the Coastal Conservancy funded development of the California Coastal Trail through the City of Rancho Palos Verdes, including a section through the Preserve. A grant from the California Trails and Greenways Foundation funded native plant installation along the Coastal Trail at Abalone Cove to help better delineate the trail. A Habitat Conservation Fund grant provided funding for trail restoration, unauthorized trail closure, and improved signage at Portuguese Bend Reserve.

The following lists the trail projects that were conducted in 2013.

Abalone Cove

- The volunteer trail crew installed check dams on Cave Trail
- The volunteer trail crew worked on the Sea Dahlia Trail
- The volunteer trail crew did tread repair, erosion control at Sacred Cove

Alta Vicente

- Eagle Scouts delineated Alta Vicente's North Spur Trail

Filiorum

- The volunteer trail crew conducted tread repair and unauthorized trail closure on Rattlesnake Trail

Forrestal

- The volunteer trail crew conducted grade dip repair on Pirate Trail
- The volunteer trail crew conducted erosion control and tread repair on Dauntless Trail

- The volunteer trail crew closed unauthorized trails

Portuguese Bend

- PVPLC and the Los Angeles Conservation Corps (LACC) reinforced unauthorized trail closures near Ishibashi Trail, Peppertree Trail, and Eagle's Nest with HCF funding;
- PVPLC staff closed additional unauthorized trails at Abalone Cove, Portuguese Bend, Filiorum, Three Sisters, and Forrestal.

Three Sisters

- The volunteer trail crew conducted erosion control and tread repair on McCarrell Canyon Trail

Future Trail Projects

Trail projects that may be completed in the future, based on funding, are listed in Appendix G.

Ranger Program

The PVPLC coordinated with the City of RPV on focal areas for Mountains Recreation and Conservation Authority (MRCA) rangers on the Preserve.

Volunteer Trail Watch

The PVPLC and City of RPV initiated the Volunteer Trail Watch Program to help educate trail users about appropriate trail use and monitor preserve misuse. 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. 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 rangers and Preserve managers to track time and location of these activities. The first training workshops for the Volunteer Trail Watch took place in summer 2013. Fifteen graduates completed the training. In 2013 volunteers contributed 1122 hours to the program. The Volunteer Coordinator spent 900 hours developing and supporting the program, including outreach to the community, organizing the trainings. The 15 volunteers spent a total of 222 hours in the Preserve, observing and educating visitors.

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. The Volunteer Annual Report for January 1, 2013 through December 31, 2013 is located in Appendix F.

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APPENDIX A

2013 RESTORATION MONITORING REPORT

In 2013 vegetation surveys were conducted at the restoration sites at Alta Vicente and Portuguese Bend to estimate percent cover of native and nonnative plants, litter and bare ground. These data are used to measure the success of the restoration, based on the goals determined in the NCCP. PVPLC also conducted a survey at the site of the 2012 fire at Three Sisters to monitor site recovery.

1.0 ALTA VICENTE SURVEY METHODS

Photo point monitoring was completed along the permanent transects in the Phase 1 restoration site (Year 4; AV1 and AV2). AV1 is located in coastal sage scrub habitat found in phase one. Two photo points were taken at AV2, located in PVB butterfly habitat. Transect monitoring was conducted in Phase 2 restoration sites (Year 3; AV3, AV5, and AV6). Vegetation data was collected along 50 m transects within the restored areas at AV3, AV5 and AV6 (Figure 1). The height and length of each plant was measured at each 1m interval on the transect line. Photographs were taken at the beginning and end of each transect to provide a visual record of general conditions of the sampling area (Figure 2). Vegetation assessments of the overall species coverage were conducted at the permanent transects in Phase 1 and Phase 2 (AV1, AV2, AV3, AV5, and AV6), using a modified version of the California Native Plant Society (CNPS) standardized methodology (CNPS 2009). Surveys were conducted on June 6th and 12th 2013.

Locations of transects and photo points are on Figure 1. Results of the Alta Vicente surveys are provided below.

1.1 ALTA VICENTE PHASE 1 SURVEY RESULTS (YEAR 4)

Coastal Sage Scrub (CSS)

According to the rapid vegetation assessments, native plant cover in the CSS site (AV1) in 2013 was approximately 29% (Figure 2). The most common plants were *Artemisia californica* (7%) and *Eriogonum cinereum* (6%). Very little recruitment from seed was observed. Lack of rain may have impacted plant recruitment from seed. Native percent cover is lower than the goal of > 40%. Photopoints indicate that shrubs are growing well but there are large gaps among shrubs. In 2014, fill-in planting will focus on *Artemisia californica*.

Palos Verdes Blue Butterfly Habitat (PVB)

According to the Rapid Vegetation Assessment, native plant cover in the PVB habitat (AV2) in 2013 was approximately 34%, with <1% host plant cover, and 29% bare ground (Figure 2). Lack of rain may have impacted plant recruitment from seed. Native plant cover is within the range

for year 3 goals, but host plant numbers are very low. The ocean locoweed plant health fluctuated throughout the year at this location. In the winter the plants were healthy but in the spring they died off. It is possible that the plants will be more successful if they germinate from seed rather than as plant installations.

1.2 ALTA VICENTE PHASE 2 (YEAR 3)

Cactus Scrub

The number of individual native plants counted in the Cactus Scrub (AV3) in 2013 was 11 (Table 1). Native plant cover was 22%, and consisted of *Eriogonum cinereum*, *Eriogonum parvifolium*, *Opuntia littoralis* and *Encelia californica* (Table 2, Table 3). Cactus cover was 4%. Percent non-native cover was 16%, and bare ground/litter 62% (Table 2). Shrub height ranged from 0.5 feet to 2.3 feet (Table 4). Overall native cover in the Cactus scrub based on the CNPS Rapid Vegetation Assessment protocol was 16% (Table 6).

Photo points indicate that cactus is growing, with 3 to 5 pads on each individual, but that there is quite a bit of grass engulfing them, most likely slowing down their growth. (Figure 2, AV3). Seed germination is low.

Surveys indicated that cactus scrub cover was lower than year 3 goals: native cover was 22% rather than 30% goal; cactus plant cover was close to the goal: 4% rather than 5% goal.

PVB Butterfly Habitat

In the butterfly habitat, the number of native plants counted in the transect (AV5) was 2. Native cover was 4%, with 2% of cover consisting of host plant (ocean locoweed) (Table 2, Table 3). Percent non-native cover was 64%, and bare ground/litter 38%, bare alone (12%) (Table 2). Shrub height ranged from 0.8 feet to 0.9 feet (Table 4). Percent cover in the butterfly habitat based on the CNPS Rapid Vegetation Assessment protocol was 14%, with 3% host plant, and 23% bare ground (Table 6). Both survey techniques indicate low PVB host plant cover.

Photo points show that native plants are present, but recruitment from seed was very low (Figure 2, AV5). The second PVB host plant, deerweed, included in the seed mix, did not germinate at the site.

Host plant cover is lower than year 3 goals of 10%, and bare ground should be higher (30%-70%). Host plant survival is low at this site. However, the host plants growing on Alta Vicente trail appear healthy, indicating that there is a soil or disturbance component that differs from

the restoration site. It is possible that plants that germinate directly from seed will be more successful than plants.

Coastal Sage Scrub (CSS)

The number of individual native plants counted in the CSS (AV6) in 2013 was 20 (Table 1). Native plant cover in the CSS site was 40%, and consisted of two main species: *Artemisia californica* (10%) and *Encelia californica* (26%) (Table 2, Table 3). Percent non-native cover was 2%, and bare ground/litter 54% (Table 2). Shrub height ranged from 0.6 feet to 2.5 feet (Table 4). Overall native cover in the CSS based on the CNPS Rapid Vegetation Assessment protocol was 27% (Table 6).

Photo points indicate that many plants have grown and are healthy and that the gaps are filling in as the plants grow larger (Figure 2, AV1).

CSS cover met goals of Year 3 for CSS (40%).

1.3 ALTA VICENTE PLANT INVENTORY

A plant inventory conducted in Phase I and Phase 2 during the 2013 surveys identified 18 native species (Table 5). Plants were identified on either side (within one meter) of a 50 meter transect in Phase 1 and Phase 2.

1.4 ALTA VICENTE CONCLUSIONS AND RECOMMENDATIONS

Phase 1 restoration will require more fill-in planting, and a strategy to better understand PVB host plant success.

The Phase 2 restoration is meeting success criteria for year 3, and native plant cover will continue to increase as container plants mature, and seedlings germinating from seed increase in size.

2.0 PORTUGUESE BEND SURVEY METHODS (PHASE I AND 2)

Intensive weed control took place for an additional year at Portuguese Bend to reduce the very high weed density at the site. Plants were installed in both Phase I and Phase II in 2013. Therefore, for the purposes of the goals of the NCCP, the 10 acres would be considered Year 1. Photo point monitoring was completed along the permanent transects in the Phase I and Phase II restoration areas (PB1, PB2, PB3, PB6). PB 1 and PB2 are located in south-facing coastal

sage scrub habitat. PB3 is located in north-facing coastal sage scrub habitat. PB6 is located in cactus scrub habitat. Vegetation assessments of the overall species coverage were conducted at the permanent transects using a modified version of the California Native Plant Society (CNPS) standardized methodology (CNPS 2009). Surveys were conducted on May 1 and 2, 2013.

Locations of transects and photo points are on Figure 3. Results of the Portuguese Bend surveys are provided below.

2.1 PORTUGUESE BEND SURVEY RESULTS (PHASE 1 AND 2)

South-facing Coastal Sage Scrub (CSS)

Native plant cover in the CSS site (PB1, PB2) in 2013 ranged from 9 to 13% (Figure 4, Table 7). This area benefitted from the fact that some shrubs were already present prior to restoration. The most common plants were *Artemisia californica*, *Baccharis pilularis, Heteromeles arbutifolia* and *Eriogonum fasciculatum*. Non-native plant cover ranged between 9 and 22%. Some recruitment from seed was also observed.

North-facing Coastal Sage Scrub (CSS)

Native plant cover in the CSS site (PB3) in 2013 was approximately 11% (Figure 4, Table 7). The most common plants were *Baccharis pilularis and Heteromeles arbutifolia*. Non-native plant cover was high at this site (79%), even after 2 years of intensive weed control.

Cactus Scrub

Native plant cover in the cactus scrub restoration area (PB6) in 2013 was approximately 6% (Figure 3, Table 7). The most common plant was *Opuntia litoralis*, some of which were a foot or more in height. Non-native plant cover was 8%, and gaps in vegetation were high (85%) based on percent cover of litter and bare ground.

2.2 PORTUGUESE BEND PLANT INVENTORY

The plant inventory at Portuguese Bend, based on the Rapid Response Survey, identified 20 native species (Table 7).

2.3 CONCLUSIONS AND RECOMMENDATIONS

Plant cover at Portuguese Bend for the first year after plant installation is a bit on the low side. Fill-in planting in 2014 will increase plant cover. Plant installation will focus on *Artemisia californica* to increase density of plants for the California gnatcatcher. *Artemisia californica* also has a high success rate in the restoration area.

Table 1: ALTA VICENTE Year 3
Number of plants per 50 m transect with line intercept method, 1 m intervals.

Species	Cactus Scrub: AV3	PVB: AV5	CSS: AV6
Artemisia californica	1		5
Astragalus trichopodus		1	
Encelia californica	2	1	13
Eriogonum cinereum	5		1
Eriogonum parvifolium	1		
Opuntia littoralis	**2**		
Rhus integrifolia			**1**
Total Native Plants	**11**	**2**	**20**
NNAG	8	30	**1**
NNP		2	
Total Non-native Plants	**8**	**32**	**1**
Bare (Litter and Bare)	31	19	27
Bare	1	6	9
Litter	30	13	18
Total Plants	**19**	**34**	**21**

Table 2: ALTA VICENTE Year 3
Percent cover along 50 m line transects with line intercept method, 1 m intervals.

Species	Cactus: AV3	PVB: AV5	CSS: AV6
Artemisia californica	2%	0%	10%
Astragalus trichopodus	0%	2%	0%
Encelia californica	4%	2%	26%
Eriogonum cinereum	10%	0%	2%
Eriogonum parvifolium	2%	0%	0%
Opuntia littoralis	4%	0%	0%
Rhus integrifolia	0%	0%	2%
Total Native Plants	**22%**	4%	40%
NNAG	16%	60%	2%
NNP	0%	4%	0%
Total Non-native Plants	16%	64%	2%
Bare (Litter and Bare)	62%	38%	54%
Bare	2%	12%	18%
Litter	60%	26%	36%
Total Plants	38%	68%	42%

Table 3: ALTA VICENTE Year 3
Relative percent cover along 50 m line transects with line intercept method, 1 m intervals.

Species	Cactus: AV3	PVB: AV5	CSS: AV6
Artemisia californica	5	0	24
Astragalus trichopodus	0	3	0
Encelia californica	11	3	62
Eriogonum cinereum	26	0	5
Eriogonum parvifolium	5	0	0
Opuntia littoralis	11	0	0
Rhus integrifolia	0	0	5
Total Native Plants	**58**	**6**	**95**
NNAG	42	88	5
NNP	0	6	0
Total Non-native Plants	**42**	**94**	**5**
Bare (Litter and Bare)	163	56	129
Bare	5	18	43
Litter	158	38	86

Table 4: ALTA VICENTE Year 3
Average plant height (ft) at each transect.

Species	AV3	AV5	AV6
Artemisia californica	2.3		1.8
Astragalus trichopodus		0.9	
Encelia californica	0.4	0.8	0.8
Eriogonum cinereum	1.2		0.6
Eriogonum parvifolium	0.5		
Opuntia littoralis	0.5		
Rhus integrifolia			2.5

Table 5 ALTA VICENTE
Plant inventory at restoration site.

Native Species
Artemisia californica
Astragalus trichopodus
Baccharis salicifolia
Cylindropuntia prolifera
Dudleya lanceolata
Eriogonum cinereum
Eriogonum parvifolium
Eriophyllum confertiflorum
Galium angustifolium
Heteromeles arbutifolia
Isomeris arborea
Leymus condensatus
Malosma laurina
Opuntia littoralis
Phacelia ramosissima
Rhus integrifolia
Salvia leucophylla
Salvia mellifera

Table 6 ALTA VICENTE
Vegetation percent cover based on CNPS Rapid Vegetation Assessment protocol.

