APPENDIX A

Definitions

Adaptive Management: A species and habitat management program that combines data from monitoring species and natural systems with new information from management and targeted studies to continually assess the effectiveness and adjust conservation actions. Adaptive Management may include re-prioritizing monitoring efforts, as indicated by monitoring results and the resultant degree of management required for a given resource. The Adaptive Management program is designed to achieve the objectives of providing corrective actions where: 1) resources are threatened by land uses in and adjacent to the Preserve, 2) current management activities are not adequate or effective, or 3) enforcement difficulties are identified.

Additional Conservation Measures: The conservation measures beyond those provided by the Plan that are necessary to adequately protect species proposed to be added to the Permits.

Annual Report(s): The report(s) prepared pursuant to the requirements of Section 9.33 of the Plan.

Certificate of Inclusion: A certificate issued by the CITY to a Third-Party Participant under its jurisdiction and control that extend the CITY's Take coverage to such parties for Covered Activities carried out in accordance with the Take Authorizations (see Appendix D of the Implementing Agreement).

CDFW: Is the California Department of Fish and Wildlife.

CEQA: Is the California Environmental Quality Act (the California Public Resources Code §§ 21000 *et seq*.), and all rules, regulations, and guidelines promulgated there under, as amended.

CESA: Is the California Endangered Species Act (California Fish and Game Code §§ 2050 *et seq*.), and all rules, regulations, and guidelines promulgated there under, as amended.

Changed Circumstances: Pursuant to 50 C.F.R. § 17.3, changes in circumstances affecting a Covered Species or geographic area covered by the Permits that can reasonably be anticipated by the Parties and that can be planned for in the Plan or as part of the Permit. Changed Circumstances and the planned responses to those circumstances are integral requirements of the Plan and are identified in Section 6.10.2 of the Plan. Changed Circumstances are not Unforeseen Circumstances.

City Interim Resource Protection Ordinance or Urgency Ordinance: Protections that the CITY shall adopt to codify and implement the protections for the Covered Species contained in the Plan and Permit on an interim basis until the CITY's new regulations and ordinances set forth in Section 10.1.4 of this Agreement are adopted to implement the Plan and Permits. The City Interim Resource Protection Ordinance/Urgency Ordinance is attached as Exhibit F. Incidental take coverage will be extended to third persons and entities under the jurisdiction and control of the CITY through permits issued pursuant to the City Interim Resource Protection Ordinance, as described in this Agreement and in Section 6.3 of the Plan.

City Mitigation Lands: All currently owned and conserved/protected City lands plus all newly dedicated and currently unprotected City lands.

Comprehensive Report: Is a report prepared by PVPLC that will be prepared every three (3) years and will include both a synthesis of all biological data collected in the preceding three years and an analysis of overall trends in biological resources as described in Section 9.3.2 of the Plan. The Comprehensive Report will also include the Annual Report.

Conserve: To keep from loss, decay or depletion; maintain, protect. Conservation and preservation are similar terms and are used in much the same way. Preservation connotes the act of securing the land and its values, whereas conservation generally is more broad and includes activities such as management of the land and its resources.

Conservation: As defined in the Federal Endangered Species Act (ESA), the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary (ESA, Section 3[3]). In this NCCP/HCP, the term "conservation" also applies to all actions related to providing a viable habitat Preserve system in the City.

Conveyance or Conveyed: Legally transfer land into biological conservation status by means of fee title and conservation easement, or other method deemed acceptable in advance in writing by the Wildlife Agencies, to ensure the permanent protection of such lands for conservation purposes consistent with the Plan. If such conveyance is to an entity other than CITY or PVPLC, such entity must also be approved in advance in writing by the Wildlife Agencies.

Corridor: A defined tract of land, usually linear, through which a species must travel to reach habitat suitable for reproduction and other life-sustaining needs.

Covered Activities: Is the operation and maintenance and habitat management activities undertaken by the CITY or PVPLC; public land development undertaken by the City; and private land development undertaken by Third-Party Participants under the jurisdiction and control of the City that obtain development permits from the City consistent with Section 9.6 of this Agreement and as described in Section 5.0 and Tables 5-1 and 5-2 of the Plan and receive Incidental Take Authorization under the section 10(a)(1)(B) Permit and NCCP Permit, provided these activities are otherwise lawful.

Covered Management Activity: Those management or monitoring activities conducted in associated with the section 10(a)(1)(B) for this NCCP/HCP for the benefit of the Covered Species.

Covered Projects: A project included in the list of projects identified in Sections 5.2 through 5.4 and Tables 5-1 and 5-2 of the Plan that are authorized to receive Incidental Take coverage under the Permits.

Covered Species: Those ten (10) species for which Incidental Take Authorization is provided through the Permits issued in conjunction with this Agreement, Plan, and Permits. These species are discussed in the Table 1-1 of the Plan.

Effective Date: The date on which the Implementing Agreement takes effect. The Implementing Agreement shall be effective upon issuance of the Permits.

Endangered Species: Any plant or animal in danger of extinction throughout all or a significant part of its range and federally or State listed as endangered under the ESA or CESA, respectively.

Endangered Species Act or ESA: Federal Endangered Species Act (16 U.S.C. §§ 1531 *et seq.*), as amended, including all rules and regulations promulgated thereunder, as amended.

Environmentally Sensitive Habitat Area (ESHA): Is a Coastal Act term defined in Section 30240 of the California Coastal Act that requires: a) Environmentally Sensitive Habitat Areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas, and b) Development in areas adjacent to Environmentally Sensitive Habitat Areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

Erosion Control Plan: A plan that will be developed for any Covered Project or Activities in the Preserve or abutting the Preserve that might result in erosion as determined by the City. Potential erosion control measures include siltation fencing, straw bales, sand bags, etc.

Fiscal Report: A report that will be prepared jointly by the City and PVPLC and will be provided to the USFWS and CDFW yearly, as part of the Annual Report, which will also be included in the Comprehensive Report. The Fiscal Report will include the total expenditures made toward habitat acquisition to date and over the preceding year. The Fiscal Report shall include an accounting of all funds received and expended during the previous year to implement the Plan, including the amounts received and expended on habitat acquisition, management, and monitoring.

Fully Protected Species: Those species identified in California Fish and Game Code sections 3511 sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) or any successor statute.

Habitat: The combination of environmental conditions of a specific place occupied by a species.

Habitat Conservation Plan or HCP: Is a Plan prepared pursuant to section 10(a)(2)(A) of the ESA, (16 U.S.C. § 1539(a)(2)).

Habitat Restoration Plan: Is a plan that will describe how to actively establish a minimum of 5 acres, or a total of 15 acres every three years if exigencies prevent restoration of 5 acres each year, of native habitat in areas currently dominated by non-native habitat or on disturbed lands, based on an initial three (3)-year Habitat Restoration Plan developed by the PVPLC in coordination with the City and the Wildlife Agencies and approved by the Wildlife Agencies as described in Section 7.5 of the Plan. 250 total acres are anticipated over the Permit Term.

Harass: A form of incidental take under the ESA; defined in Federal regulations as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to, breeding, feeding or sheltering (50 C.F.R. § 17.3).

Harm: A form of incidental take under the ESA; defined in Federal regulations as an act that actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 C.F.R. § 17.3).

Implementing Agreement: Is the executed agreement intended to ensure implementation of the NCCP/HCP.

Impact Avoidance/Minimization Measures: Is the standard enforceable conditions of approval that the CITY will impose on all Covered Projects and Activities in the Plan Area to ensure implementation of the Plan in accordance with the Permits, as set forth in Section 5.0 of the Plan.

Incidental Take: Is the taking of Covered Species that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Linkage (Habitat): A component of the Preserve system established under this Plan, consisting of conserved habitat that provides connectivity between natural vegetation communities within the region with opportunities for breeding where generational movement is required.

Major Amendment: A proposed change to the Plan and/or this Agreement, as described in Section 6.8.2 of the Plan and Section 18.2 of this Agreement that will require an amendment to one or more of the Permits. Major amendments generally include, but are not limited to, proposed modifications to the Plan that would result in changes in the level of conservation provided for a Covered Species, higher levels of Take, significant changes in reserve design, additions to or exclusions of lands from the Plan Area, or greater or different impacts to the Covered Species and their habitats or to the environment generally, than were analyzed in the NEPA and CEQA documents prepared for the Plan. Major amendments must be processed in accordance with all applicable Federal and State laws and regulations including ESA, CESA, NCCP Act, NEPA, and CEQA.

Migratory Bird Treaty Act (MBTA): Is the Federal Migratory Bird Treaty Act (16 U.S.C. §§ 701 *et seq*.), including all regulations promulgated thereunder, as amended.

Minor Amendment: A proposed minor modification to the Plan or the Implementing Agreement, as described in Section 6.8.1 of the Plan and Section 18.1 of this Agreement that is approved in writing by the Wildlife Agencies and does not require an amendment to either of the Permits. Minor amendments include adjustments to the Preserve boundaries (Preserve Boundary Adjustments) that are approved by the Wildlife Agencies based on a finding that the adjustment will result in equal or higher biological value to the Preserve. Minor amendments generally include small changes to the NCCP/HCP that do not result in: 1) coverage for new activities or in 2) impacts to the Covered Species or their habitats, including a higher level of Take, or to the environment generally, that are different from or greater than those impacts analyzed in the NEPA and CEQA documents prepared for the NCCP/HCP. A Minor Amendment does not require an amendment to the Take Authorizations.