Species	CSS Year 4 AV1	PVB Year 4 AV2	Cactus Year 3 AV3	PVB Year 3 AV5	CSS Year 3 AV6
Artemisia californica	7	11	3	2	9
Astragalus trichopodus		<1		3	1
Baccharis salicifolia	<1				
Cylindropuntia prolifera	<1	<1	1	<1	
Encelia californica			3	4	7
Erigeron canadensis				<1	
Eriogonum cinereum	6	6	5	2	5
Eriogonum parvifolium	2	4	1		<1
Hazardia squarrosa	1				1
Heteromeles arbutifolia	1	<1			
Heterotheca grandiflora			<1	<1	
Leymus condensatus	2	1			
Malosma laurina	1	1			
Opuntia littoralis	2	2	3	<1	2
Peritoma arborea	2	2			
Pseudognaphalium californicum				<1	
Rhus integrifolia	2	2	<1	1	2
Rhus ovata	1			2	
Salvia leucophylla	1	3			
Salvia mellifera	1	2			
Solanum douglasii				<1	<1
Total Native Cover	**29**	**34**	**16**	**14**	**27**

NNAG	<1	<1	1	23	1
NNP	<1	<1	1	13	<1
Total Non-native Cover	**1**	**1**	**2**	**36**	**1**
Bare	4	29	21	23	38
Litter	65	35	60	24	32
Bare & Litter	**69**	**64**	**81**	**47**	**70**

Table 7. Portuguese Bend: Vegetation percent cover based on CNPS Rapid Vegetation Assessment protocol.

Species	CSS South Phase1&2 PB1	CSS South Phase1&2 PB2	CSS North Phase1&2 PB3	Cactus Phase1&2 PB6
Acmispon glaber	1	1		
Artemisia californica	3	1		<1
Asclepias fascicularis		<1		
Baccharis pilularis	2	2	6	
Cylindropuntia prolifera				1
Encelia californica	1	<1		1
Eriogonum fasciculatum	1	2		
Eschscholzia californica		<1		
Euphorbia terracina	<1			
Heteromeles arbutifolia	2	1	2	
Malacothrix saxatilis				
Melica imperfecta		<1	1	
Opuntia littoralis				3
Rhus integrifolia	1	1		
Salvia mellifera	1			
Rhus integrifolia		1	1	1
Rhus ovata			<1	
Sambucus nigra subsp *caerulea*			<1	
Stipa spp	1	<1		
Stipa pulchra			1	
Total Native Plant Cover	**13**	**9**	**11**	**6**
NNAG	<1	1	6	<1
NNP	9	21	73	8
Total Non-Native Cover	**9**	**22**	**79**	**8**
Litter	38	50	7	42
Bare	40	17	2	43
Bare & Litter	**78**	**67**	**9**	**85**

3.0 THREE SISTERS 2012 FIRE MONITORING

On January 9, 2012, the Crest Fire burned approximately 12.7 acres of the 99-acre Three Sisters Reserve, as well as some habitat in McCarrell's canyon, outside of the Preserve. The wildfire burned native and non-native vegetation and known habitat of the threatened coastal California gnatcatcher and cactus wren. The Fire Report and Restoration Plan for the site recommends cactus planting in key areas, weed control and monitoring. The burn area was

weeded and planted with large cactus in 2012. Surveys in 2013 showed that burned cactus and other native vegetation were recovering; weed cover was low; and there remains a high amount of bare ground (Figure 5).

Figure 1. Alta Vicente Restoration Monitoring Map.

Figure 2. 2013 Alta Vicente Restoration Monitoring Photopoints


AV2


AV2


AV3


AV3
End


AV5


AV5


AV6


AV6

Figure 3.

Portuguese Bend Reserve

Phases I & II: NCCP Restoration Transects

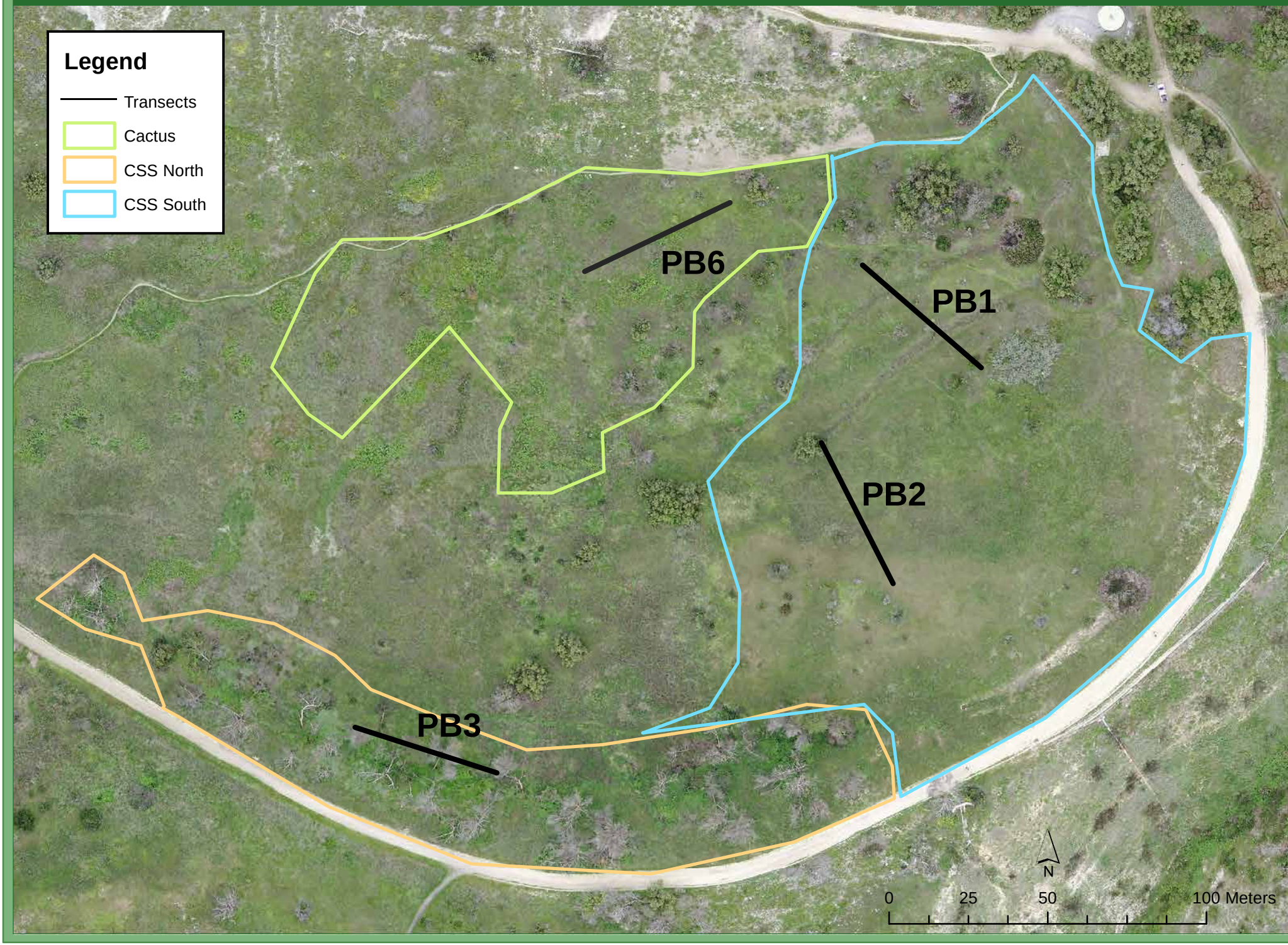


Figure 4. 2013 Portuguese Bend Restoration Monitoring Photopoints


PB1
START


PB1
END


PB2
BEGIN


PB2
END


PB3
Begin


PB3
END


PB6
BEGIN

Figure 5. Three Sisters Fire 2013 Monitoring Photographs

Appendix B.

Portuguese Bend NCCP Site Proposed Revised Restoration Plan for Phase 4 and 5

3.5 SEEDING AND PLANTING SPECIFICATIONS

The following methods will be used to seed and plant during the restoration of coastal sage scrub and cactus scrub habitats within the Portuguese Bend Reserve. Seeding and planting should be implemented in October 2012 to take advantage of the entire rain season.

3.5.1 Seeding

Seed shall be applied by hand with a belly grinder in the areas between container plant groupings as well as in between the plants among the container plant groups in all restoration areas. The seed will be mixed together as specified for the seed mix. Specified VAM will be spread by hand with a belly grinder over the seeding area prior to seeding. The seed shall be broadcast and raked, where practical, into the ground to no more than a quarter of an inch to incorporate the seed into the soil to increase germination success. The seed palettes are the same as in the 2010 Restoration Plan (see Table 2, 4, 6).

3.5.2 Planting

Container plant palettes were based on the seed palette in the 2010 Restoration plan (Tables 1, 3, 5).

Container plants consist of dominant shrubs and 40 to 60 plants will be planted in groups of mixed species throughout the restoration area. However, cactus species will be planted in the 2 acre restoration area with no other species planted within the group. The layout for container plants will be determined for each area based on micro topographic features and planting sites will be marked on the site using different colored pin flags under the supervision of the restoration ecologist or PVPLC biologist. Spacing of plants within the groups will follow the specifications presented in the tables for container plant palettes. Groups of container plants will be spaced in a natural looking mosaic in each area.

All container plants are to be planted to the following specifications:

- Planting holes shall be made with the minimum disturbance to accommodate the containers.
- Prior to planting, the planting hole shall be filled with water, and allowed to drain.
- Plants shall be set in the planting hole so that the crown of the root ball is approximately 0.25 inch above finish grade. Under no circumstance should the plant crown be buried.
- A watering basin shall be provided around each plant from 18 – 24 inches in diameter.
- Watering basins shall be filled with water after planting, at least twice.
- The irrigation system should be tested to ensure that all emitters are functioning.

3.6 IRRIGATION SYSTEM

A temporary above ground irrigation system is specified for the groups of container plants within the coastal sage scrub restoration areas. The irrigation system will be used, as necessary to supplement the annual rainfall during the establishment period. The temporary irrigation system will be installed in summer prior to planting to permit “grow and kill” weed treatments.

The temporary above ground irrigation system will be used in the early fall and late spring seasons. The irrigation system will slightly lengthen the growing season to maximize the development of the habitat. Depending on rainfall, irrigation likely will be required for the first two growing seasons for establishment.

3.7 SITE MAINTENANCE

One of the goals for the restoration is to provide self-sustaining habitats. However, initially, maintenance of the restoration area will be necessary to establish the newly planted and seeded areas. Maintenance will include any activities required to meet the performance standards set forth in this plan, in the estimation of the restoration specialist or PVPLC biologist. For the Three Sisters Reserve, these include the following:

- Weed control, at a minimum for fennel, acacia, mustards, wild oats and purple false brome;
- Irrigation for the container plants;
- Replacement hand seeding in areas of more than 200 sq. ft where target seed germination failed after one good season of rainfall;
- Replacement of container plants in areas with less than 80 percent survival in years two and three, based on visual observations of substantial mortality; and
- Pest and disease control, if necessary.

The establishment maintenance period is generally three years duration with the most intense maintenance in the first and second year, and only seasonal weeding activities in the third year. The amount of maintenance each year will depend on weather conditions and how well the site develops. The following specifications for maintenance may require adjustments as determined by the restoration specialist or PVPLC biologist over the three-year maintenance period.

3.7.1 Weed Control

During the active maintenance period, the target cover from exotic weed species will be generally 10 percent or less. Control of the wild oats and purple false brome is especially important because annual grasses have been shown to compete with shrub species in restoration (Eliason and Allen 1997; Corbin and D’Antonio 2004). Purple false brome is a relatively recent invader to southern California, and the habitat of this species is relative dense growth.

Weeds will be controlled during late winter through early summer, as necessary, before they set seed and/or before they reach approximately 12 inches in height. Three weeding events should

be estimated for a normal rainfall season, with more or less as dictated by rainfall. Weeds, such as purple false brome will be removed from the site if seeds have set prior to weeding. Since removal of weeded material is expensive, weeded material may be left on site as organic mulch material if seeds have not yet set. Removal of herbicide treated material is not an issue.

Weed control will mainly employ hand pulling, mechanical methods, and spot spraying of herbicides for certain species such as fennel and acacia as described in Section 3.2.1.

3.7.2 Irrigation of Container Plants

Temporary irrigation will only be used in the areas where groups of container plants are to be planted. Irrigation will be used in the first two seasons from planting to extend the rainy season and establish the shrubs, as necessary. The timing of irrigation events will depend on evapo-transpiration between irrigation events and soil moisture. The following management scheme is anticipated as a guideline for water management of native trees and shrubs:

- Irrigate soil to full field capacity to the desired depth (approximately 18 inches after planting; and 18–24 inches during plant establishment).
- Allow soil to dry down to approximately 50-60 percent of field capacity in the top 6-12 inches before the next irrigation cycle. Depth of soil dry down between irrigation events will depend on development of container plants.

Wetting of the full root zone and drying of the soil between irrigation events is essential to the maintenance of the plants and the promotion of a deep root zone that will support the vegetation in the years after establishment. A soil probe or shovel should be used to examine soil moisture and rooting depth directly.

3.7.3 Seeding and Plant Replacement

Target values for relative cover of the native vegetation, including nurse and erosion control species, will be as follows with at least 20 percent cover in Year 1, 30 percent in Year 2, and 40 percent in Year 3. Actual cover values will depend mainly on weather conditions (seasonal rainfall and temperature) during the establishment period.

Areas of significant erosion shall be repaired and re-seeded in the first fall season after damage. Re-seeding will occur in areas if coverage is less than 20 percent of native species over any contiguous area of 200 sq ft.

Survival of the container plants within the first growing season should be 80 percent. Plants shall be replaced if survivorship falls below 80 percent in the first season. Replacements will be planted as previously specified and maintained for one growing season, as necessary. As sites develop, it is impractical to implement direct counts of all the container plants. Replacement planting after the first season shall only be specified if the visual estimate indicates substantial mortality and the function of these species has not been replaced by seeded material and natural recruitment.