Mesopredators: Middle-sized (meso=middle) meat eaters such as gray fox, raccoon, skunk, and opossum.

Metapopulation: A network of semi-isolated breeding populations of a species that have some level of regular or intermittent migration and gene flow among them. (see also Population).

Mitigation: Measures undertaken to diminish or compensate for the negative impacts of a project or activity on the environment.

Mitigation Fee: Is the adopted by the City to fund the Habitat Restoration Fund for conveyance and permanent management of land within the Plan Area. The fee is described in Sections 5.1, 5.3.4, and 8.2.1.1 of the Plan.

NCCP Act: Is the California Natural Community Conservation Planning Act (codified in part at California Fish and Game Code §§ 2800, *et seq*.), as amended, including all rules and regulations promulgated thereunder, as amended.

NCCP/HCP or Plan: The City of Rancho Palos Verdes Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP), conservation analysis, and related maps/appendices.

NCCP Permit or State Permit: Is the authorization issued in accordance with this Plan and Agreement by CDFW under section 2835 of the NCCP Act to authorize the Incidental Take of a Covered Species, including Covered Species that are listed under CESA as threatened or endangered, and Covered Species that are candidates for listing, or that are Non-Listed species (e.g., species of special concern).

Natural Community Conservation Plan or NCCP: developed in accordance with the State's NCCP Act California Fish and Game Code (section 2800, *et seq*.), which provides comprehensive management and conservation of multiple wildlife and plant species, and which identifies and provides for the regional or area-wide protection and conservation of natural wildlife diversity through preservation of sufficient habitat in an appropriate configuration that enables species to persist, while allowing compatible and appropriate development and growth.

NEPA: The National Environmental Policy Act (42 U.S.C. § 4321-d 4335) as amended, and all rules and regulations promulgated thereunder, as amended. For the purposes of the Plan and Federal Permit, the USFWS is the lead agency under NEPA as defined in 40 C.F.R. § 1508.16.

Neutral Lands: Lands on private property that have one of the following three conditions: 1) extreme slopes (35% or greater slope), 2) are zoned Open Space Hazard or 3) contain deed restricted open space (e.g., Home Owner Association lots). These Lands are outside of the Preserve. Neutral Lands are currently undevelopable land located outside of the Preserve, and therefore is not subject to the restrictions that apply to properties within the Preserve, but that add biological function (e.g., facilitate wildlife movement) and value to the Preserve.

No Surprises Rule: Is the rule promulgated by USFWS and currently codified at 50 C.F.R. §§ 17.22(b)(5) and 17.32(b)(5) that extends certain assurances regarding future mitigation obligations to permittees obtaining Incidental Take Permits under section 10(a) of the Federal ESA.

Non-Listed Covered Species: Is a species that is not listed under ESA and/or CESA.

NPPA: Is the Native Plant Protection Act (California Public Resources Code §§ 1900 *et seq*.), including all regulations promulgated thereunder, as amended.

Party or Parties: The Parties mean the signatories to this Agreement, namely the USFWS, CDFW, the City of Rancho Palos Verdes, and Palos Verdes Peninsula Land Conservancy (PVPLC).

Permits: Permits mean the Federal Permit issued pursuant to section 10(a)(1)(B) of the ESA and the "Take Authorization" (state Permit) issued pursuant to section 2835 of the State NCCP Act.

Plan Area: The boundaries of the City of Rancho Palos Verdes NCCP/HCP, consisting of approximately 8,616.5 acres within the City's municipal boundaries, Los Angeles County, California, as depicted in Figure 2-1 of the NCCP/HCP.

Point Location: Data incorporated in the database for the Plan that was collected from various sources and studies that occurred on the Palos Verdes Peninsula from 1976-1998 (2004 discovery of *Crossosoma californicum*). Most point locations have high precision (see Section 2.2.2 of the Plan); some point locations are cumulative observations for the same location and some point locations are a single observation.

Population: A group of individuals of a given species that inhabits a relatively well defined geographic area and has the opportunity to interbreed freely.

Preserve: Lands in the Plan Area that will be conserved and managed to meet the species and habitat requirements of the Plan and Permits, including previous mitigation lands that are either currently protected through conservation easements held by the PVPLC or the City (baseline) and City mitigation lands that will be conveyed and added to the Preserve during the Permit Term. Assembly of the Preserve is described in Section 4.0 of the Plan and in Section 6.1 of this Agreement. Lands in the Preserve will be subject to habitat management and restoration actions described in Sections 7.0 and 9.0 of the Plan. In order to facilitate management, the Preserve has been divided into 12 geographical management units referred to as "Reserve Areas" as shown in Figure 4-4 of the Plan.

Preserve Access Protocol or PAP: means the plan that will be developed by the City and its Preserve Land Manager within 90 days of issuance of the Permits to facilitate access by utility agencies and the City's Public Works Department to areas within the Preserve and must be approved by the Wildlife Agencies. The Preserve access protocol will contain measures, including the Impact Avoidance/Minimization Measures provided in Section 5.0 of the Plan, to avoid and minimize, to the maximum extent possible, environmental damage, including direct and indirect impacts to habitat and Covered Species. Until the PAP is approved by the Wildlife Agencies, the City and PVPLC shall ensure all access to the Preserve is consistent with the minimization measures described in Section 5.0 of the Plan.

Preserve Boundary Adjustment: Is a change in the boundaries of the Preserve specified under the Plan, as described in Section 6.8.1 of the Plan and Section 21.1 of the Implementing Agreement that has been approved by the Wildlife Agencies upon their determination that the adjustment will result in equal or higher biological value to the Preserve. This would be considered a Minor Amendment to the Plan.

Preserve Habitat Manager or Preserve Manager: The Palos Verdes Peninsula Land Conservancy (PVPLC), the CITY's designated Preserve Habitat Manager for the Plan and the entity responsible for overseeing the day-to-day and long-range preserve management activities within the Preserve pursuant to the Palos Verdes Nature Preserve Management Agreement with the City, as described in Section 9.0 of the Plan, including, but not limited to management of resources, restoration of habitat, reporting, and enforcement of open space restrictions.

Preserve Habitat Management Plan (PHMP): The Preserve Habitat Management Plan developed for the Permits as described in Sections 9.3 of the Plan. The PHMP consists of the following four plans: 1) Initial Management and Monitoring Plan; 2) Predator Control Plan; 3) Habitat Restoration Plan; and, 4) Targeted Exotic Removal Plan for Plants TERPP).

Project(s): Any activity that has biological impacts and is undertaken by the City or involves the issuance of a lease, permit, license, certificate, or other entitlement by the City. "Projects" are well-defined actions that occur once in a discrete location whereas "Activities" are actions/operations that occur repeatedly in one location or throughout the permit area. The take authorization from the Wildlife Agencies in the Plan covers both "Projects" and "Activities."

Public Lands: Properties owned by the City of Rancho Palos Verdes means land owned by the City of Rancho Palos Verdes, as depicted in Figure 4-2 of the Plan.

Public Use Master Plan (PUMP): Is the City's Public Use Master Plan that describes public access within the Preserve. The City's PUMP covers the CITY's Conceptual Trails Plan, including the Preserve Trails Plan component. The PUMP is a Covered City Project under the Plan as described in Sections 5.2.8, 5.4, and 9.2.1 of the Plan.

Palos Verdes Peninsula Land Conservancy (PVPLC): The Palos Verdes Peninsula Land Conservancy which will contribute lands and act as the City's designated habitat manager to the "Preserve" in accordance with the Plan and the Implementing Agreement. PVPLC is a certified 501(c)(3) nonprofit corporation and conservation organization that has been actively working to "preserve land and restore habitat on the Palos Verdes Peninsula" since 1988. The City and PVPLC have entered into a separate Palos Verdes Nature Preserve Management Agreement (Management Agreement) that will allow PVPLC to act as the City's designated NCCP/HCP Preserve Habitat Manager. PVPLC is also a Permittee under the NCCP/HCP for take authorization related to implementation of specified biological management and monitoring activities as agreed to by the City and PVPLC under the Management Agreement and this Plan (Section 8.1 of the Plan).

Qualified Biologist: A biologist that either possess ESA section 10(a)(1)(A) permits for the target species or is approved by the Service, in coordination with the CDFW, prior to conducting surveys.

Rare: A species (plant or animal) existing in such small numbers throughout all or a significant portion of its range that it may become endangered or threatened (as defined by CESA or ESA) if its environment worsens.

Reintroduction Plan: A plan that provides guidance to minimize risks to source populations, manage the genetic composition of the reintroduced population, and maximize the likelihood of successful establishment of the reintroduced population.

Reserve Area: The Preserve has been divided into 12 geographical management units referred to as "Reserve Areas" (see Figure 4-4 of the Plan).