Table 1. Northerly Facing Slope Coastal Sage Scrub Container Plant Palette.

Species	**Plants per acre**
Artemisia californica	900
Encelia californica	100
Eriogonum cinereum	222
Eriogonum fasciculatum	409
Eschscholzia californica var. maritima	40
Hazardia squarrosa	50
Gnaphalium californicum	50
Heteromeles arbutifolia	11
Leymus condensatus	55
Isocoma menziessi	50
Lotus strigosus	0
Lotus scoparius	55
Malosma laurina[1]	11
Melica imperfecta	50
Nassella lepida	55
N. pulchra	55
Phacelia cicutaria	10
Rhus integrifolia[1]	11
Salvia leucophylla	245
Vulpia microstachys	20
Bloomeria crocea	As available
Dichelostemma capitatum	As available
Calochortus catalinae	As available
[1] In groupings	

Table 2. Northerly Facing Slope Coastal Sage Scrub Seed Mix.

Species	**Lbs. Per Acre**
Artemisia californica	2
Castilleja exserta	0.5
Deinandra fasciculata	0.5
Encelia californica	0.5

Eriogonum cinereum	2
Eriogonum fasciculatum	3
Eschscholzia californica var. maritima	1.5
Hazardia squarrosa	0.5
Gnaphalium californicum	0.5
Heteromeles arbutifolia	0.1
Leymus condensatus	1
Isocoma menziessi	0.5
Lotus strigosus	1
Lotus scoparius	1
Lupinus succulentus	1
Lupinus bicolor	1
Malosma laurina	0.1
Melica imperfecta	2
Nassella lepida	1
N. pulchra	1
Phacelia cicutaria	0.4
Rhus integrifolia	0.1
Salvia leucophylla	1.5
Vulpia microstachys	1
Bloomeria crocea	as available
Dichelostemma capitatum	as available
Calochortus catalinae	as available

Table 3. Southerly and Westerly Facing Slope Coastal Sage Scrub Plant Palette.

Species	**Plants per acres**
Artemisia californica	500
Castilleja exserta	10
Deinandra fasciculata	50
Encelia californica	50
Eriogonum cinereum	188

Eriogonum fasciculata	563
Eschscholzia californica var. maritima	120
Gnaphalium californicum	47
Heteromeles arbutifolia	19
Isocoma menziessi	20
Lotus scoparius	90
Lupinus succulentus	50
Lupinus bicolor	50
Malosma laurina[1]	9
Melica imperfecta	95
Nassella lepida	60
N. pulchra	60
Phacelia cicutaria	10
Rhus integrifolia[1]	9
Salvia leucophylla	100
Salvia mellifera	80
Sisyrinchium bellum	10
Bloomeria crocea	As available
Dichelostemma capitatum	As available
Calochortus catalinae	As available
[1] In groupings	

Table 4. Southerly and Westerly Facing Slope Coastal Sage Scrub Seed Mix.

Species	**Lbs. Per Acre**
Artemisia californica	2
Castilleja exserta	0.5
Deinandra fasciculata	0.5
Encelia californica	0.5
Eriogonum cinereum	2
Eriogonum fasciculata	6
Eschscholzia californica var. maritima	1.5
Gnaphalium californicum	0.5
Heteromeles arbutifolia	0.3
Isocoma menziessi	0.5
Lotus strigosus	1.5
Lotus scoparius	1.5
Lupinus succulentus	1

Lupinus bicolor	1.5
Malosma laurina	0.1
Melica imperfecta	0.5
Nassella lepida	0.5
N. pulchra	0.5
Phacelia cicutaria	0.4
Rhus integrifolia	0.1
Salvia mellifera	0.5
Sisyrinchium bellum	0.5
Vulpia microstachys	0.5
Bloomeria crocea	as available
Dichelostemma capitatum	as available
Calochortus catalinae	as available

Table 5. Cactus Scrub Container Plant Palette.

Scientific Name	Common Name	Container Size[1]	Plants per acre [2, 3]	
Cylindropuntia prolifera	Coastal cholla	1-gallon	40	
Opuntia littoralis	Coast prickly pear	1-gallon	120	
Sambucus nigra	Blue elderberry	1-gallon	3	
Artemisia californica	California sagebrush	1-gallon	400	
Eriogonum cinereum	Coast buckwheat	1-gallon	100	
Eriogonum fasciculatum	California buchwheat	1-gallon	300	
			TOTAL	**963**

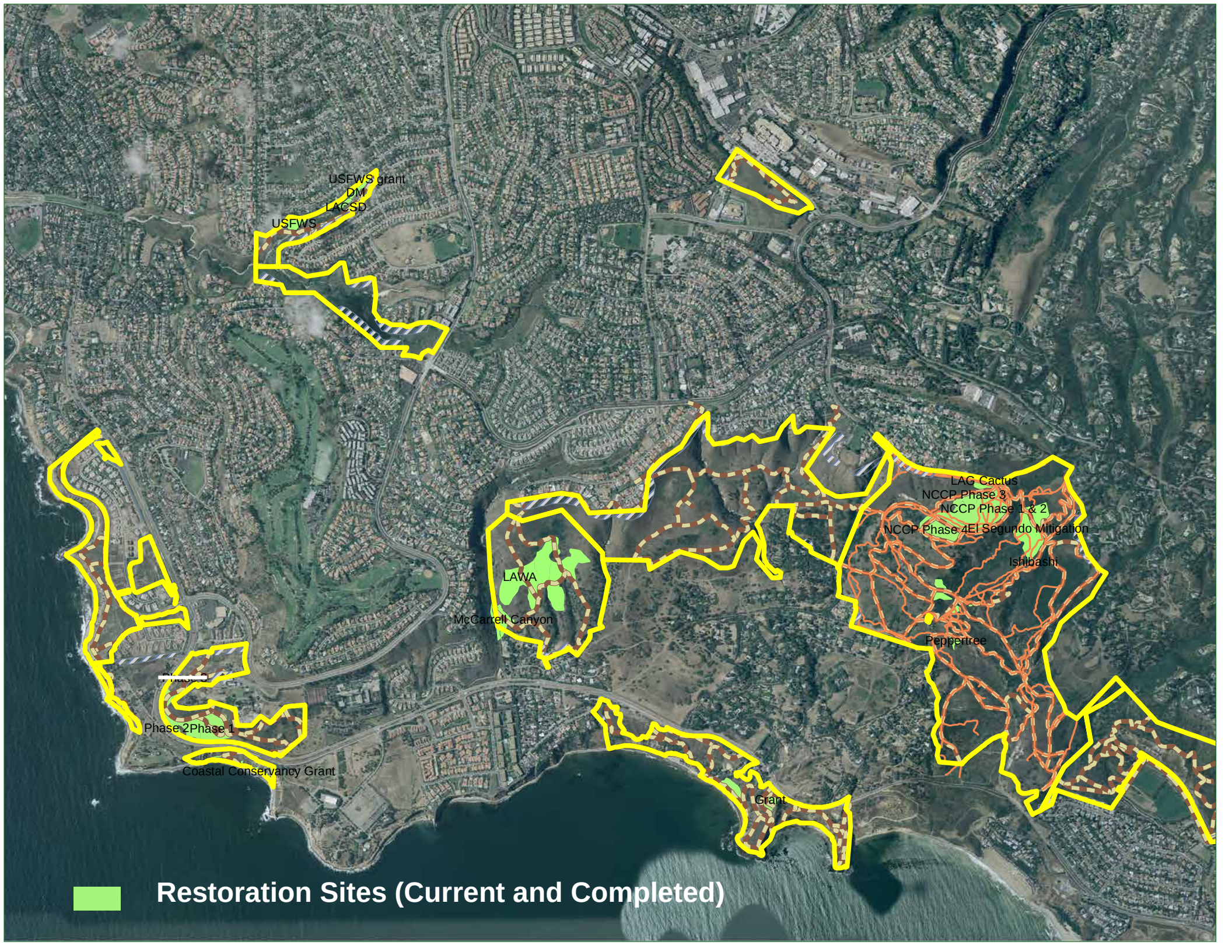
[1] A combination of pads, 1-gallon, and 5-gallon cactus can be used.
[2] Spacing = feet on-center distance from other cactus within planting groups. Spacing of 5-gallon cactus should be 6' from next closest cactus.
[3] Cactus should be planted in groups of 30. Planting groups can consist of a combination of cactus pads, 1-gallon, and 5-gallon plants at the specified number of plants per acre.

Table 6. Cactus scrub seed mix.

Scientific Name	Common Name	Pounds of bulk seed per acre
Artemisia californica	California sagebrush	2.0
Eriogonum cinereum	ashyleaf buckwheat	2.0
Eriogonum fasciculatum	California buckwheat	6.0
Gnaphalium californicum	California everlasting	0.5
Lotus scoparius	deerweed	6.0
Lotus strigosus	strigose lotus	1.5
Lupinus bicolor	miniature lupine	3.0
Lupinus succulentus	arroyo lupine	1.0
Melica imperfecta	melic grass	2.0
Nassella lepida[3]	foothill needlegrass	2.5
Phacelia ramosissima	branching phacelia	0.4
Plantago insularis[4]	wooly plantain	20.0
Sambucus Mexicana	Mexican elderberry	0.5
Sisyrinchium bellum	blue-eyed grass	0.5
Vulpia microstachys[4]	small fescue	6.0

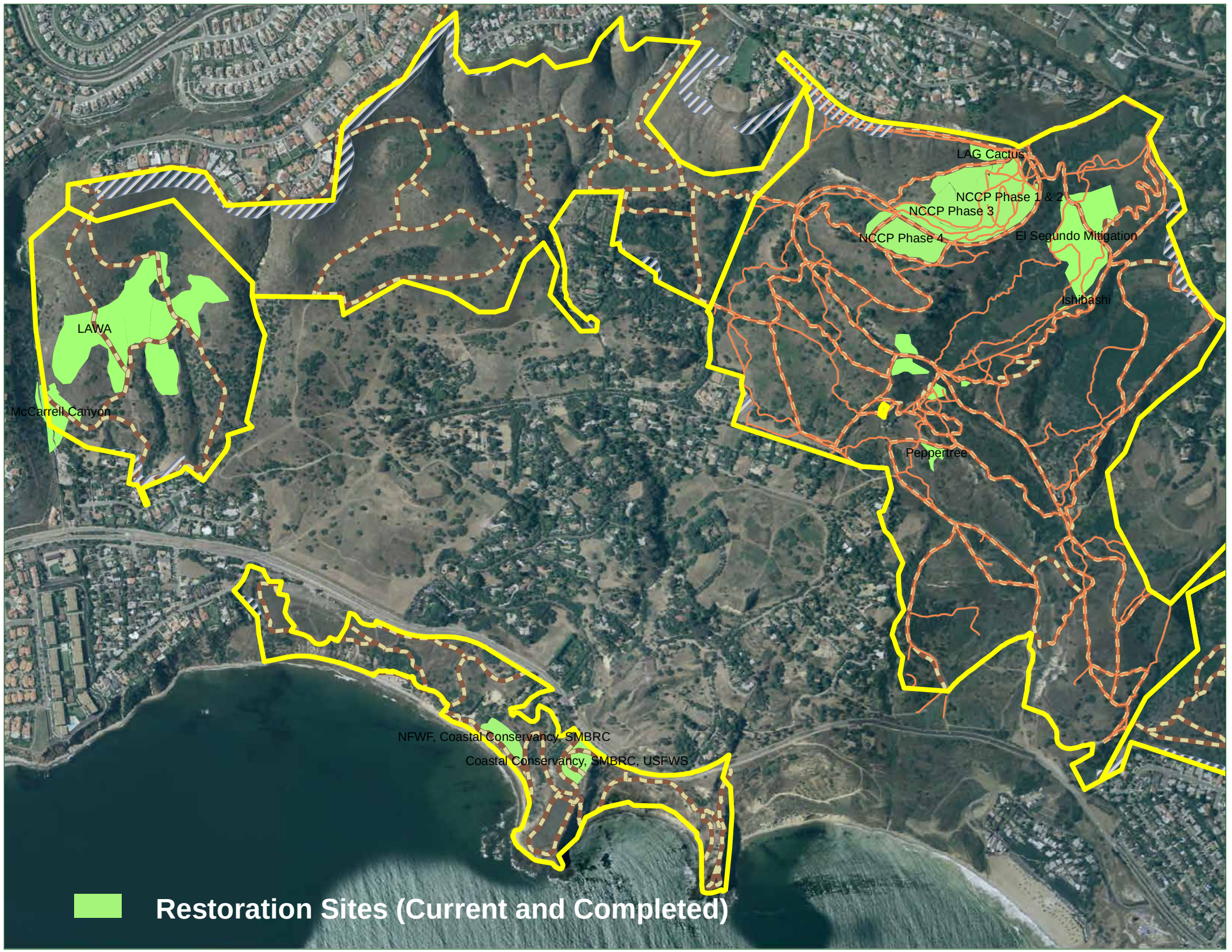
APPENDIX C. PALOS VERDES NATURE PRESERVE RESTORATION PROJECTS THROUGH 2013

Table 1. Palos Verdes Nature Preserve Restoration projects through 2013.							
	Funding source	**Location**	**Habitat**	**Acres**	**Status**	**Stard date**	**End date**
NCCP							
Alta Vicente	NCCP	phase 1 and 2	CSS	8.5	ongoing	2007	
Alta Vicente	NCCP	phase 1 and 2	cactus scrub	0.5	ongoing	2007	
Alta Vicente	NCCP	phase 1 and 2	pvb habitat	1	ongoing	2007	
Portuguese Bend	NCCP	phase 1 and 2	CSS	8	ongoing	2010	
Portuguese Bend	NCCP	phase 1 and 2	cactus scrub	2	ongoing	2010	
Portuguese Bend	NCCP	Phase 3	CSS	5	ongoing	2012	
Additional Projects							
Abalone Cove	Coastal Conservancy, NFWF, SMBRC, USFWS		CSS	4	ongoing	2013	
Agua Amarga	USFWS		CSS	2	completed	2001	2003
Agua Amarga	USFWS		riparian	0.5	completed	2004	2005
Agua Amarga	LACSD		riparian	0.25	ongoing	2011	
Agua Amarga	D&M		riparian	0.2	ongoing	2012	
Portuguese Bend	El Segundo Mitigation	ishibashi	CSS and grassland	9.5	ongoing	2010	2015
Portuguese Bend	HCF grant	ishibashi	CSS	0.25	ongoing	2012	
Portuguese Bend	HCF grant	peppertree	CSS	0.5	ongoing	2012	
Portuguese Bend	Local Assistance Grant		cactus scrub	3	completed	2010	2011
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		2012
Three Sisters/McCarrell's Canyon	Coastal Conservancy		CSS	2	completed		2012
Vicente Bluffs	Coastal Conservancy		coastal scrub	2	ongoing	2008	


USFWS grant
DM
LACSD
USFWS
LAG Cactus
NCCP Phase 3
NCCP Phase 1 & 2
NCCP Phase 4El Segundo Mitigation
Ishibashi
LAWA
McCarrell Canyon
Peppertree
Phase 2Phase 1
Coastal Conservancy Grant
Grant
Restoration Sites (Current and Completed)


Potential Restoration Sites
Phase 2
Phase 1
Coastal Conservancy Grant
Restoration Sites (Current and Completed)


USFWS grant
DM
LACSD
USFWS
Restoration Sites (Current and Completed)


LAG Cactus
NCCP Phase 1 & 2
NCCP Phase 3
NCCP Phase 4
El Segundo Mitigation
Ishibashi
LAWA
McCarrell Canyon
Peppertree
NFWF, Coastal Conservancy, SMBRC
Coastal Conservancy, SMBRC, USFWS
Restoration Sites (Current and Completed)

APPENDIX D

ANNUAL REPORT FOR THE

2013

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 exotic 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 2013 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.

As of the writing of this report, the NCCP is still in draft format and the regulatory agencies have not yet signed the final plan. However, the City of Rancho Palos Verdes and PVPLC currently perform the responsibilities outlined in the draft NCCP, including fulfillment of the TERPP requirements.

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. Guided by the NCCP, which ranks known PVNP exotic species based on State and Federal guidelines, 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 exotic species control across the entire NCCP area.

To more effectively collect baseline data and track invasive species within the Preserve, PVPLC is currently developing a new methodology for collecting TERPP information. A new TERPP 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.

Each TERPP site is tracked via GIS, a tool that aids planning and monitoring efforts. Since 2006, PVPLC has treated 99 individual TERPP sites, and the program is ongoing. Every year, tracking, documenting and planning for the following year becomes more complex as more sites are added. Use of GIS allows staff not only to look at the land within the NCCP boundaries, but to view the Palos Verdes Peninsula at a landscape level. This report implements for the first time a newly developed TERPP mapping system that maps all TERPP sites over time (Appendix D8 of TERPP report). In 2012, interns started mapping invasive species locations in the Preserve, but the project has not been completed due to lack of funding. These maps will assist in selecting sites for invasive species eradication. While the most common approach to managing invasions of exotic species may be to target individual species, a more comprehensive approach is to identify major pathways for invasion that will influence more efficient and economic management of the exotic species.

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 2013 TERPP

In 2013, PVPLC treated 28 populations of invasive plants (Table 1, photopoints in Appendix D9). PVPLC treated 17 populations of *Euphorbia terracina* (Geraldton spurge, Euphorbia). Euphorbia grows rapidly in disturbed areas, is a prolific seeder and is rapidly expanding its distribution in southern California. Invaded areas show reduced ecological quality and inferior habitat quality compared to un-invaded areas. Continued spread of this species throughout California seems possible and even likely if action is not taken immediately. Euphorbia shows a broad habitat tolerance in southern California, invading both cool coastal areas and hot, dry, interior areas. Most of the populations of Euphorbia have been treated for several years, in attempts to keep it from spreading further into the Preserve.

PVPLC treated three populations of *Coronilla valentina* ssp. *glauca.* This is a range expansion for this species, and has the potential to cause major infestations in the area. There will need to be follow-up treatments to control seeds germinating from the seed bank.

PVPLC treated a large *Schinus molle* tree at Abalone Cove.

PVPLC treated one population of *Pistacia chinensis* at Portuguese Bend Reserve.

PVPLC treated three populations of *Acacia cyclops.* In particular, acacia that was competing with cactus habitat was removed at Portuguese Bend. The second acacia population was located at Three Sisters Reserve, at the bottom of a canyon. The third was at Vicente Bluffs, as part of the invasive plant removal described below.

At Vicente Bluffs, a 0.5-acre site was cleared of the following invasive species: *Cortaderia selloana, Foeniculum vulgare, Acacia cyclops* and *Schinus molle.* This site was on the edge of a healthy coastal sage scrub restoration area.

Table 1. 2013 TERPP Treatments.

Stand ID	Reserve	Species Name	Stand Size	Number of Individuals	Treatment	Outcome
AA_EuTe_01	Agua Amarga	*Euphorbia terracina*	300 ft2 - 600 ft2	10-50	Hand pull	ongoing
AA_EuTe_02	Agua Amarga	*Euphorbia terracina*	10 ft2 - 100 ft2	10-50	Hand pull	ongoing
AC_CoVa_01	Abalone Cove	*Coronilla valentina*	600 ft2 - 1000 ft2	200-500	Herbicide	will need to follow up with seed bank
AC_CoVa_02	Abalone Cove	*Coronilla valentina*	100 ft2 - 300 ft2	500-1000	Other	will need to follow up with seed bank
AC_CoVa_03	Abalone Cove	*Coronilla valentina*	100 ft2 - 300 ft2	100-200	Herbicide	will need to follow up with seed bank
AC_EuTe_01	Abalone Cove	*Euphorbia terracina*	600 ft2 - 1000 ft2	>1000	Herbicide	ongoing
AC_EuTe_02	Abalone Cove	*Euphorbia terracina*	10 ft2 - 100 ft2	1-10	Hand pull	ongoing
AC_EuTe_03	Abalone Cove	*Euphorbia terracina*	300 ft2 - 600 ft2	10-50	Hand pull	ongoing
AC_ScMo_01	Abalone Cove	*Schinus molle*	1 ft2 - 10 ft2	1-10	Herbicide	successfully removed
AV_EuTe_01	Alta Vicente	*Euphorbia terracina*	10 ft2 - 100 ft2	100-200	Herbicide	ongoing

AV_EuTe_02	Alta Vicente	*Euphorbia terracina*	1 ft2 - 10 ft2	10-50	Hand pull	ongoing
AV_EuTe_04	Alta Vicente	*Euphorbia terracina*		100-200	Round up	ongoing
FO_EuTe_03	Forrestal	*Euphorbia terracina*	1 ft2 - 10 ft2 (32nd acre)	100-200	Hand pull	ongoing
PB_AcCy_01	Portuguese Bend	*Acacia cyclops*			Cut and treated	successfully removed a portion of individuals that were covering cactus
PB_EuTe_01	Portuguese Bend	*Euphorbia terracina*		100	Hand pull	ongoing
PB_EuTe_03	Portuguese Bend	*Euphorbia terracina*		10-50	Hand pull	ongoing
PB_EuTe_04	Portuguese Bend	*Euphorbia terracina*		100-200	Hand pull	ongoing
PB_EuTe_08	Portuguese Bend	*Euphorbia terracina*		10-50	Hand pull	ongoing
PB_Pist_01	Portuguese Bend	*Pistacia chinensis*	1 ft2 - 10 ft2	1-10	Herbicide	successfully removed
TS_AcCy_02	Three Sisters	*Acacia cyclops*	> 660 ft2 (acre or more)	50-100	Herbicide	successfully removed
TS_EuTe_02	Three Sisters	*Euphorbia terracina*	300 ft2 - 600 ft2	>1000	hand pull and herbicide	ongoing

VB_EuTe_01	Vicente Bluffs	*Euphorbia terracina*	10 ft2 - 100 ft2	>1000	Hand pull	ongoing
VB_EuTe_02	Vicente Bluffs	*Euphorbia terracina*	10 ft2 - 100 ft2	500-1000	Hand pull	ongoing
VB_EuTe_03	Vicente Bluffs	*Euphorbia terracina*	10 ft2 - 100 ft2	200-500	Hand pull	ongoing
VB_CoSe_01	Vicente Bluffs	*Cortaderia selloana*	50 ft2	11	physical removal	successfully removed
VB_FoVu_01	Vicente Bluffs	*Foeniculum vulgare*	50 ft2	9	physical removal	will need to follow up
VB_AcCy_02	Vicente Bluffs	*Acacia cyclops*	100 ft2	12	physical removal	successfully removed
VB_ScMo_01	Vicente Bluffs	*Schinus molle*	25 ft2	1	cut and treated	successfully removed

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.

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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.

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APPENDIX D1: SAMPLE TERPP FORM

Invasive Weed Mapping Field Datasheet

Survey Type New Infestation Assesment 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 -300ft^2 300 ft^2 - 600 ft^2 600 ft^2 - 1000 ft^2 > 1000 ft^2	
No. Individuals 1-10 10-50 50-100 100-200 200-500 500-1000 >1000	**Stand Comments:**
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	

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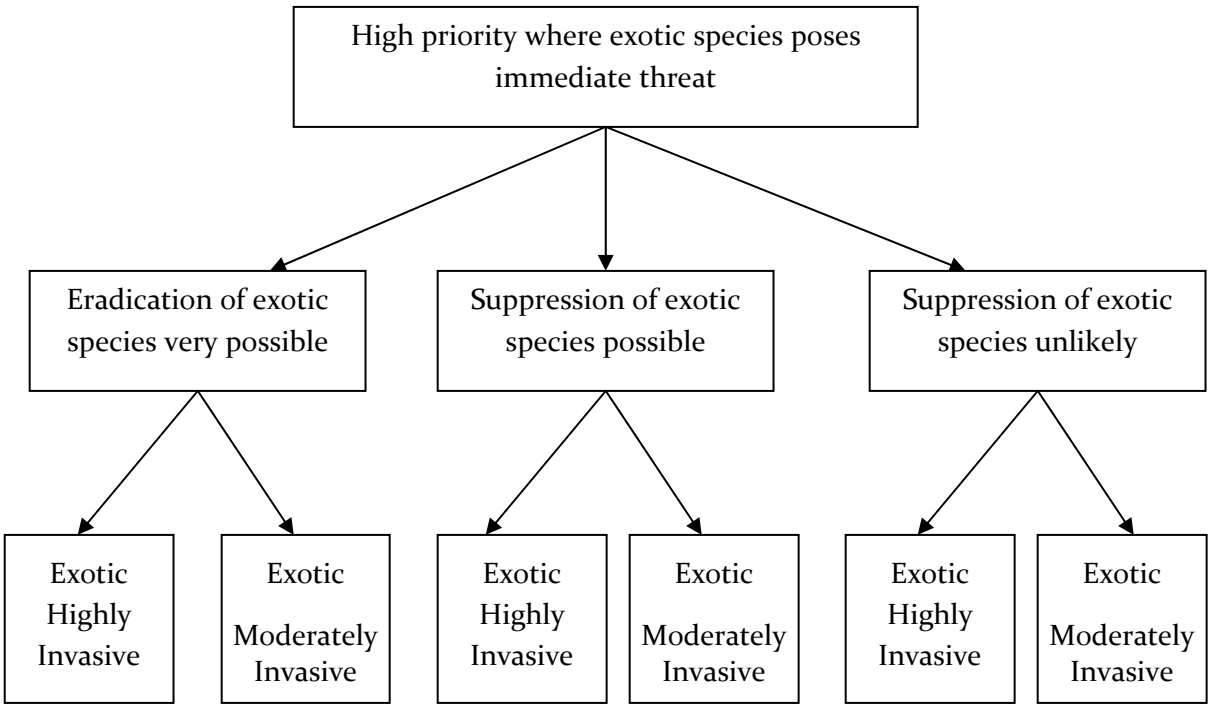
APPENDIX D2: FLOWCHART FOR HIGH PRIORITY THREAT TO NATIVE VEGETATION



Priority Ranking For Control of Exotic Species

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

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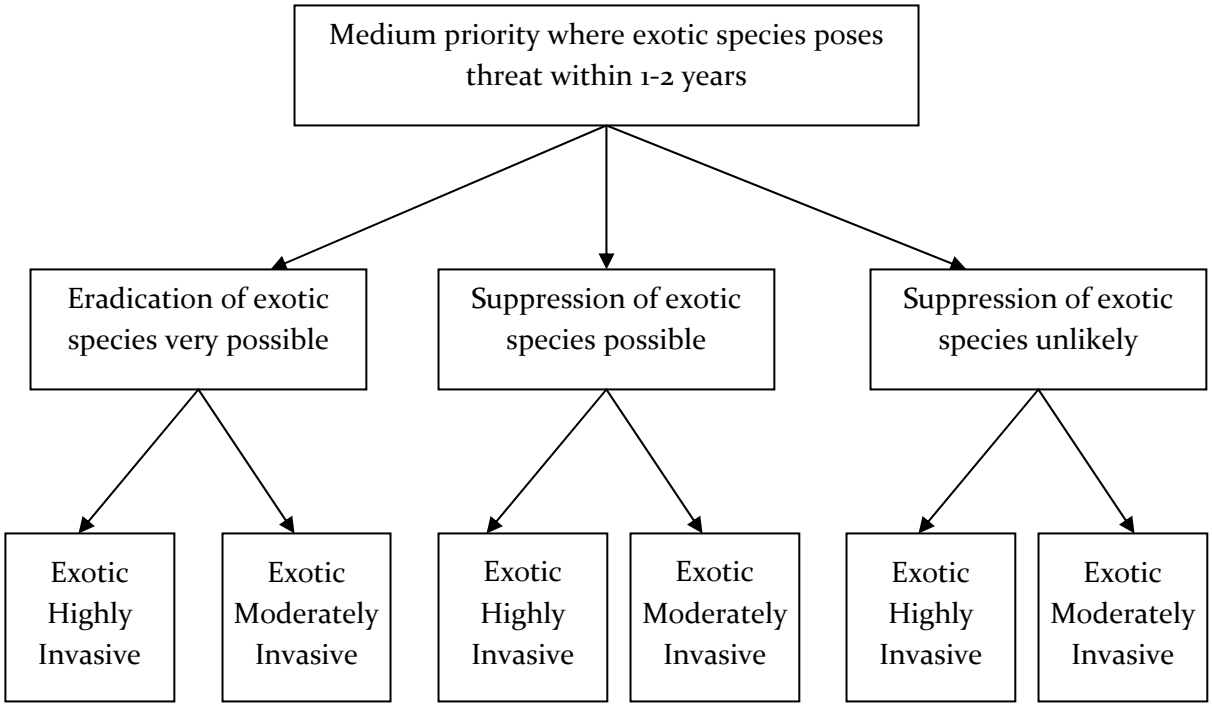
APPENDIX D3: FLOWCHART FOR MEDIUM PRIORITY DEGREE OF THREAT TO NATIVE VEGETATION