Section 4(d) Special Rule: Is the special rule for the coastal California gnatcatcher, published by the USFWS on December 10, 1993 (58 Federal Register 65088) and codified at 50 C.F.R. § 17.41 (b), which defines the conditions under which Incidental Take of the species is considered lawful under the ESA. Under the 4(d) rule, incidental take of the coastal California gnatcatcher is not considered a violation of the take prohibition under section 9 of the ESA if such take occurs within a jurisdiction that is enrolled in and actively engaged in preparing an NCCP under the State of California's NCCP Act of 1991 and results from activities conducted in accordance with the NCCP Conservation and Process Guidelines; or such

take results from activities conducted in accordance with an NCCP Plan that has been prepared, approved and implemented in accordance with the NCCP Act and the NCCP Conservation and Process Guidelines and approved by USFWS through issuance of written concurrence that the NCCP Plan meets the standards for issuance of an incidental take permit under 50 C.F.R. § 17.32(b).

Section 7 Consultation: Is the process under section 7 of the ESA, 16 U.S.C. §§ 1531, 1536(a)(2), wherein Federal agencies must consult with the National Marine Fisheries Service (NMFS) for marine and anadromous species, or the USFWS for freshwater species and terrestrial wildlife, if they are proposing an "action" that may affect listed species or their designated critical habitat. "Action" is defined broadly to include funding, permitting, and other regulatory actions and extends to local government projects that require a Federal permit or receive Federal funding. See 50 C.F.R. § 402.02.

Section 10(a) Permit or Federal Permit: Is the permit issued by the USFWS to the City and the PVPLC under section 10(a)(l)(B) of the ESA pursuant to 16 U.S.C. § 1539(a), authorizing the Incidental Take of Covered animal Species.

Special Purpose Permit: A permit issued under the Migratory Bird Treaty Act, 16 U.S.C. pursuant to 50 C.F.R § 21.27 for the Take of the following two listed Covered Species: coastal California gnatcatcher and cactus wren (if listed in the future).

Species: Any distinct population of organisms (plant or animal) that interbreed when mature.

Species of Special Concern (SSC): Species of Special Concern means a species, subspecies, or distinct population of an animal native to California that is not currently listed and does not currently warrant listing under CESA or but may in the future warrant listing under the statute.

Take and Taking: Take shall have the meanings provided by the Federal and state ESAs and shall apply to both listed and Non-Listed Covered Species in the Plan. Loss of Covered plant species that occurs under the Federal Permit shall be considered Take for purposes of assessing any outstanding mitigation owed on account of Take of Covered Species during the term of the Federal Permit under 50 C.F.R. §§ 17.22(b)(7) and 17.32(b)(7).

Take Authorization: Is the authorization to incidentally take the Covered Species under the Federal section 10(a)(1)(B) Incidental Take Permit or pursuant to section 2835 of the State NCCP Act.

Targeted Exotic Removal Plan for Plants (TERPP): A key component of the PHMP and Adaptive Management program to control for invasive species in the Preserve as described in Sections 6.10.2.5, 7.6, and 9.0 of the Plan.

Targeted Lands: Is Federal and private properties shown in Figure 4-1 of the Plan that contain natural vegetation and provide biological value to Covered Species and other wildlife. These areas could benefit from habitat stewardship and the private properties may be formally dedicated to the Preserve with conservation easements and committed habitat management as described in Sections 7.0 and 9.0 of the Plan. Conservation of these properties is not required under the terms of the Plan.

Third-Party Participants: Is a third-party under the jurisdiction and where the CITY has land use control that receive Take Authorization for Covered Projects and Activities under the Plan through the

CITY local development review/approval process or receives a Certificate of Inclusion to ensure compliance with the terms and conditions of the Plan and Permits in accordance with the Plan and Section 9.6 of this Agreement. Third-Party Participants specifically include landowners and public and private entities undertaking land development Covered Activities in conformance with an approval granted by the CITY in compliance with the Plan, Permits, and this Agreement.

Threatened Species: Those species or subspecies listed as threatened under the ESA and/or CESA.

Trump National HCP: Is the existing Habitat Conservation Plan (Trump National/Ocean Trails HCP, PRT-799348) which is covered by an incidental take permit issued by the USFWS in 1997 to address potential impacts of golf course construction and operation to eight species that were covered under the HCP, including the coastal California gnatcatcher and coastal cactus wren, and subsequently amended in 2001 to include the Palos Verdes blue butterfly (TE-032423-1, TE-037483-0). The Trump National Golf Course (Ocean Trails) is described in Section 4.2.1 of the Plan, and its associated conservation area is included within the Plan Area and CITY's Preserve.

Vision Plan: A Plan, adopted by the Rancho Palos Verdes City Council in 2008, which establishes a vision, goals, concept designs and design guidance that seek to cohesively link key open space properties and public lands along the coast, including the NCCP properties located within the Palos Verdes Nature Preserve.

Unforeseen Circumstances: As provided in 50 C.F.R. § 17.3, the term "Unforeseen Circumstances" shall mean changes in circumstances affecting a species or geographic area covered by the Plan that could not reasonably have been anticipated by the CITY, PVPLC, or Wildlife Agencies, at the time of the Plan's negotiation and development, and that result in a substantial and adverse change in the status of a Covered Species as described in Section 6.10.1 of the Plan and Section 10.3 of the Implementing Agreement.

USFWS: Is the United States Fish and Wildlife Service, an agency of the United States Department of the Interior.

Wetlands: Generally those areas that are inundated or saturated by surface or ground water at a frequency or duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. For purposes of the Plan, wetlands are those lands that contain one or more of the naturally occurring wetland communities (e.g., riparian scrub) described in Section 2.2 and 6.7 of the Plan including those listed on Table 2-1 of the Plan. Impacts to state and/or Federal jurisdictional wetlands are not covered under this Plan or Permit.

Wildlife Agencies: The USFWS and CDFW, collectively.

APPENDIX B

Species-Specific Conservation Analyses and Conditions for Coverage

APPENDIX B-1

SPECIES-SPECIFIC ANALYSES AND CONDITIONS FOR COVERAGE

This Appendix is the analysis of impacts from City of Palos Verdes (City) and Private Covered Projects and Activities for the City of Rancho Palos Verdes Natural Communities Conservation Plan/Habitat Conservation Plan (Plan or NCCP/HCP). Mitigation for these activities primarily consists of dedicating currently unprotected, biologically valuable, City-owned land and Palos Verdes Land Conservancy (PVPLC)-owned land (Plan Conservation Lands). Lands, or portions thereof, which were purchased using state and/or Federal funding do not serve as mitigation for impacts under this Plan; however, these lands may be subject to habitat restoration where such actions will benefit Covered Species. Lands purchased using state and/or Federal acquisition funds within the City's Plan Area enhance the Plan by providing baseline conservation, which the City's conservation strategy builds upon. Additionally, approximately 258.7 acres of land that were previously conserved to mitigate for previous projects (Previous Mitigation Lands) will be dedicated to the Preserve: Trump National/Ocean Trails[1] Habitat Conservation Plan (HCP) Property within the Ocean Trails Reserve (66.9 acres), Switchbacks Property within the San Ramon Reserve (94.5 acres), Shoreline Park within the Ocean Trails Reserve (45.7 acres of the 50.7-acre property), and Ocean Front Estates Property within the Vicente Bluffs Reserve (51.6 of the 71.5-acre open space property). These existing conservation lands are not considered mitigation for Covered Projects and Activities in the Plan (Section 4.2.1 in the Plan), but are factored into the overall Preserve design as "baseline" conserved lands. Table 1 shows the distribution of mapped vegetation categories throughout the Plan Area.

Specifically, the City's primary conservation strategy is to dedicate 1,402.4 acres of habitat for the NCCP/HCP Preserve assembly. Of this total, 61.5 acres were acquired in association with a grant to the State of California through the USFWS's Section 6 Habitat Conservation Plan Land Acquisition Program. Another 798 acres of land in Portuguese Bend, Agua Amarga, Upper Filiorum, and Forrestal were purchased by the City for conservation in support the NCCP/HCP with funds provided by the City, PVPLC, California Coastal Conservancy, Wildlife Conservation Board, City of Rolling Hills, County of Los Angeles, and California State Dominquez Hills. Of the 798 acres, funding for 236.3 acres was contributed from non-state funding sources. An additional 263.6 acres are being dedicated directly by the City. Thus, the City is contributing a total of 499.9 acres to mitigate for all Covered City Projects and Activities (Figure 4-2). The remainder of the Preserve is comprised of 20.7 acres owned by PVPLC, and 258.7 acres of City-owned land, or land that will eventually be owned by the City, which has been previously dedicated for conservation as mitigation for certain private projects. The City and PVPLC will be responsible for the management of the entire 1,402.4-acre Preserve.

[1] Names of individual Preserve areas follow the convention established in the Plan.

Table 1. Vegetation Categories throughout the Plan Area Table

Vegetation Category	Preserve	Neutral Lands	Lands Outside Preserve/Neutral Lands	Grand Total
Agriculture	2.9	0.2	14.6	17.6
Cliff Face	7.4	1.3	0.0	8.8
Coastal Sage Scrub	582.2	354.6	89.8	1,026.8
Developed	51.8	967.6	4,964.9	5,984.5
Disturbed Vegetation	30.8	14.9	119.2	164.9
Exotic Woodland	37.5	14.5	23.5	75.4
Grassland	470.9	216.5	262.8	950.2
Riparian Scrub	2.3	0.1	0.2	2.5
Rocky Shore/Intertidal	7.3	39.3	12.1	58.8
Ruderal Habitat	54.5	9.8	22.7	86.9
Saltbrush Scrub	6.6	0.6	0.0	7.3
Southern Cactus Scrub	66.6	28.2	4.9	99.7
Southern Coastal Bluff Scrub	81.6	46.7	4.8	133.2
Grand Total	**1,402.4**	**1,694.3**	**5,519.6**	**8,616.6**

*Neutral Lands are not subject to NCCP/HCP management requirements.