Priority Ranking For Control of Exotic Species

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

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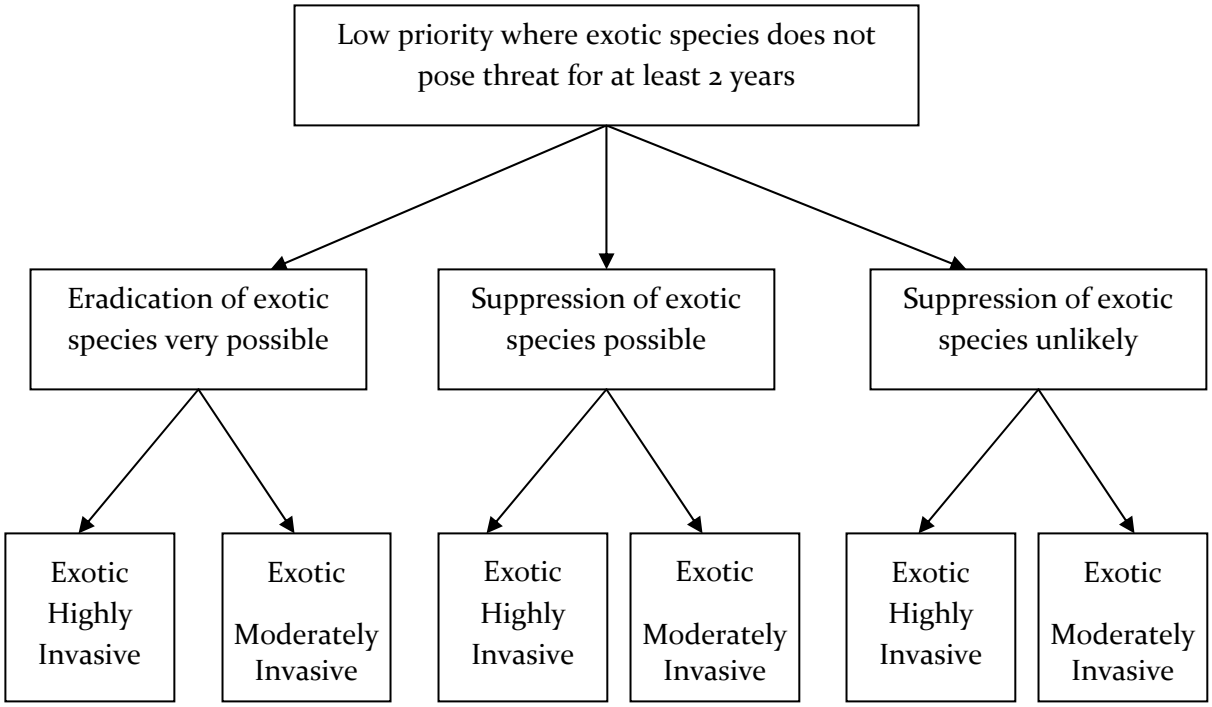
APPENDIX D4: FLOWCHART FOR LOW PRIORITY DEGREE OF THREAT TO NATIVE VEGETATION



Priority Ranking For Control of Exotic Species

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

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APPENDIX D5: HIGHLY INVASIVE SPECIES

Genus species	Common name
Arundo donax	Giant reed
Asparagus asparaagoides	Bridal creeper
Avena barbata	Slender oat
Avena fatua	Wild oat
Brachypodium distachyon	False brome
Brassica nigra	Black mustard
Bromus diandrus	Ripgut grass
Bromus madritensis ssp. rubens	Red brome
Carpobrotus edulis	Hottentot fig
Caesalpinia spinosa	Spiny holdback
Centaurea melitensis	Tocalote
Chrysanthemum coronarium	Garland chrysanthemum
Cortaderia selloana	Pampas grass
Cynodon dactylon	Bermuda grass
Euphorbia terracina	Spurge
Foeniculum vulgare	Fennel
Malva nicaeensis	Bull mallow
Malva parviflora	Cheeseweed
Malva sylvestris	Mallow
Mesembryanthemum crystallinum	Annual iceplant
Nicotiana glauca	Tree tobacco
Pennisetum clandestinum	Kikuyu grass
Pennisetum setaceum	Fountain grass
Picris echioides	Bristly ox-tongue
Pistacia atlantica	Pistachio

Pittosporum undulatum	Pittosporum
Raphanus sativus	Wild radish
Ricinus communis	Castor bean
Salsola tragus	Russian thistle
Silybum marianum	Milk thistle
Sonchus asper	Prickly sow thistle
Sonchus oleraceus	Sow thistle
Spartium junceum	Spanish broom
Tamarix species	Tamarisk
Tropaeolum majus	Garden nasturtium

APPENDIX D6: MODERATELY INVASIVE SPECIES

Genus species	Common Name	Genus species	Common Name
Acacia cyclops	Acacia	*Limonium perezii*	Sea lavender
Acacia species	Acacia	*Limonium sinuatum*	Sea lavender
Aegilops cylindrica	Jointed goat grass	*Lobularia maritima*	Sweet alyssum
Ageratina adenophorum	Eupatory	*Lolium multiflorum*	Italian rye
Atriplex semibaccata	Australian saltbush	*Lolium perenne*	Perennial ryegrass
Bassia hyssopifolia	Five-Hook bassia	*Marrubium vulgare*	Horehound
Bromus hordeaceus (mollis)	Soft brome	*Medicago polymorpha*	Bur clover
Bromus catharticus	Rescue grass	*Medicago sativa*	Alfalfa
Cakiel maritime	Sea rocket	*Melilotus albus*	White sweet clover
Carduus pycnocephalus	Italian thistle	*Melilotus indicus*	Yellow sweet clover
Carpobrotus aequilaterus	Sea Fig	*Myoporum laetum*	Myoporum
Carpobrotus chilensis iceplant	Fig-Marigold	*Olea europea*	Olive
Conium maculatum	Poison hemlock	*Oxalis pes-caprae*	Bermuda buttercup
Convolvulus arvensis	Bindweed	*Pelargonium zonale*	Zonal geranium
Erodium cicutarium	Red stem filaree	*Phalaris minor*	Phalaris
Eucalyptus camaldulensis	Red gum tree	*Phoenix canariensis*	Phoenix palm
Eucalyptus globulus	Blue gum tree	*Piptatherum miliacea*	Smilo grass
Eucalyptus species	Gum tree	*Pittosporum undulatum*	Pittosporum
Hirschfeldia incana	Annual mustard	*Plantago lanceolata*	English plantain
Hordeum murinum leporinum	Foxtail barley	*Polygonum aviculare*	Knotweed
Hordeum vulgare	Common barley	*Polypogon monspessulensis*	Rabbitsfoot
Lactuca serriola	Compass plant	*Pyracantha sp.*	Firethorn
Lathyrus tangianus	Tangier pea	*Rumex crispus*	Curly dock

Schinus molle	Mexican pepper	*Washington robusta*	Mexican fan palm
Schinus terebinthifolius	Brasilian pepper	*Vicia sativa*	Spring vetch
Sisymbrium irio	London rocket	*Vulpia myuros varhirsuta*	Annual fescue
Trifolium hirtum	Rose clover	*Vulpia myuros var myuros*	Rattail fescue

APPENDIX D7: EXOTIC, NON-INVASIVE SPECIES

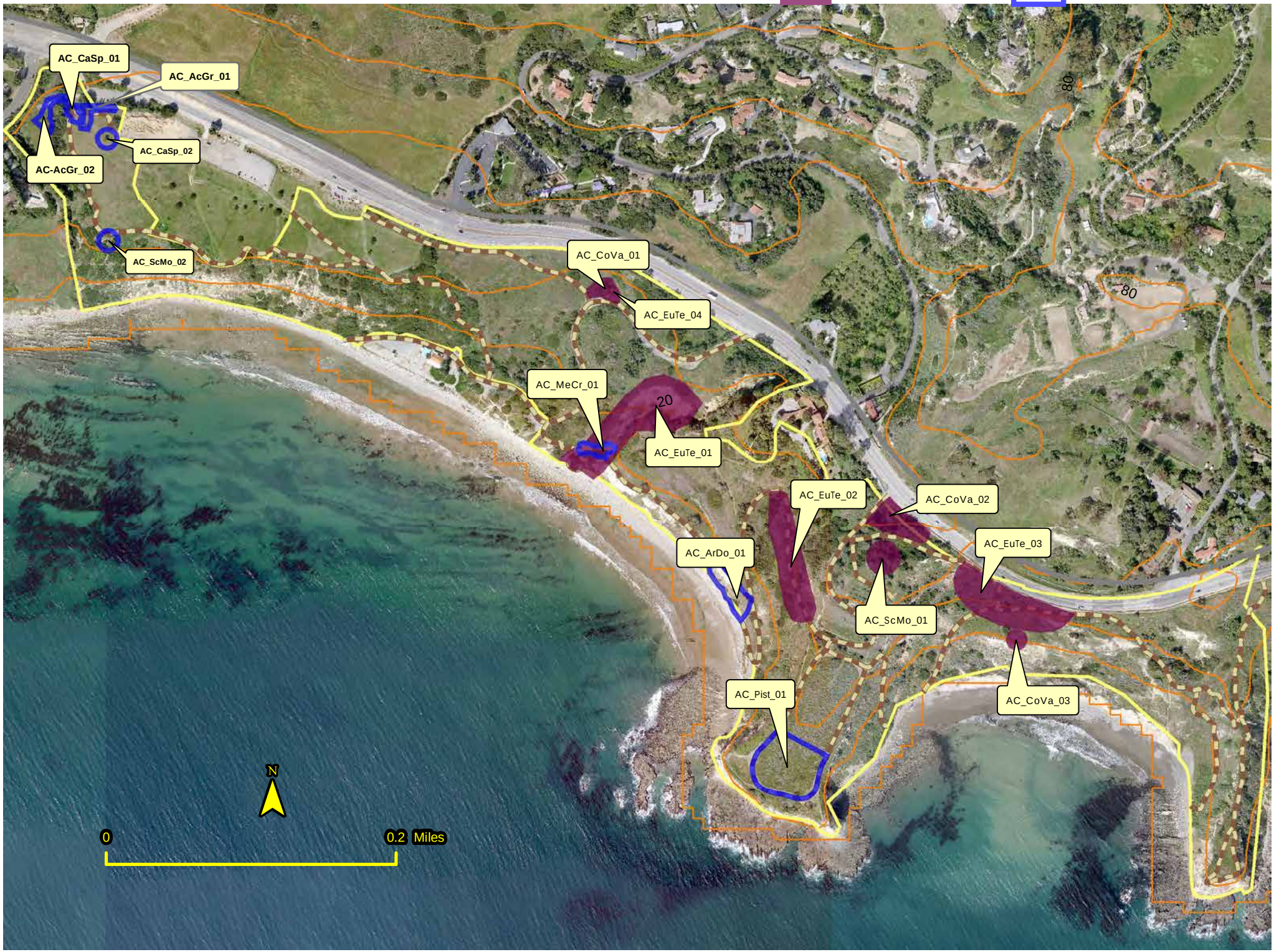
Scientific Name	Common Name
Amaranthus albus	Tumbleweed
Anagallis arvensis	Pimpernel
Apium graveolens	Celery
Aptenia cordifolia	Baby sun-rose
Atriplex glauca	Saltbush
Bidnes pilosa	Common beggar-ticks
Capsella bursa-pastoris	Shepherd's purse
Centranthus rubber	Red valerian
Ceratonia siliqua	Locust bean tree
Chamaesyce maculata	Spotted spurge
Chenopodium album	Lamb's quarters
Chenopodium ambrosioides	Mexican tea
Chenopodium murale	Nettleleaf goosefoot
Conyza canariensis	Horseweed
Coronilla valentina	Coronilla
Cyperus involucratus	Umbrella plant
Digitaria sanguinalis	Hairy crabgrass
Echium fastuosum	Pride of madeira
Erodium botrys	Long-beaked filaree
Euphorbia lathyris	Gopher plant
Euphorbia peplus	Petty spurge
Filago gallica	Narrow-leaf filago
Fraxinus uhdei	Shamel ash
Gazania species	Gazania
Geranium carolinianum	Geranium
Gnaphalium luteo-album	White cudweed
Koehlreuteria species	Koehlreuteria
Lamarckia aurea	Goldentop
Lantana montevidensis	Lantana
Lathyrus odoratus	Sweet pea
Lycium species	Lycium
Lycopersicon esculentum	Garden tomato
Malephora crocea	Mesemb
Melaleuca species	Melaleuca
Mesembryanthemum nodiflorum	Iceplant
Osteoapermu fruticosum	African daisy
Oxalis corniculata	Woodsorrel
Paspalum dilatatum	Dallis grass
Pinus halepensis	Alepppo pine
Plantago major	Plantain
Poa annua	Bluegrass
Polygonum arenastrum	Knotweed
Senecio vulgaris	Groundsel
Silene gallica	Common catchfly
Triticum aestivum	Cultivated wheat
Urtica urens	Dwarf nettle
Veronica anagallis-aquatica	Water speedwell
Yucca species	Spanish bayonet