To assess impacts and anticipated conservation benefits to Covered Species, survey data prior and up to the year 1997 were used because they provided a complete set of data throughout the entire Plan Area (Table 2). These data serve as the baseline and were used to develop the impact analysis for the City-approved 2004 Plan. Table 2 represents either individuals or distinct populations with multiple individuals that were observed (e.g., presence/absence) over several years (Ogden 1999). Ocean locoweed and coast buckwheat are included because they are the specific hostplant species for the Palos Verdes blue and El Segundo blue, respectively. Woolly seablite was not included in this initial dataset; therefore, this species is not included in Table 2 but is included in the 2006-2013 dataset provided in Table 3.

Table 2. Results from species surveys throughout the Plan Area

	Preserve		Outside Preserve		Grand Total
Species	Plan Conservation Land	Previous Mitigation Land	**Neutral Lands**	**Other**	
Aphanisma (*Aphanisma blitoides*)	2	22	3	0	27
South coast saltscale (*Atriplex pacifica*)	3	6	0	0	9
Catalina crossosoma (*Crossosoma californicum*)	3	0	0	0	3
Island green dudleya (*Dudleya virens ssp. insularis*)	5	16	13	0	34

Santa Catalina Island desert-thorn (*Lycium brevipes var. hassei*)	3	0	0	0	3
Palos Verdes blue (*Glaucopsyche lygdamus palosverdesensis*)	9	4	2	4	19
Ocean locoweed (PVB) (*Astragalus trichopodus var. lonchus*)	40	13	13	19	85
El Segundo blue 1. (*Euphilotes battoides allyni*)	0	0	1	0	1
Coast buckwheat (ESB) (*Eriogonum parvifolium*)	8	4	6	1	19
Coastal California gnatcatcher (*Polioptila californica californica*)	121	27	39	4	191
Coastal cactus wren (*Campylorhynchus brunneicapillus*)	135	54	71	19	279

Since 2006, PVPLC has conducted routine plant surveys for areas within dedicated City open space and PVPLC-owned lands that are proposed to be included as part of the NCCP/HCP Preserve (PVPLC 2013). The 2006-2013 PVPLC data is used in this conservation analysis to update the current baseline for plants within the proposed Preserve; however, with some exceptions these data do not inform the analysis of potential impacts outside of the Preserve, including Neutral Lands. It is expected that outside the Preserve, conditions have not substantially changed from the 1997-1998 City-wide baseline surveys. More recent survey and vegetation data will be used as the basis for management and monitoring required under this Plan. Table 3 shows population counts of individuals within the Preserve during these surveys, rather than observation points for presence/absence throughout the entire Plan Area as shown in Table 2.

Table 3. Individual Plant Counts within the Preserve

Species	**2006**	**2007**	**2008**	**2010**	**2011**
Aphanisma (*Aphanisma blitoides*)	0	0	≥371	≥250	300
South coast saltscale (*Atriplex pacifica*)	136	0	376	5	17
Catalina crossosoma (*Crossosoma californicum*)	540	--	≥198	783	--
Island green dudleya (*Dudleya virens ssp. insularis*)	3,430	550	408	240	--
Santa Catalina Island desert-thorn (*Lycium brevipes var. hassei*)	750	300	--	605	--
Woolly seablite (*Suaeda taxifolia*)	455	55	48	122	--

Aphanisma (*Aphanisma blitoides*)

USFWS: No Status
CDFW: No status
CNPS: List 1B.2

Background

Aphanisma is a small annual herb that occurs on coastal shrublands, coastal dunes, and bluffs or slopes on sandy substrates or clay soils from less than 200 meters (650 feet) in elevation (Wetherwax *et al.* 2013; *data from* CNDDB 2003; CNPS 2001). It is a fleshy species that blooms from March to June (CNPS 2001). Aphanisma is presumably wind-pollinated with self-dispersing seeds (McArthur and Sanderson 1984). As an annual plant subject to prevailing weather and rainfall conditions, aphanisma experiences dramatic annual fluctuations in population size. Historically, aphanisma occurred from Ventura County southward to Baja California, Mexico, and on most of the Channel Islands. It is now considered extirpated in much of the northern portion of its range and is facing steep declines in all other mainland locations as well (CNPS 2001). Mainland populations have declined due to recreational use of beaches and development along the coast (Reiser 1994).

In 1992, aphanisma was found in the Plan Area within Abalone Cove Reserve along the southern coastal bluff scrub from the west side of Portuguese Point to the Rancho Palos Verdes/San Pedro city limit (*data from* CNDDB 2003). One plant was observed at this location growing between sage scrub and remnants of *Pelargonium* hybrids (*data from* CNDDB 2003). The aphanisma population in the Abalone Cove Reserve is subject to dramatic population fluctuations tied to seasonal climatic variability with no observations during surveys in 2006 or 2007, but more than 250 individuals in 2008, 2010, and 2011 (PVPLC 2013). The species also occurs within the Plan Area in and immediately north of Trump National/Ocean Trails Property south to the City-owned Shoreline Park within the Ocean Trails Reserve.

Aphanisma occurs primarily on bluffs where it may be subject to limited trampling but is otherwise partially protected from impacts associated with development due to its proximity to steep slopes. Aphanisma is threatened by urbanization, recreational development, and foot traffic, and by feral herbivores on Santa Catalina, Santa Cruz, and Santa Rosa islands (CNPS 2001). Exotic plant invasions and dewatering for landslide control are also significant threats to this species (CNDDB 2003).

Within the Plan Area, potential habitat for aphanisma is defined as all southern coastal bluff scrub. There are 133.2 acres of potential aphanisma habitat in the Plan Area, of which 81.6 acres are located in the proposed Preserve and 46.7 acres occur outside the Preserve in Neutral Lands. Of the 81.6 acres of aphanisma habitat within the Preserve, 55.0 acres (or 67%) are within Previous Mitigation Lands. Potential habitat for aphanisma is restricted to areas within the southern coastal bluff scrub vegetation community with specific soil types (e.g., clay, sandy loam soils). Therefore, the conservation analysis for this species relies primarily on the known

distribution of aphanisma in the Plan Area from occurrence data (Table 2) as well as more specific population data (Table 3).

According to surveys through 1997 covering the Plan Area (Table 2), 27 locations of aphanisma were observed, of which 24 are within the proposed Preserve and 3 occur outside the Preserve (within Neutral Lands within the Trump National/Ocean Trails HCP Property). Of those within the proposed Preserve, 22 were observed in Previous Mitigation Lands (18 in the Trump National/Ocean Trails HCP Property and 4 in Shoreline Park) and 2 within the Abalone Cove Reserve. Each of the 24 within-Preserve observations represented either multiple or individual plants. Subsequent surveys that counted each individual for these previously observed locations show no aphanisma observations in 2006 or 2007, at least 371 individuals in 2008, at least 250 individuals in 2010, and 300 individuals in 2011 (Table 3). Abalone Cove Reserve is the only proposed Plan Conservation Land Preserve area that currently supports aphanisma (Figure 1). Aphanisma is a covered species in the Trump National/Ocean Trails HCP (Section 4.2.1 of the Plan).

Conservation Goals

At a minimum, conserve and manage the existing aphanisma population (two locations) within the Plan Conservation Lands at Abalone Cove Reserve. The other locations of this species are already conserved at Ocean Trails Reserve (Trump National/Ocean Trails HCP Property and Shoreline Park). Additionally, restoration/enhancement projects should include efforts to expand the Abalone Cove population (in terms of occupied area as well as number of individuals) and efforts to establish three new populations in suitable habitat within the Preserve to guard against stochastic events. The establishment of aphanisma populations into unoccupied habitat as part of ongoing restoration will be considered whenever feasible.

Conservation Strategy

- The known populations within the Plan Conservation Lands (Figure 1) will be monitored at three-year intervals and managed to protect against threats, particularly to address establishment/expansion of invasive plants, as well as to prevent human trespass.
- Suitable, unoccupied habitat within the Preserve (e.g., Abalone Cove Reserve, Ocean Trails Reserve) will be targeted for seeding with aphanisma (if propagation techniques are established), possibly with additional habitat enhancement/restoration measures (depending on the specific location), in an effort to establish, re-establish and/or expand population(s) to protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Impacts to southern coastal bluff scrub are limited to 2 acres within the Plan Area, and habitat avoidance and minimization measures will be implemented where impacts could occur to aphanisma.
- Potential impacts to the existing populations at Abalone Cove, as well as to any newly established populations in the Plan Conservation Lands, will be avoided or minimized through advance planning (pre-project surveys, incorporation of avoidance and minimization measures, best management practices, etc.) and follow-up habitat restoration (where appropriate). The existing populations at the Ocean Trails Reserve locations will

be adequately protected by the existing Trump National/Ocean Trails HCP. Because any individual project may not be able to perform habitat restoration at/near the location of the impact due to steep, erosive slope and other logistics, the conservation strategy relies on a broader effort to protect and expand aphanisma populations rather than specific mitigation measures for individual project impacts. Furthermore, the species tends to occur as scattered individuals or clumps of individuals, therefore potential impacts at any particular project location are expected to be largely able to avoid plants, and/or would only affect a small number of plants at any location.

Coverage Determination

Coverage Determination: **Covered**

Rationale. All but 4.8 (3%) of 133.1 acres of potential aphanisma habitat within the Plan Area are either in the Preserve (81.6 acres) or Neutral Lands (46.7 acres). Although there is no commitment for active aphanisma management within Neutral Lands, no impacts are authorized. The City has committed to limiting impacts within the 81.6 acres of southern coastal bluff scrub to 2 acres throughout the Preserve (NCCP/HCP Table 5-1). Given the highly restricted distribution of aphanisma and limitation on impacts in southern coastal bluff scrub within the Preserve, direct impacts from Covered Projects and Activities are highly unlikely, and the primary threats to the species are indirect anthropogenic impacts that can best be ameliorated with active habitat management and targeted reseeding. For the proposed 2 acres of impact with southern coastal bluff scrub habitat, the impact avoidance and minimization measures for Covered Projects and Activities (Section 5.5 of the Plan) will be followed. Therefore, through the commitment for habitat management, enhancement, and restoration, the Plan is anticipated to benefit aphanisma. Potential impacts to the species will therefore be offset by active management, opportunistic seeding, and impact avoidance/mitigation measures.

Conditions. Surveys will continue to be conducted every 3 years within the existing fixed locations (PVPLC 2013), and the Preserve Manager will evaluate potential habitat restoration or enhancement opportunities as part of routine habitat management. Habitat restoration, including clearing of ice plant or other exotic plants adjacent to populations, unauthorized trail closures, and seeding for aphanisma will be included in the PHMP.

Pre-project surveys will be conducted throughout potential aphanisma habitat prior to approving Covered Activities to assess occupancy and to determine avoidance and minimization measures. If an existing population, as defined in Figure 1, will be impacted by Covered Projects/Activities, the project applicant will engage the Preserve Manager and work with the Wildlife Agencies to prepare and implement a habitat restoration plan, to be approved by the City and Wildlife Agencies, that will ensure no net loss of aphanisma within the population. Habitat restoration will include use of seed collected from the project site or from previously collected seed. Impacts to newly discovered or established populations throughout the Plan Area will be offset with equivalent habitat restoration. No more than two populations will be impacted unless additional populations are located or successfully established in advance of the impact, and the City, PVPLC and Wildlife Agencies, through annual coordination meetings, document that the status

of the species in the Preserve is stable and adequately conserved. Trails will be maintained, posted and patrolled to avoid/minimize encroachment into occupied habitat.

Conservation Analysis

Conservation and Impact Levels. There are no known aphanisma outside of the Preserve and Neutral Lands and impacts to southern coastal bluff scrub habitat will be limited to 2 acres within the Plan Area. Moreover, habitat avoidance and minimization measures will be implemented where impacts to potential habitat for aphanisma could occur. With these provisions is place, it is not anticipated that any direct impacts to aphanisma in the Neutral Lands would occur; however, since Neutral Lands do not have a commitment for active management (unless formally enrolled into the Preserve) there is still a potential for indirect effects to occur. The only known aphanisma occurring in Neutral Lands are part of the Ocean Trails Reserve population, and the plants within the Neutral Lands are only a very small portion of this population (three of the 21 locations are within Neutral Lands). The majority (18 locations) of the plants are broadly distributed within the protected open space on the Trump National/Ocean Trails HCP Property and considered adequately protected by the measures included in the Trump National/Ocean Trails HCP. The remaining aphanisma are within the Abalone Cove Reserve (2 locations) and Shoreline Park (4 locations). There are no proposed Covered Projects or Activities currently planned that would affect aphanisma within the Abalone Cove Property; however, the Miscellaneous Drainage Repair in the Landslide Area project has the potential to impact aphanisma. The location of this project is dependent on hydrogeological conditions that cannot be precisely anticipated until site-specific studies are completed. The Abalone Cove Beach Project also has the potential to result in direct and/or indirect impacts to aphanisma; however, the City will avoid impacts to the known population through coordination with the PVPLC to verify known aphanisma locations, project design, and implementation of the impact avoidance/mitigation measures for Covered Projects/Activities identified in Section 5.5 of Plan. These measures are expected to prevent any Covered Project or Activity from eliminating an existing or any newly established aphanisma location.

The PHMP is anticipated to improve habitat conditions for aphanisma and this species' distribution within the Preserve is anticipated to expand as a result. The PVPLC will focus habitat enhancement efforts in areas that are unlikely to be impacted by Covered Projects and Activities; however, given the unpredictable location of the landslide repair project, some impacts may occur. Prior to any habitat enhancement efforts for this species, PVPLC shall coordinate with the City to verify that the proposed location is not anticipated to be impacted by any Covered Projects and Activities. If any were to occur within the 2 acres of southern bluff scrub habitat, they are expected to be very small and limited in scope/distribution and not anticipated to affect the viability of the existing aphanisma population within the proposed Plan Conservation Lands. The populations within the Previous Mitigation Lands will be adequately managed under the Trump National/Ocean Trails HCP. Overall, the Plan is expected to protect and expand aphanisma populations within the Plan Area.

Preserve Configuration Issues. Within the Plan Area, potential habitat for aphanisma occurs as relatively small stands of habitat that will likely be subject to edge effects. The NCCP/HCP

includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan), and measures for Covered Projects and Activities adjacent to the Preserve (Section 5.6 of the Plan) that will be implemented for projects in existing and/or potential habitat for aphanisma to address potential edge effects to this species within the Preserve.

Effects on Population Viability and Species' Distribution. With implementation of the Plan, very few direct impacts are anticipated to occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing disbursed aphanisma population in the Plan Area. Active management for this species within the Preserve, which is the best safeguard against indirect impacts that are the primary threats, would occur under the Plan's PHMP. The PHMP will also provide additional suitable habitat for this species in Abalone Cove Reserve, Ocean Trails Reserve, and possibly other suitable locations, and provide the opportunity to expand this species' distribution in the Preserve.

Adaptive Management. As part of PVPLC's habitat management of the Preserve, seed will be collected and used for propagation, and applied based on monitoring results (e.g., in response to low abundance counts). The seed collected will be incorporated into the 5 acre per year restoration requirements, where appropriate conditions are identified, that are included as part of this Plan (Section 7.5 of the Plan). These restored areas are required to be monitored and reported for 5 years (Section 7.5.5 of the Plan).



Figure 1. Distribution of Aphanisma and south coast saltscale within Plan Conservation Lands.

***South Coast Saltscale (Atriplex pacifica*)**

USFWS: No status
CDFW: No status
CNPS: List 1B.2

Background

South coast saltscale occurs in coastal bluff scrub, coastal sage scrub, and alkali playas (CNPS 2001). This small, wiry, prostrate annual herb grows in openings between shrubs in xeric, often mildly disturbed areas. As an annual plant subject to prevailing weather and rainfall conditions, south coast saltscale experiences dramatic annual fluctuations in population size. Historically, South Coast saltscale was known from Santa Rosa, Santa Cruz, and Anacapa islands; San Nicholas Island and coastal Ventura County; Santa Catalina and San Clemente islands and

coastal Los Angeles County; Orange, Riverside, San Diego counties, as well as Arizona and Baja California and Sonora, Mexico (CNPS 2001; *data from* CNDDB 2003). South coast saltscale is severely declining throughout its coastal range on the mainland, and it has been recommended that all mainland populations be protected (Reiser 1994).

Threats to south coast saltscale include urbanization, recreational development, and foot traffic (CNPS 2001, Skinner and Pavlik 1994). Extant populations of this species occur primarily on coastal bluffs that may be partially protected from impacts associated with development due to their proximity to steep slopes. Within the Plan Area, potential habitat for south coast saltscale is defined as all coastal sage scrub and southern coastal bluff scrub. There are 1,159.3 acres of south coast saltscale habitat in the Plan Area, of which 663.5 acres are in the Preserve and 401.1 acres are in Neutral Lands. Of the 663.5 acres of south coast saltscale habitat within the Preserve, 101.6 acres (15%) are within Previous Mitigation Lands. South coast saltscale is typically found in open patches frequently associated with disturbance within the coastal sage scrub and southern coastal bluff scrub vegetation communities; therefore, potential habitat within these vegetation communities is more restricted than these vegetation communities.

According to surveys through 1997 covering the Plan Area (Table 2), 9 locations of south coast saltscale were observed within the Plan Area, all within the Preserve. Of the nine known occurrences, six of the observations are within Previous Mitigation Lands (4 in Trump National/Ocean Trails HCP Property and 2 in Shoreline Park), and three locations in the Plan Conservation Lands, specifically the Abalone Cove Reserve (Figure 1). Subsequent surveys conducted by PVPLC show highly variable abundance with 136 individuals counted in 2006, zero in 2007, 376 in 2008, 5 in 2010, and 17 in 2011(Table 3). South coast saltscale is a covered species in the Trump National/Ocean Trails HCP (Section 4.2.1 of the Plan).