APPENDIX D8

MAPS OF TERPP SITES

TERPP Sites: *ABALONE COVE*

2013 TERPP Sites | Previous TERPP Sites



TERPP Sites: ***AGUA AMARGA***

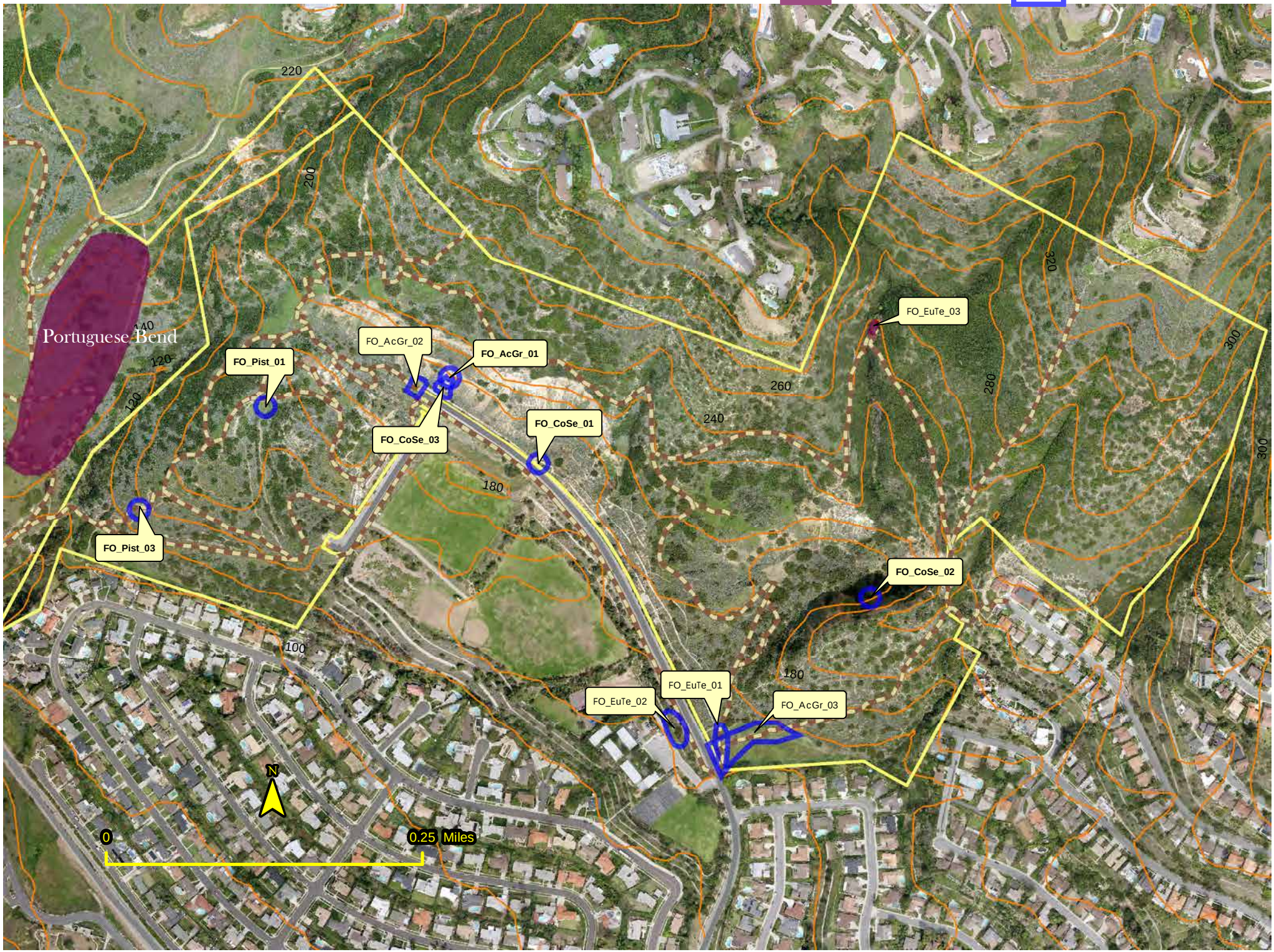
2013 TERPP Sites | Previous TERPP Sites

TERPP Sites: ***ALTA VICENTE***

2013 TERPP Sites | Previous TERPP Sites

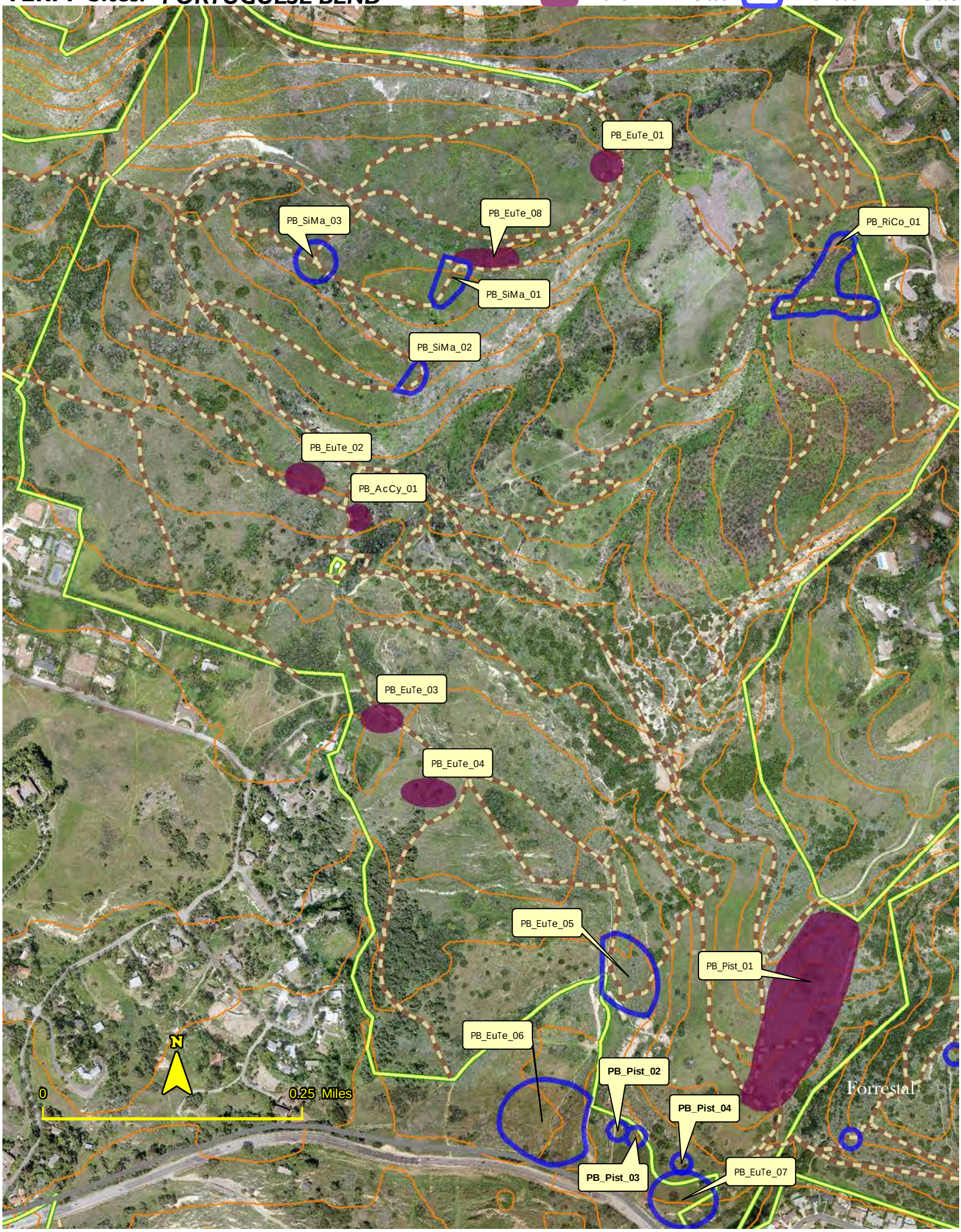
TERPP Sites: *FORRESTAL*

2013 TERPP Sites | Previous TERPP Sites



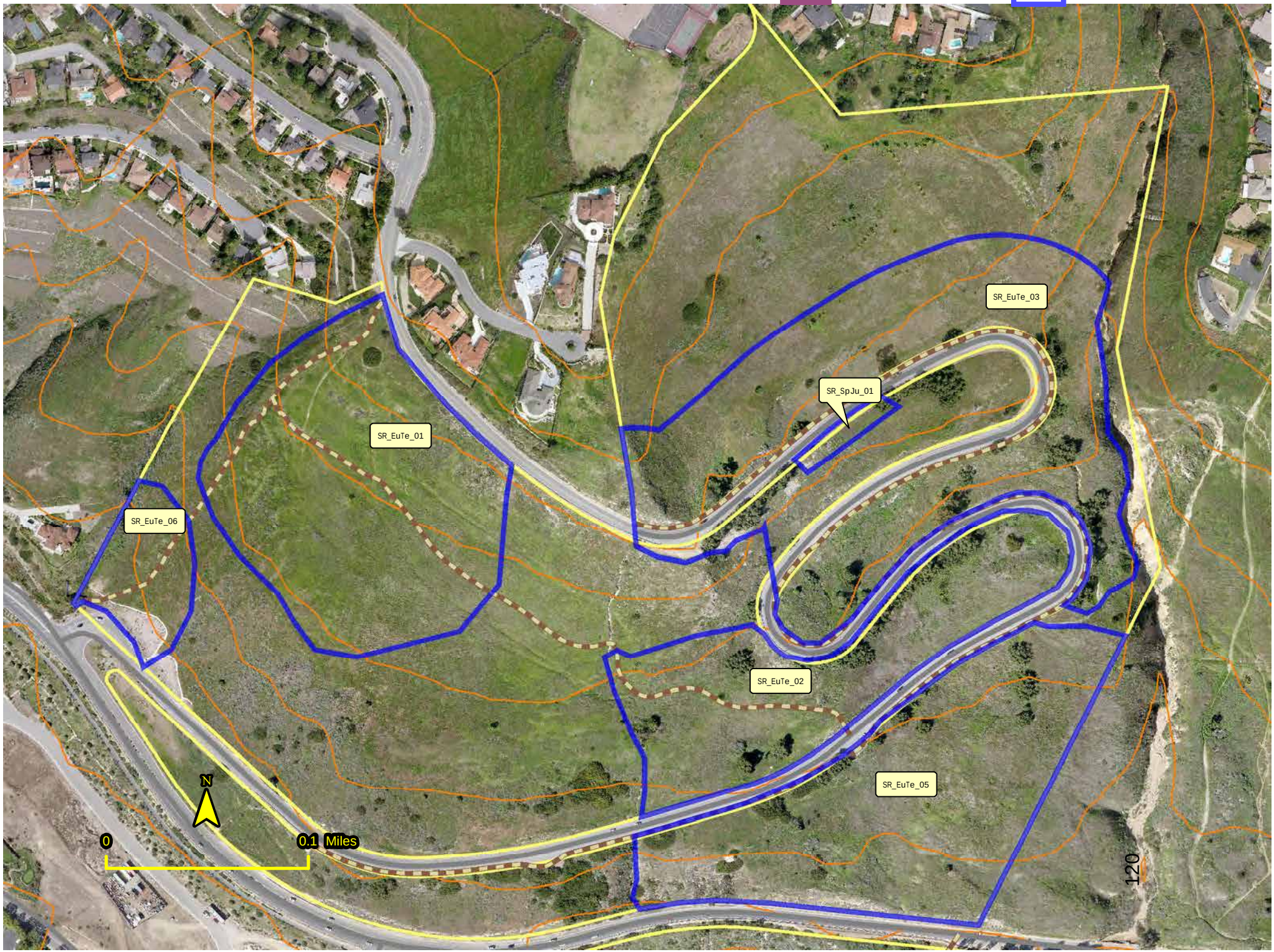
TERPP Sites: *PORTUGUESE BEND*

2013 TERPP Sites | Previous TERPP Sites



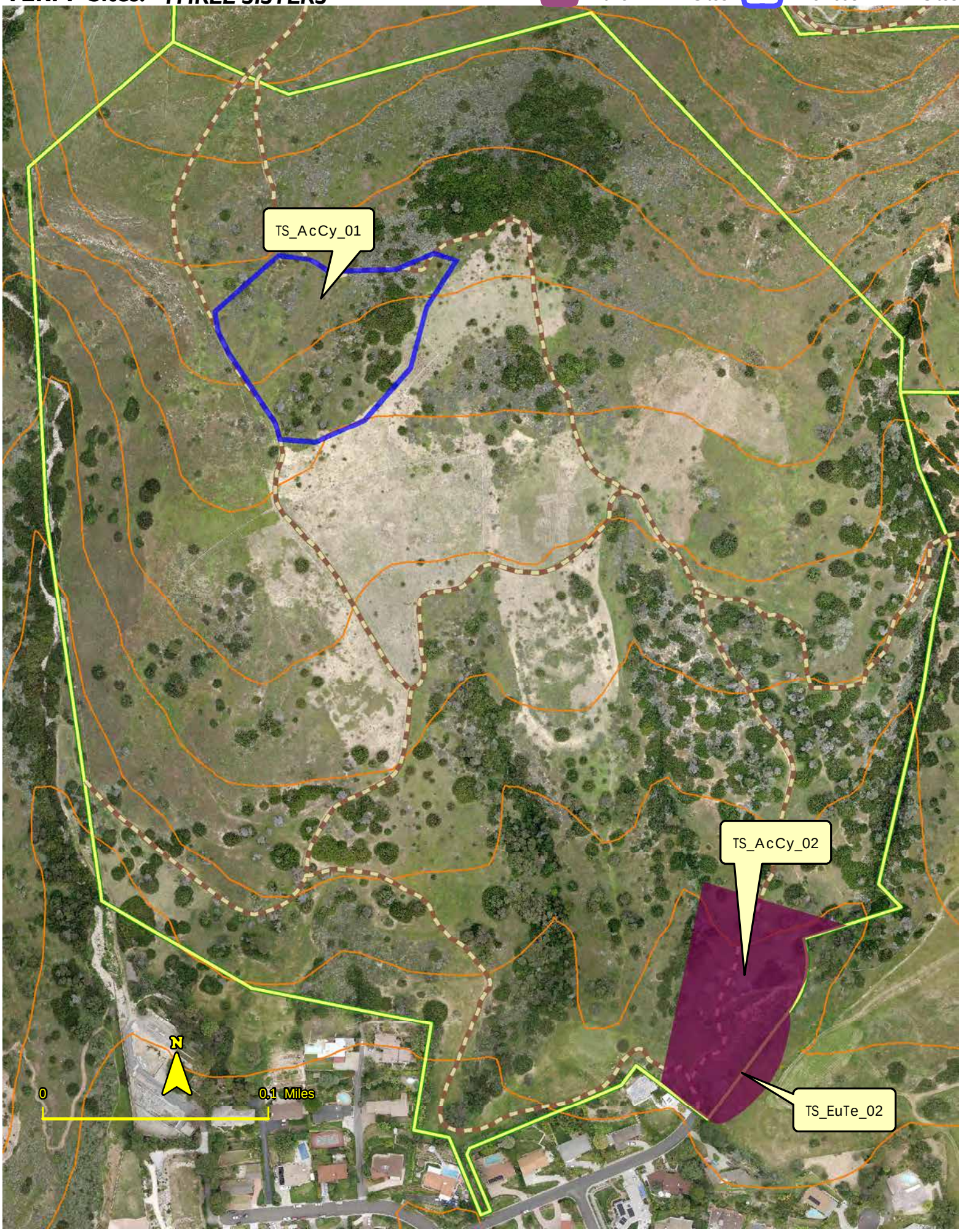
TERPP Sites: *SAN RAMON*

2013 TERPP Sites | Previous TERPP Sites



TERPP Sites: ***THREE SISTERS***

2013 TERPP Sites | Previous TERPP Sites



TERPP Sites: ***VICENTE BLUFFS***

2013 TERPP Sites | Previous TERPP Sites

Appendix D9

2013 Photos

Targeted Exotic Removal Program for Plants (TERPP)