Conservation Goals

At a minimum, conserve and manage the existing south coast saltscale population within the Plan Conservation Lands, specifically Abalone Cove Reserve. The other locations of this species are adequately conserved at Ocean Trails Reserve (Trump National/Ocean Trails HCP Property and Shoreline Park). Additionally, restoration projects should include efforts to expand the Abalone Cove Reserve population (in terms of occupied area as well as number of individuals) and efforts to establish three new populations in suitable habitat within the Preserve to guard against extirpation from stochastic events. The establishment of south coast saltscale populations into unoccupied habitat as part of ongoing restoration will be considered whenever feasible.

Conservation Strategy

- Established transects will continue to be monitored at three-year intervals, and known populations within the Preserve (Figure 1) will be managed to protect against threats, particularly to address establishment/expansion of invasive plants and prevent unauthorized public access into occupied habitat.
- Suitable, unoccupied habitat within the Preserve (e.g., Abalone Cove Reserve, Ocean Trails Reserve) will be targeted for enhancement, restoration, and/or seeding to expand,

establish, or re-establish population(s) to protect against catastrophic events (e.g., fire, landslides, bluff retreat).

- Impacts to southern coastal bluff scrub are limited to 2 acres within the Plan Area, and habitat avoidance and minimization measures will be implemented where impacts could occur to south coast saltscale. Impacts to coastal sage scrub will be avoided or minimized through advance planning (pre-project surveys, incorporation of avoidance and minimization measures, best management practices, etc.).
- Minimize impacts to the populations at Abalone Cove and any new population(s) in the Preserve through surveys and avoidance and minimization measures including controlling for public access, brush clearing and operation/maintenance activities. Populations on the Ocean Trails Reserve are adequately protected by the Trump National/Ocean Trails HCP.
- Restoration of coastal sage scrub will incorporate south coast saltscale seed into the planting pallet where conditions are favorable to its establishment.

Coverage Determination

Coverage Determination: **Covered**

Rationale. All (100%) of the known locations of south coast saltscale are within the Preserve. The City has committed to limiting impacts within the existing 81.6 acres of southern coastal bluff scrub to 2 acres and within the existing 1,266.9 acres of coastal sage scrub to 188 acres, of which 127.5 acres (67%) would occur outside the Preserve and 60.5 acres (32%) within the Preserve. Given the highly restricted distribution of south coast saltscale and limitation on anticipated impacts within south coast saltscale habitat within the Preserve, few direct impacts from Covered Projects and Activities are anticipated, and the primary threats to the species are indirect anthropogenic threats that can best be ameliorated with active habitat management. For the proposed 2 acres of impact with southern coastal bluff scrub habitat and 60.5 acres of impacts to coastal sage scrub within the Preserve, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. Therefore, through the commitment for habitat management, enhancement, and restoration, the Plan is anticipated to benefit south coast saltscale, and potential impacts, if any, to the species will be offset by active management and impact avoidance/mitigation measures.

Conditions. Surveys will continue to be conducted every 3 years within the existing fixed locations (PVPLC 2013), and the Preserve Manager will evaluate potential habitat restoration or enhancement opportunities as part of routine habitat management. Habitat restoration, including clearing of ice plant or other exotic plants adjacent to populations, unauthorized trail closures, and seeding for south coast saltscale will be included in the PHMP.

Pre-project surveys will be conducted throughout potential south coast saltscale habitat prior to approving Covered Projects/Activities to assess occupancy and to determine avoidance and minimization measures. If an existing population, as defined in Figure 1, will be impacted by Covered Projects/Activities, the project applicant will engage the Preserve Manager and work with the Wildlife Agencies to prepare and implement a habitat restoration plan, to be approved

by the City and Wildlife Agencies that will ensure no net loss of south coast saltscale within the population. Habitat restoration will include use of seed collected from the project site or from previously collected seed. Impacts to newly discovered or established populations throughout the Plan Area will be offset with equivalent habitat restoration. No more than one population will be impacted unless additional populations are located or successfully established in advance of the impact, and the City, PVPLC and Wildlife Agencies, through annual coordination meetings, document that the status of the species in the Preserve is stable and adequately conserved. Trails will be maintained, posted and patrolled to avoid/minimize encroachment into occupied habitat.

Conservation Analysis

Conservation and Impact Levels. All of the nine known point locations in the Plan Area are within the Preserve, and 91.8% of potential habitat (1,064.6 of 1,159.3 acres) in the Plan Area is within the Preserve or Neutral Lands. Of this, approximately 663.5 acres occur within the Preserve (561.9 within Plan Conservation Lands) and will be subject to management actions. Impacts to southern coastal bluff scrub habitat are limited to 2 acres within the Plan Area and impacts to coastal sage scrub are limited to 60.5 acres within the Preserve. Moreover, habitat avoidance and minimization measures would be implemented where impacts to potential south coast saltscale habitat could occur. With these provisions in place, it is not anticipated that direct impacts to south coast saltscale would occur. There are no known south coast saltscale outside of the Preserve.

The Miscellaneous Drainage Repair in Landslide Area project has the potential to impact south coast saltscale. The location of this project is dependent on hydrogeological conditions that cannot be precisely anticipated until site specific studies are completed. The Abalone Cove Beach Project has the potential to impact south coast saltscale; however, the City will avoid impacts to the known population through project design and implementation of the impact avoidance/mitigation measures for Covered Projects and Activities identified in the Plan (Section 5.5 of the Plan).

Implementation of the PHMP will result in enhancement of habitat for south coast saltscale, and this is expected to result in an expansion of the species' distribution within the Preserve. PVPLC will focus habitat enhancement efforts in areas that are unlikely to be impacted by Covered Projects/Activities; however, given the unpredictable location of the landslide repair project, some impacts may occur. Prior to any habitat enhancement efforts for this species, PVPLC shall coordinate with the City to verify that the proposed location is not anticipated to be impacted by any covered activities.

Potential impacts, if any were to occur, are expected to be too limited in scope/distribution to affect the viability of the existing south coast saltscale population within the Plan Conservation Lands. The populations within the Previous Mitigation Lands will be managed under the Trump National/Ocean Trails HCP. Overall, the Plan is expected to protect and expand south coast saltscale populations within the Plan Area.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs as relatively small stands of habitat that will be subject to edge effects. However, the NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and measures for Covered Projects and Activities adjacent to the Preserve (Section. 5.6 of the Plan) that would be implemented for projects in existing and/or potential habitat for south coast saltscale to reduce the likelihood that edge effects will occur.

Effects on Population Viability and Species' Distribution. With implementation of the Plan, very few impacts are anticipated to occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of south coast saltscale in the Plan Area. Active management for this species within the Preserve, which is the best safeguard against indirect impacts that are the primary threats, would occur under the Plan's PHMP. The PHMP will create additional habitat for this species in the Abalone Cove Reserve, Ocean Trails Reserve, and possibly other suitable locations.

Adaptive Management Program. As part of PVPLC's management of the Preserve, seed will be collected and used for propagation, and applied based on monitoring results (e.g., in response to low abundance counts) and in areas of coastal sage scrub restoration/enhancement where site conditions are favorable to establishment of south coast saltscale. Where local site conditions are appropriate, collected seed will also be incorporated into the 5-acre per year restoration/enhancement requirements that are part of this Plan (Section 7.5 of the Plan). Restored areas are required to be monitored for 5 years (Section 7.5.5 of the Plan).

Catalina Crossosoma (*Crossosoma californicum*)

USFWS: No status
CDFW: No status
CNPS: List 1B.2

Background

Catalina crossosoma is a deciduous shrub that can reach 5 meters (16 feet) in height. This shrub is usually found on dry, rocky slopes and canyons in coastal sage scrub below 500 meters (1,600 feet) elevation (Skinner and Pavlik 1994, Preston and Shevock 2013). It is known from the Palos Verdes Peninsula (Peninsula), San Clemente Island, Santa Catalina Island, and on Guadelupe Island, Mexico (Preston and Shevock 2013). Catalina crossosoma was once in decline on San Clemente Island but appears to be recovering well (CNPS 2001). Henrickson (1979) first reported this species on the mainland of California on the Palos Verdes Peninsula northeast of Forrestal Drive (within the City).

Threats to this species include urbanization, recreational development, and foot traffic (CNPS 2001). Development is the primary threat to this species on the mainland (CNPS 2001).

Within the Plan Area, potential habitat for Catalina crossosoma is coastal sage scrub and southern coastal bluff scrub. There are 1,159.3 acres of Catalina crossosoma habitat in the Plan Area, of which 663.5 acres are in the Preserve and 401.1 acres are in Neutral Lands. Of the 663.5 acres of Catalina crossosoma habitat within the Preserve, 101.6 acres (15%) are within Previous Mitigation Lands. Due to its specific habitat requirements, Catalina crossosoma is found on dry, rocky slopes and canyons within southern coastal bluff scrub and coastal sage scrub; therefore, potential habitat within these vegetation communities is more restricted to areas that exhibit these conditions.

According to surveys through 1997 covering the Plan Area (Table 2), there are 4 locations of Catalina crossosoma within the Plan Area, all within the Forrestal Reserve. One location is north of Pirate Drive; three locations occur in an area west of Ganado Drive and south of Crest Road, on the ridgeline and in the adjacent canyon. Subsequent surveys conducted by PVPLC that counted each individual found 540 individuals in 2006, 198 in 2008, and 783 in 2010 (Table 3). Mapping in 2015, shows that the largest population is within Forrestal Preserve and the adjacent Neutral Lands with 3.1 acres in the Preserve and 0.2 acres in the Neutral Lands. This population extends into a separate section of Neutral Lands with a less dense stand of 0.5 acres.

Conservation Goals

At a minimum, conserve and manage the existing Catalina crossosoma population within the Forrestal Reserve. Additionally, restoration projects should include efforts to expand this population and establish at least two new populations in suitable habitat within the Preserve to guard against extirpation from stochastic events. The establishment of Catalina crossosoma populations into unoccupied habitat as part of ongoing restoration will be considered whenever feasible.

Conservation Strategy

- Sample populations within the Preserve will continue to be monitored at three year intervals and managed to protect against threats, particularly from recreational uses and competition with invasive plants (PVPLC 2013).
- Suitable, unoccupied habitat within the Preserve (e.g., Forrestal Reserve) will continue to be targeted for restoration and seeding to establish or re-establish additional population(s) and to protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Incorporate Catalina crossosoma seed or container plants into sage scrub restoration planting pallets where suitable conditions exist for this species.
- Minimize impacts to the existing population at the Forrestal Reserve, as well as to any new population(s) discovered or established in the Preserve, through surveys and avoidance measures when planning for Covered Projects and Activities such as public access, brush clearing, and operation/maintenance activities.
- Monitor use of trails in the vicinity of Catalina crossosoma locations to ensure public access is controlled and avoids direct or indirect impacts.

Coverage Determination

Coverage Determination: **Covered**

Rationale. The Catalina crossosoma population within Forrestal Reserve is the largest known stand of the species throughout its range and extends into the adjacent Neutral Lands. Although there is no commitment for active Catalina crossosoma management within Neutral Lands, no impacts are authorized. The City has committed to limiting impacts within the 81.6 acres of southern coastal bluff scrub in the Preserve to 2 acres and impacts within the 663.5 acres of coastal sage scrub in the Preserve to 66.5 acres (32%) (Table 5-1 in the Plan). Given the highly restricted distribution of Catalina crossosoma and limitations on anticipated impacts within suitable Catalina crossosoma habitat within the Preserve, direct impacts from Covered Projects/Activities are highly unlikely, and the existing population is large and robust enough to withstand minor impacts (including the loss of a small number of individuals) that may be associated with Covered City Projects/Activities within the Preserve. For proposed impacts to habitat within the Preserve where Catalina crossosoma exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. The primary threats to the species are indirect anthropogenic threats that can best be ameliorated with active habitat management. Therefore, through the commitment for habitat management, enhancement, and restoration, the Plan is expected to benefit Catalina crossosoma. Potential impacts to the species will be offset by active management and impact avoidance/minimization measures.

Conditions. Surveys will continue to be conducted every 3 years within the Preserve by the Preserve manager to monitor trends in population dynamics. Potential for habitat restoration actions that may benefit this species will be evaluated during routine habitat management. There are no Covered Projects/Activities with the potential to impact existing populations. If the large population in the Forrestal Reserve expands into an existing trail, routine trail maintenance as contemplated in the PUMP may require trimming or selective removal of some Catalina crossosoma individuals, only to the extent that it will maintain the existing width of an existing trail; impacts from the widening of an existing trail or a new trail would be subject to the conditions below.

Pre-project surveys will be conducted in potential Catalina crossosoma habitat prior to any Covered Projects/Activities to assess occupancy and determine avoidance and minimization measures. If an existing population, as defined in Figure 2, will be impacted by Covered Projects/Activities, the project applicant will engage the Preserve Manager and work with the Wildlife Agencies to prepare and implement a habitat restoration plan, to be approved by the City and the Wildlife Agencies that will ensure no net loss of Catalina crossosoma within the population. Habitat restoration will include transplantation or use of seedlings propagated from previously collected seed. Impacts to newly discovered or established populations throughout the Plan Area will be offset with equivalent habitat restoration. No more than one population will be impacted unless additional populations are located or successfully established in advance of the impact, and the City, PVPLC and Wildlife Agencies, through annual coordination meetings, document that the status of the species in the Preserve is stable and adequately conserved. Trails

will be maintained, posted, and patrolled to prevent/minimize encroachment into occupied habitat.

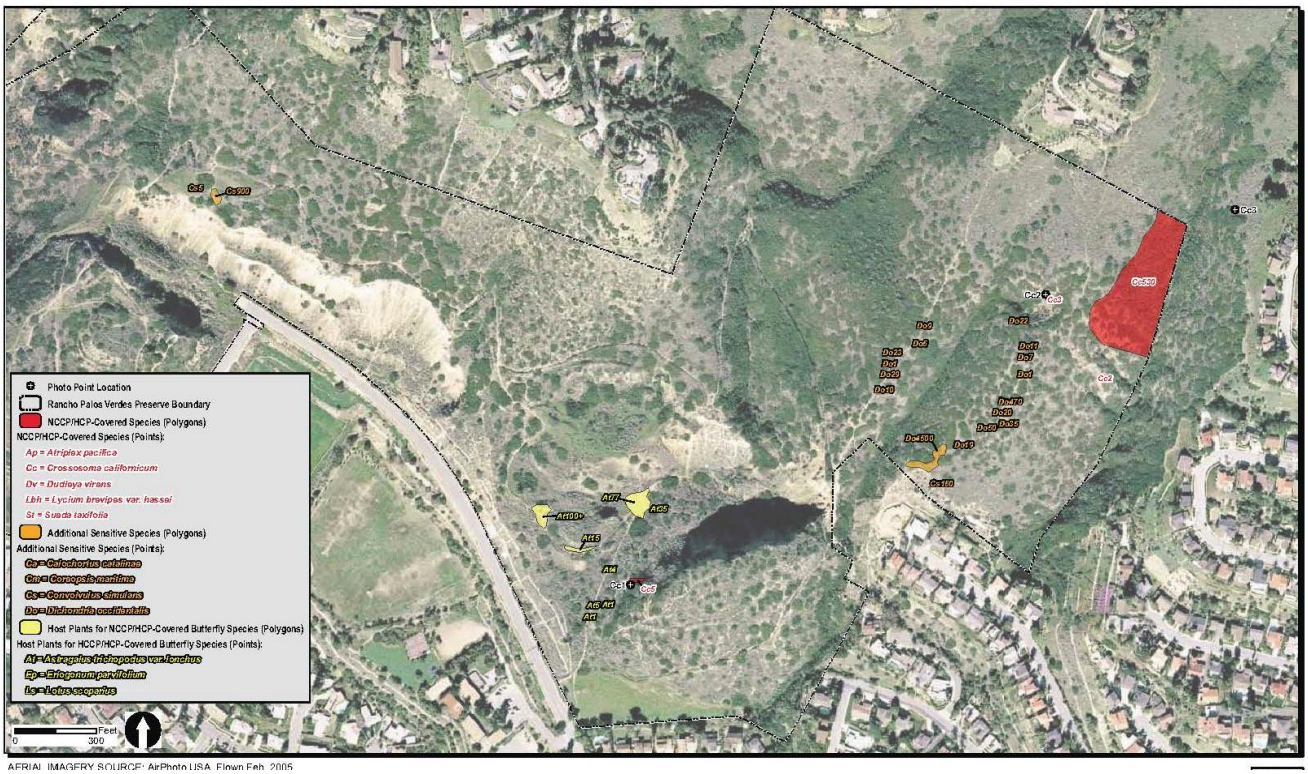


Figure 2. Distribution of Catalina crossosoma within Plan Conservation Lands.

Conservation Analysis

Conservation and Impact Levels. Catalina crossosoma is almost entirely within the Preserve; however, incidental observations have shown that the Forrestal Parcel population extends slightly into adjacent steep slopes within Neutral Lands. The Plan does not authorize direct impacts to Catalina crossosma in the Neutral Lands. The Preserve Trails Plan Implementation Project may impact some individuals of this species. As described in the Public Use Master Plan (PUMP), several hiking, biking and equestrian trails run through the Forrestal Parcel. The Catalina crossosoma population in the Forrestal Reserve is currently not in conflict with trail use; however, one population in this Reserve is large and be expanding, and minor impacts may be unavoidable if the population grows into a trail use area. For proposed impacts to habitat within the Preserve where Catalina crossosoma exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. In particular, some impacts to the Catalina crossosoma population in the Forrestal Reserve from trail use, improvements, and maintenance are anticipated in this Plan.

Surveys will be conducted in potential Catalina crossosoma habitat prior to approving any covered activity to assess occupancy and to determine appropriate avoidance and minimization measures as described above. These measures will prevent any Covered Activity/Project from

eliminating any population. If demonstrated to be unavoidable, or avoidance may impact other sensitive biological and non-biological resources, impacts to newly discovered or established populations will not exceed 10% of the individuals at the time of impact based on current surveys. Trails will be maintained, posted and patrolled to prevent/minimize encroachment into occupied habitat.