AA_EuTe_01

AA_EuTe_02

AC_CoVa_01

AC_CoVa_02 pre

AC_CoVa_02 post

AC_CoVa_03

AC_EuTe_01

AC_EuTe_02

AC_EuTe_03

AC_EuTe_05

AC_ScMo_01 Pre

AC_ScMo_01 Post

AV_EuTe_01

AV_EuTe_02

AV_EuTe_04

FO_EuTe_03

PB_AcCy_01

PB_AcCy_01

PB EuTe 01

PB_EuTe_03

PB_EuTe_04

PB_EuTe_08

TS_AcCy_02 Pre

TS_AcCy_02 Post

TS_EuTe_02 Pre

TS_EuTe_02 post

TS_EuTe_03

TS_EuTe_05

VB_EuTe_01 pre

VB_EuTe_01 post

VB_EuTe_02

VB_EuTe_03

VB_CoSe_01, VB_FoVu_01, VB_AcCy_02, VB_ScMo_01 Post

VB_CoSe_01, VB_FoVu_01, VB_AcCy_02, VB_ScMo_01 Post

VB_CoSe_01, VB_FoVu_01, VB_AcCy_02, VB_ScMo_01 Post

APPENDIX E

RESEARCH AND EDUCATION PROGRAM

1.0 INTRODUCTION

The Research and Education Program at the Palos Verdes Peninsula Land Conservancy (PVPLC) began in 2006 with a grant from Alcoa Foundation and Alcoa Fastening Systems. The grant funded the Research, Education, and Community Involvement Program for the Environment (RECIPE) which concluded in May 2010. This initial grant enabled PVPLC to develop a robust research program centered on improving our conservation efforts while extending learning opportunities within our community.

PVPLC has since focused on strengthening collaborative relationships with universities and organizations, and seeking new funding sources (Table 1). It was equally important to continue integrating young students and researchers to maintain the spirit of RECIPE. In 2012 and 2013, the Long Family Foundation Conservation Research Scholarship provided funds for a CSULB student to conduct field research on coastal cactus wrens.

University professors are crucial for the success of research, because they provide expertise and technical guidance, including managing several research projects. Land Conservancy staff provides access to the preserves as well as technical support to participants. The Science Advisory Panel meets annually to offer feedback on restoration projects and covered plant and animal questions in the Preserve.

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

- High School Research
- University Research, and
- Community Researchers.

Table 1. List of ongoing research projects in the Preserve.

Research Managed by PVPLC

Three Sisters Bird Survey – A bi-monthly survey to study the bird community's response to a 21-acre restoration effort within the Palos Verdes Nature Preserve.

Wild Animal Surveys – College students track coyote and fox use of the preserves and their diets.

Managed by University Researchers

Multi-Agency Rocky Intertidal Network (MARINe) – A long-term monitoring site was added to the nationally-run MARINe program, managed by a CSU Long Beach marine biology professor and his students.

Microclimate on the Preserves – The results of this program involving high school and college students to monitor habitat temperature and humidity trends for different plant species was presented at the 6th International Conference on Fog, Fog Collection and Dew at Yokohama, Japan in May 2013.

Table 2. 2013 Science Fair Results

PVPLC High School Researchers

Student	Award	Project Title
Eric Ellison	Recognition in Plant Biology at Los Angeles County Science Fair	Biomass of ashy-leaf buckwheat *Eriogonum cinereum*
Richard Hu	Third Place at PV Science Fair	Efficiency of chicken wire in preventing Audubon cottontail rabbit herbivory of deerweed.
Anthony Kim	Honorable Mention at PV Science Fair	Cactus wren use of recently burned habitat compared to unburned habitat.
Jeff Kim	Honorable Mention at PV Science Fair	Predicting the Canopy mass of a Plant Using Measured Characteristics
Stephanie Yong	Honorable Mention at PV Science Fair	Observation of threatened California gnatcatchers in various locations of California sagebrush

2.0 HIGH SCHOOL RESEARCH

High school and college students are important elements in PVPLC's field research. By participating in PVPLC's research program with professionals and university researchers, 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 top 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 2 and Figure 1).

Figure 1. High school research
High school researcher Jeff Kim discusses his project to optimize the calculated canopy mass of selected native plant species with his mentor Dr. Tony Lin.

3.0 UNIVERSITY STUDENTS

College students from local universities participate in research under the umbrella of the Conservancy's Intern program. They participate in programs that are integral with habitat restoration, which provides the students valuable hands-on experience (Table 3.).

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. The Conservancy's Interns participated in all the vegetation assessment surveys as well as entered the resulting data into the database. They also developed data tables for reports and conducted the initial stages of the report writing.

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 3. 2013 College Intern Projects

Student	Project Title
Kelley Dawdy	Vegetation monitoring, data entry, and data table development for 2013 vegetation monitoring
Paola Ducoing	Wild animal tracking at Forrestal
Kali McCombs	Cactus wren monitoring at Portguese Bend
Chelsea Williams	Vegetation monitoring, data entry, and data table development for 2013 vegetation monitoring

4.0 COMMUNITY RESEARCHER

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 are terrific and travel from throughout the Peninsula and surrounding areas to help out.

Figure 2. Community research

Volunteers celebrate the completion of a five-year bird survey at Three Sisters Bird Survey.

The 5-year Three Sisters Bird Survey, conducted in conjunction with the Palos Verdes/South Bay Audubon Chapter, concluded in September 2013. Over 30 volunteers participated in this project including high school and college students, plus many community volunteers. This successful research started in July 2008 to monitor the bird community's response to the Land Conservancy's 21-acre restoration effort at the site (Figure 2). This study documented an increase in diversity and abundance of birds within the restoration area. Also, California gnatcatchers were more regularly seen in the new habitat, and western meadowlarks were seen in the open, grassland areas.

Another community researcher, Diane Dobbos-Bubno was a significant participant in developing the Conservancy's new Invasive Weed Management Program. Diane developed the worksheet, Excel template, database, and GIS maps for tracking weed management. With her help, the Conservancy rolled-out a well conceptualized program that was easily implemented.

In the fall, the Conservancy initiated the first of its Citizen Science programs, Wild Life Tracking. Our community volunteers were trained in tracking wild coyotes, red fox, and gray

fox in the preserves. Then they individually conducted regular surveys along specific routes in the preserves. These data were submitted to the Conservancy for use in its management reports.

Appendix F
Volunteer Program

1 INTRODUCTION AND SUMMARY

1.1 Volunteer Programs

This Annual Report describes each of the individual programs included within the larger Volunteer Program that serviced the Palos Verdes Nature Preserve. Specific activities are detailed for the reporting period January 1, 2013 to December 31, 2013. The PVPLC continues to work to implement grants geared toward improving this program.

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:

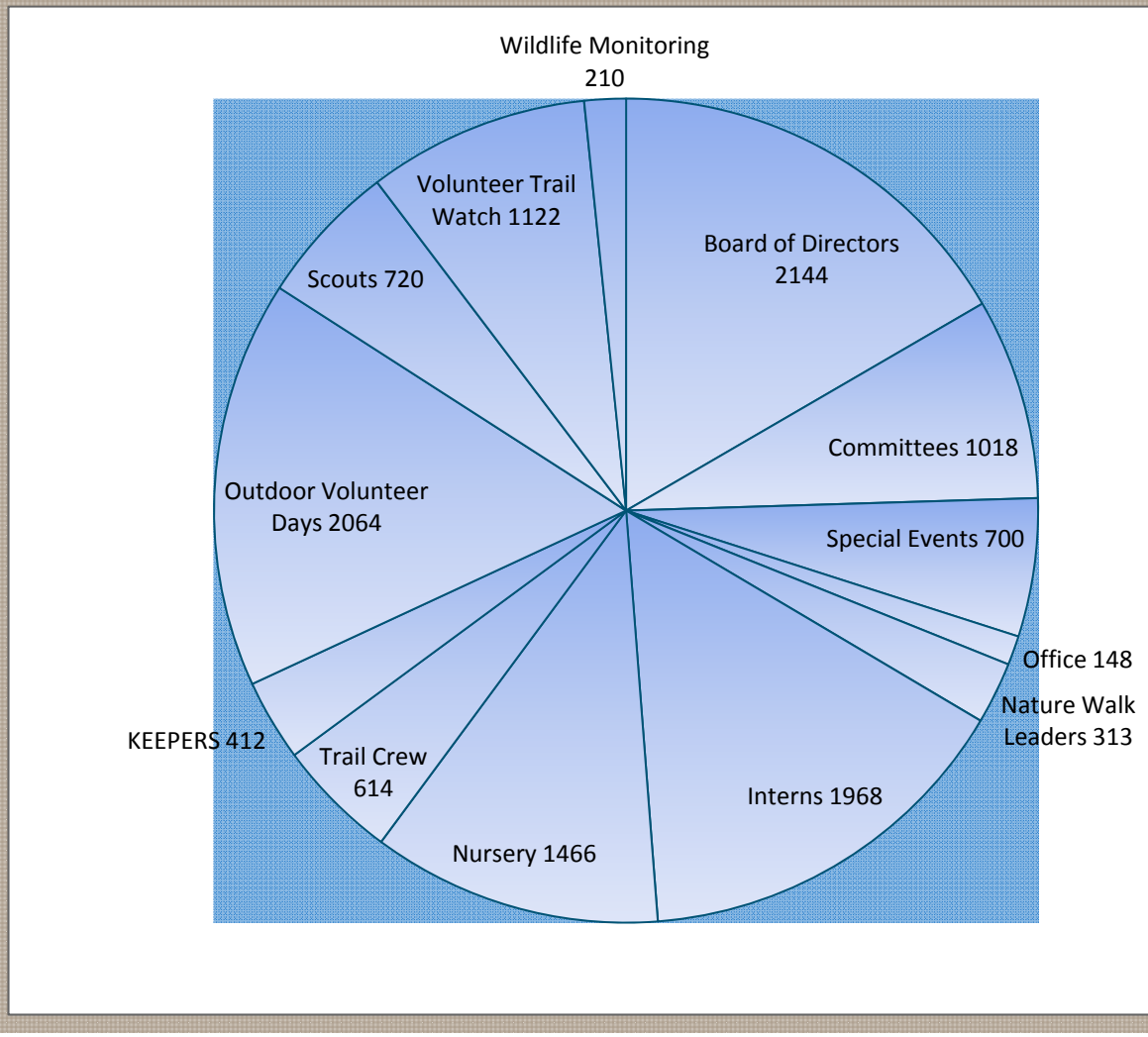
- Board of Directors
- Committees and Advisory Boards
- Special Events and Office Assistance
- Education Docents and Nature Walk Leaders
- Interns

The second category, Stewardship Volunteers, supports activities that are performed on the land to assist with management of the Preserves. In all, there are six programs 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 contact the PVPLC and arrange to 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 (Adopt-a-Plot, Rapid Response Team, Invasive Weed Team). The six programs are listed below:

- Outdoor Volunteer Days
- Team Leaders
- Scout Projects
- Trail Crew
- Keeping an Extra Eye on the Preserve for Environmental Review and Stewardship (KEEPERS)
- Volunteer Trail Watch

In 2013, volunteers provided a grand total of **12899** hours of service (Table 1) to support conservation, restoration and management of the Palos Verdes Nature Preserve. According to the Independent Sector, volunteer time in California is valued at $24.75 per hour (based on Dollar Value of a Volunteer Hour, by State: 2011, Independent Sector), thus generating a total of **$319250** 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.

Figure 1. Distribution of volunteer hours by program or location of activity.



2 COMMUNITY INVOLVEMENT

2.1 Board of Directors

PVPLC is driven and supported by a seventeen-member volunteer board, which meets on a regular basis to strategize and direct the organization's mission. This year, the board contributed about 2144 hours in serving the Land Conservancy's mission.

2.2 Committees and Advisory Boards

The PVPLC maintains numerous committees and advisory boards 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

Committee volunteers donated a total of 1018 hours, with many committees meeting on a quarterly basis. 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:

- Audit Committee
- Finance Committee
- Fundraising Committee
- Investment Committee
- Science Advisory Panel
- Personnel/Human Resources Committee
- Special Events Committee(s)

2.3 Special Events and Office Assistance Volunteers

The PVPLC relies on individual volunteers and organized groups, such as the National Charity League (NCL), Los Hermanos, and Assisteens, 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 include the White Point Home Tour, the Edge of LA, PV Pastoral, Trump Wine and Beer Festival, and more.

In the office, volunteers handle routine tasks such as labeling newsletters, stuffing envelopes, assembling event materials, planning and preparation for special events, and much more. During the 2013 reporting year, office volunteers and special event volunteers, donated 848 hours of assistance.

2.4 Nature Walks

Nature Walk Leaders donated a total of 313 hours in 2013. Former PVPLC Board of Directors member Anke Raue coordinates 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 (in Appendix).

2.5 Internships

Interns dedicate much of their volunteer time to helping the Land Conservancy's mission to educate and restore. In 2013, 23 interns dedicated a total of 1965 hours to various projects such as educational outreach, field trips, weed mapping, native plant propagation, wildlife monitoring and much more.

3 STEWARDSHIP VOLUNTEERS

Stewardship volunteers play an integral part in helping PVPLC staff exceed our goals for restoring all managed open spaces. 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 KEEPERS help "keep an eye" on the Reserves on a monthly basis. Scout projects, local HERO Club chapters and nursery volunteers are also Stewardship volunteers that support Conservancy restoration efforts. These restoration efforts take place within the Palos Verdes Nature Preserve, Chandler Reserve, George F Canyon, White Point Nature Preserve and Navy Fuel Defense Support Point.

Stewardship volunteer highlights in 2013:

- 6398 hours of outdoor stewardship volunteer time
- Grants from Room&Board, Toyota TogetherGreen and REI Inc. to support volunteer programs, youth engagement, and restoration initiatives
- Facilitated the volunteering effort of several organizations and corporate give-back events including Investment Technologies Group, Keller Williams, Marymount California University, and Japanese Business Association.
- Initiated the new Volunteer Trail Watch program

3.1 Outdoor Volunteer Days

The PVPLC holds outdoor volunteer days nearly every Saturday of the year, held from 9am-12pm, excluding holiday weekends and during the month of August. The focus of these events is to restore native habitat, maintain the trail system, and do general clean-ups. All age groups are encouraged to participate though the common demographic of participants are volunteers under 18 years of age. There is a particular focus on getting young people involved as a mechanism 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.

A detailed account of volunteer days and group events are listed below. Events are listed chronologically by Preserve with the Palos Verdes Nature Preserve (PVNP) further separated by Reserve.

3.1.1 Palos Verdes Nature Preserve (PVNP)

Abalone Cove Reserve

April 30 – Six Whole Foods Torrance employees removed trash along the shoreline.

May 9 – 19 Keller Williams representatives eradicated *Coronilla* from the Coastal Trail area with loppers.

June 15 – Five volunteers continued to eradicate *Coronilla* from the Coastal Trail area.

September 21 – 250 volunteers removed marine debris and invasive iceplant as a part of the annual Coastal Cleanup Day in partnership with the Los Serenos and City of Rancho Palos Verdes.

October 25 – 29 Salvation Army volunteers planted 70 native shrubs in the new restoration area near Sea Dahlia Trail.

October 26 – 19 volunteers planted shrubs in the Sea Dahlia restoration area.

Agua Amarga Reserve

February 16 – 10 volunteers removed weeds are new shrubs.

March 23 – 33 volunteers, many from the HERO Club, weeded around shrubs and removed fennel with loppers.

June 29 – Four volunteers hand-watered shrubs in the restoration area.

Alta Vicente Reserve

April 12 – 13 Salvation Army volunteers planted deerweed in the Phase 2 area.
November 23 – 43 volunteers removed fennel and *Limonium perezii* from the Phase 3 area.

Portuguese Bend Reserve

January 5 – Six volunteers removed branches from pepper trees in Peacock Flats.

March 9 – 24 volunteers weeded around new shrubs in Peacock Flats.

March 30 – 14 volunteers weeded around shrubs in the mitigation site off upper Ishibashi Trail.

April 16 – 36 Whole Foods El Segundo employees removed mustard and fennel from the Ailor Trail area.

June 22 – Ten volunteers watered plants and installed rope around the Peacock Flats site.

July 20 – Seven volunteers watered plants in the Peacock Flats area.

September 14 – 14 volunteers watered new shrubs in the Peacock Flats area.

October 12 – 28 volunteers planted 80 shrubs in the Peacock Flats area.

October 19 – 12 volunteers planted 80 shrubs in the Peacock Flats area.

November 2 – 15 volunteers removed trash from the trails around upper Portuguese Bend.

December 14 – 48 volunteers removed fennel with loppers and dug out weeds in the Peacock Flats area.

Vicente Bluffs Reserve

September 7 – Kids Day with Whole Foods: 34 volunteers removed trash along the Pelican Cove shoreline and created seed balls which were launched onto the bluffs below.

3.1.2 Native Plant Nursery/DFSP

Activities in the Native Plant Nursery include transplanting seedlings from flats into individual containers, removing weeds from the containers. On rare occasion, groups help maintain the shade structure, build plant benches and repair the weed barrier cloth. The following dates detail the nursery's volunteer effort this year:

February 2 – Five volunteers removed iceplant around deerweed on top of the hill in butterfly habitat.

March 21 – 17 volunteers from Investment Technologies Group (ITG) replaced weed barrier cloth, removed weeds from containers and cleaned seeds.

April 4 – Seven volunteers transplanted 300 *Rhus integrifolia* and 320 *E. fasciculatum* seedlings.

May 18 – 13 volunteers transplanted 400 *Isocoma menziesii* and seeded 600 *Isomeris arborea* containers.

July 13 – Five volunteers transplanted 475 *Eriogonum fasciculatum.*

November 16 – 23 volunteers transplanted 49 *Rhus integrifolia,* 54 *Rhus ovata,* and 171 *Heteromeles arbutifolia*.

December 23 – Eight volunteers from Audubon YES transplanted 260 *Artemesia californica* and 140 *Encelia californica.*

3.2 Team Leader Program

The Team Leader program was started 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 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. In 2013, only one workshop was held which trained nine leaders at Portuguese Bend Reserve on August 26.

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 local 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.

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 2013, scout projects have accumulated 720 hours of volunteer service and are detailed below:

Chris Stefan – For his Eagle Scout project, Chris coordinated his troop to construct a shade house to keep birds and squirrels away from sprouting seedlings at the nursery.

Keith Nishihara – Alta Vicente's North Spur Trail has been opened up thanks to Keith and his troop.

David Williams III – David and his troop helped beautify the native plant nursery by constructing and repairing plant tables and repair torn shade cloth.

Enoch Park – Enoch and his troop installed weed barrier cloth as well as constructed plant benches and shade structures at the native plant nursery.

Grant Gage – Grant led his troop to construct nursery plant tables to provide growing space for Palos Verdes blue butterfly host plants.

3.4 Trail Crew Program

This year, the volunteer Trail Crew contributed a total of 614 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. This year, Leadership Training was offered for graduates and dedicated Trail Crew members through two workshops to help prepare volunteers to initiate additional trail projects with smaller teams outside of the

Table 2. Trail Crew training classes

Date	# Volunteer Hours	Location	Project/Skill Learned
January 12	42	Filiorum	Tread repair and spur trail closure on Rattlesnake Trail
February 9	33	Three Sisters	Erosion control and tread repair on McCarrell Canyon Tr
February 9	31	White Point	Introductory Class
March 9	54	Forrestal	Erosion control and tread repair on Dauntless Trail
April 13	36	Portuguese Bend	Pruning and fallen tree removal
May 11	33	Forrestal	Pruning and spur trail closure
June 8	42	Abalone Cove	Tread repair, erosion control and pruning in Sacred Cove
July 13	33	Three Sisters	Jack's Hat trail assessment
August 10	36	PVPLC Office	Introductory Class
August 10	22	PVPLC Office	Leadership Training Workshop
August 19	9	PVPLC Office	Leadership Training Workshop
September 14	48	Abalone Cove	Install check dams on Cave Trail
October 12	51	Three Sisters	Erosion control and tread repair on McCarrell Canyon Tr
November 9	60	Abalone Cove	Rock work on Sea Dahlia Trail
December 21	33	Forrestal	Grade dip repair on Pirate Trail

Participation, location and skills learned at each Trail Skills class.

monthly Trail Crew classes.

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.

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.

3.5 Keeping an Extra Eye on the Preserves Stewardship (KEEPERS) Program

In 2013, The KEEPERS program contributed 412 hours to monitoring the Preserve. The program was developed in April of 2007 to help staff monitor the nearly 1600 acres of land that is managed by the PVPLC. Keepers are volunteers who monitor an area within a preserve and fill out monthly property review forms. These forms are reviewed by staff and consolidated into a monthly report that is sent to all of the current Keepers.

The property review form is a one page form that requires some knowledge of basic trail maintenance and plant identification. The skills needed to fill out these forms are provided in a training session with a PVPLC staff person and are continually developed with an ongoing relationship between the volunteer, the PVPLC staff, and regular visits to the preserve being monitored. This volunteer opportunity is a one year commitment (a total of 12 visits) to the chosen preserve area. Some of the properties managed by the PVPLC are large enough to require more than one Keeper to monitor them. The person or group that accepts this responsibility also helps, if necessary, to train the following year's replacement volunteer Keeper. Currently, there is no term limit.

Table 3. KEEPERS for each Reserve

Reserve	# of Keepers
Abalone Cove Reserve	4
Agua Amarga Reserve	2
Alta Vicente Reserve	1
Linden H. Chandler	1
Filiorum Reserve	3
Forrestal Reserve	2
Portuguese Bend Reserve	5
San Ramon Reserve	2
Three Sisters Reserve	1
White Point Nature Preserve	2
Vicente Bluffs Reserve	1

3.6 Volunteer Trail Watch Program

This is the first year of the Volunteer Trail Watch Program, a program initiated to help educate trail users about appropriate trail use and monitor preserve misuse. Fifteen volunteers in the first cohort dedicated 1122 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 Barbara Ailor (an estimated 900 hours), the Volunteer Trail Watch coordinator, who dedicated much of her time to research and getting the program established with the first cohort.

4 GRANTS SUPPORTING VOLUNTEER ENGAGEMENT

In August 2013, REI awarded the PVPLC with a $10,000 grant to support stewardship volunteer events and programs with supplies and tools.

PVPLC partnered with PV/South Bay Audubon for a second TogetherGreen Innovation Grant to introduce the Audubon YES (Youth Environmental Service) program to Bill and Cindy Simon Technology High School in Watts to engage the predominantly-Latino student body in habitat conservation on the peninsula.

Room&Board awarded PVPLC a $50,000 grant, some of which is to support volunteer and education programs. They aim to build a strong partnership with PVPLC by supporting volunteer events, plant sales, and fundraising functions utilizing their unique resources.

5 FUTURE PLANS

Further improvements can be made in retaining, focusing and motivating Team Leaders of all ages and future recruitment may be focused toward environmentally-minded college students and active community residents, perhaps through internship opportunities. Additionally, the same goals can be applied towards the Trail Crew program's ability to motivate graduated volunteers to develop and execute trail projects independently. Leaders from the crew could be supported into leadership roles through one-on-one coaching and/or workshops.

APPENDIX G - 2013 TRAILS PROJECT LIST

The following is a list of trail projects planned for 2014 based on priority and funding opportunities. This list is intended to outline potential projects but may be amended. Projects not completed will carry over to the following year. In addition to the list below, smaller-scale projects may be accomplished by the Volunteer Trail Crew on an as-needed basis.

Reserve Name	Trail Name	Project Type	Priority
Abalone Cove	Cave Trail	Trail delineation and work to reduce erosion; signage at start of trail	Medium
	Smuggler's Cove Trail	Reroute: Create a connector trail between Portuguese Bend Loop trail to Sacred Cove View trail by delineating current foot path to Palos Verdes Drive South	High
	Sacred Cove (to beach)	Erosion repair	Low
	Bow and Arrow	Erosion repair on eastern portion	Low
	Sea Dahlia trail	Erosion control and closure of unauthorized spur trails with signage and fill-in planting	High
Agua Amarga	Lunada Canyon trail	Trail Delineation with vegetation trimming and signage	Low
Forrestal	Conqueror Trail	Erosion Repair	Medium
	Crystal Trail	Delineation and signage	Low
	Quarry	Closure of unauthorized spur trails with signage and fill-in planting	Low
	Cool Overlook	Closure of unauthorized spur trail with post-and-cable and fill-in planting	Medium
	Dauntless	Closure of unauthorized spur trails with signage and fill-in planting	Low
	Mariposa	Bridge and trail repair	Medium
	Vista	Closure of unauthorized spur trails with signage and fill-in planting	Medium
	Intrepid	Closure of unauthorized spur trails with signage and fill	Low
	Exultant	Closure of unauthorized spur trails with signage and fill-in planting	Low
	Cristo	Closure of unauthorized spur trails with signage and fill	Medium
	Packsaddle	Closure of unauthorized spur trails with signage and fill-in planting	Medium
	Flying Mane (west)	Fill sinkholes along trail	High

Reserve Name	Trail Name	Project Type	Priority
Portuguese Bend	Burma at Panorama	Install grades and dips to decrease water flow onto Panorama Trail	High
	North Sandbox	Trail Repair	Medium
	Ishibashi Trail	Closure of unauthorized spur trails with signage and fill-in planting; bicycle jump closure	Ongoing
	Peppertree Trail	Trail erosion repair	Medium
	Barn owl trail	Trail erosion repair	Medium
	Fire Station Trail	Closure or reroute	Medium
San Ramon	Switchback trail	Install bridge over gully	Medium
	Marymount trail	Delineate trail	Medium
	Connector trail to Friendship park	Trail delineation and creation	Low
Three Sisters	Sunshine Trail	Delineation in fuel mod area	Low
	Barkentine Trail	Closure of unauthorized spur trails with signage and fill-in planting	Medium
	Jack's Hat Trail	Trail delineation and erosion control	High
	McCarrell's Trail	Erosion control	Medium
Vista del Norte	Indian peak loop trail	Trail Delineation with vegetation trimming and signage	Low