The PHMP will result in measures to enhance habitat for Catalina crossosoma and this species' distribution within the Preserve is expected to expand as a result. PVPLC will focus habitat enhancement efforts in areas that are unlikely to be impacted by future covered projects. Prior to any habitat enhancement efforts for this species, PVPLC shall coordinate with the City to verify that the proposed location is not anticipated to be impacted by any Covered Projects/Activities.

Very few impacts are anticipated to occur under the Plan, and where impacts would occur they would be small and not substantially affect the viability of the existing Catalina crossosoma population within the Preserve. Overall, the Plan is expected to increase the number and distribution of Catalina crossosoma within the Preserve.

Preserve Configuration Issues. Within the Plan Area, the Catalina crossosoma is restricted to a relatively small area in the Forrestal Reserve and is therefore vulnerable to edge effects and catastrophic events such as fire. The NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and measures for Covered Projects and Activities adjacent to the Preserve (Section 5.6 of the Plan). These measures, along with efforts to expand existing and establish new populations, will reduce potential edge effects, and vulnerability to catastrophic events.

Adaptive Management Program. PVPLC has collected some seed from Catalina crossosoma which will be used in habitat restoration efforts. This will safeguard the local genetic composition from extirpation from catastrophic events. Where site conditions are favorable, collected seed will be incorporated into the 5 acre per year restoration requirements of this Plan (Section 7.5 of the Plan). These restored areas are required to be monitored and reported for five years (Section 7.5.5 of the Plan), and subject to the monitoring requirements thereafter.

Island Green Dudleya (*Dudleya virens* ssp. *insularis*)

USFWS: No status
CDFW: No status
CNPS: List 1B.2

Background

Island green dudleya is a succulent perennial with a basal rosette of leaves from a caudex (i.e., a short woody stem at or below the ground; McCabe 2013). Island green dudleya is insect-pollinated (e.g., bees, bee flies; Wyatt 1983) and seeds are presumably self-dispersed. It is known from the mainland on the Peninsula at the south base of San Pedro Hill from Point

Vicente to Point Fermin within the Plan Area, Santa Catalina Island, and San Nicholas Island (CNPS 2001, *data from* CNDDB 2003, Moran 1995). This species occurs on steep slopes in chaparral, coastal bluff scrub, and coastal sage scrub habitats below 200 meters (650 feet) (CNPS 2001, McCabe 2013). This species is threatened by development (*data from* CNDDB 2003) and livestock grazing. Island green dudleya may also be susceptible to surface disturbance (e.g., vehicle traffic, trampling by hikers and horses).

Although island green dudleya has been found in other vegetation communities outside of the Plan Area, it is primarily restricted to southern coastal bluff scrub within the Plan Area. Therefore, potential habitat for island green dudleya is defined as southern coastal bluff scrub. There are 133.2 acres of island green dudleya habitat in the Plan Area, of which 81.6 acres (61%) are in the Preserve and 46.7 acres (35%) are in Neutral Lands. Of the 81.6 acres of island green dudleya habitat within the Preserve, 55.0 acres (67%) are within Previous Mitigation Lands. Due to its specific habitat requirements, island green dudleya is restricted to steep slopes in southern coastal bluff scrub within the Plan Area.

According to surveys covering the Plan Area through 1997 (Table 2), there were 34 observations of island green dudleya within the Plan Area, of which 21 (61%) are within the Preserve and 13 (38%) within Neutral Lands. Within the Preserve, 16 (76%) of the observations are located in Previous Mitigation Lands (13 in the Trump National/Ocean Trails HCP Property and 3 in Shoreline Park) and 5 within Plan Conservation Lands (Pelican Cove and Abalone Cove Reserve). Subsequent surveys conducted by PVPLC found 3,430 individuals in 2006, 550 in 2007, 408 in 2008, and 240 in 2010 (Table 3). Pelican Cove is the only area within Plan Conservation Lands that currently supports a stable population of island green dudleya. PVPLC introduced island green dudleya to Abalone Cove Reserve in 2013.

Conservation Goals

Conserve and manage the existing island green dudleya populations within the Preserve, consisting of five locations at Pelican Cove and Abalone Cove. The locations in Previous Mitigation Lands (Ocean Trails Reserve) will continue to be managed consistent with the obligations in the existing Trump National/Ocean Trails HCP. Additionally, restoration projects should include efforts to expand these populations (in terms of occupied area as well as number of individuals), and include island green dudleya in planting pallets, where appropriate, as part of the coastal scrub restoration obligations to establish new populations to guard against stochastic events. The establishment of island green dudleya populations into unoccupied habitat as part of ongoing restoration will be considered whenever feasible.

Conservation Strategy

- Sample populations of island green dudleya within the Preserve will continue to be monitored at 3 year intervals and managed to protect against threats, particularly from unauthorized recreational uses and competition with invasive plants.

- Suitable, unoccupied habitat within the Preserve (e.g., Pelican Cove and Abalone Cove Reserve) will be targeted for restoration and seeding to establish or expand populations to protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Incorporate use of island green dudleya into sage scrub restoration planting pallets where suitable conditions exist for this species.
- Avoid/minimize impacts to all populations from authorized activities (e.g., new trails, brush clearing and operation/maintenance activities) in the Preserve, through pre-project surveys and incorporation of avoidance measures into project design and construction (e.g., construction and maintenance of trails).
- Monitor use of trails in the vicinity of island green dudleya locations to ensure public access is controlled and avoids direct and indirect impacts.

Coverage Determination

Coverage Determination. **Covered**

Rationale. All but 4.8 (3%) of 133.1 acres of southern coastal bluff scrub within the Plan Area are either in the Preserve or Neutral Lands. Although there is no commitment for active island green dudleya management within Neutral Lands, no direct impacts are authorized. The City has committed to limiting impacts within the 81.6 acres of southern coastal bluff scrub to 2 acres throughout the Preserve (Table 5-1 in the Plan). Given the restricted distribution of island green dudleya and limitation on anticipated impacts within suitable southern coastal bluff scrub within the Preserve, direct impacts from Covered Projects and Activities are highly unlikely. For proposed impacts to coastal bluff scrub habitat within the Preserve where island green dudleya exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. The primary threats to the species are indirect anthropogenic threats that can best be ameliorated with active habitat management. Therefore, through the commitment for habitat management, enhancement, and restoration, the Plan is anticipated to benefit island green dudleya, and potential impacts to the species are considered to be offset by active management and impact avoidance/mitigation measures.

Conditions. Surveys will continue to be conducted every 3 years within established locations to monitor trends in population dynamics, and potential habitat restoration actions that may benefit this species will be evaluated during routine habitat management.

Pre-project surveys will be conducted within potential island green dudleya habitat prior to any Covered Project or Activity to assess occupancy, and to determine avoidance and minimization measures. If this species is detected during surveys, impacts to this plant are expected to be avoided. Where avoidance of island green dudleya is not feasible, the project applicant will engage the Preserve Manager and work with the Wildlife Agencies to prepare and implement a habitat restoration plan, to be approved by the City and Wildlife Agencies, that will ensure the impacts will be offset with equivalent habitat restoration. No more than 0.25 acre of occupied dudleya habitat will be impacted, and no more than one impact per Reserve, unless additional populations are located or successfully established in advance of the impact, and the City, PVPLC and Wildlife Agencies, through annual coordination meetings, document that the status

of the species in the Preserve is stable and adequately conserved. The PVPLC has a successful propagation program for this species at the PVPLC nursery, and this program will continue as part of the NCCP/HCP. This species can be successfully planted in suitable habitat. Trails will be maintained, posted, and patrolled to avoid/minimize encroachment into occupied habitat.

Conservation Analysis

Conservation and Impact Levels. No direct impacts to island green dudleya within the Pelican Cove are anticipated under this Plan because no Covered Project or Activities are planned in these reserves. However, because island green dudleya will continue to be used in habitat restoration efforts within the Preserve, there remains a potential for future projects and activities, depending on their ultimate location, to impact restored/expanded populations associated with the following projects depending on their ultimate location: Miscellaneous Fissure Filling, Miscellaneous Damaged Drain Repair, Miscellaneous Drainage Projects, Abalone Beach Project, and Preserve Trails Plan Implementation. Most island green dudleya in the Preserve are within the Ocean Trails Reserve, and impacts to these populations are addressed in the Trump National/Ocean Trails HCP. For proposed impacts to habitat within the Preserve where island green dudleya exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. The remaining island green dudleya are within Neutral Lands, where no impacts are authorized by the Plan.

Pre-project surveys will be conducted throughout potential island green dudleya habitat prior to any covered activity to assess occupancy and determine appropriate avoidance and minimization measures as described above. It is anticipated that these measures will prevent any Covered Projects and Activity from eliminating the existing or any newly established population(s). Where avoidance of island green dudleya is not feasible, impacts will be offset with equivalent habitat restoration.

The conservation required by the Plan will contribute to the viability of the species by removing invasive plants within the Preserve. Additionally, the populations will continue to be augmented within potential habitat in Preserve areas where it does not currently exist. Island green dudleya will be incorporated into sage scrub restoration planting pallets where suitable conditions exist for this species. As mentioned above, this species may be relocated to other areas within the Preserve that contain suitable habitat. It is anticipated that the PHMP will enhance habitat for island green dudleya and this species' distribution within the Preserve may expand as a result. Through coordination with the City, PVPLC will focus habitat enhancement efforts in areas that are unlikely to be impacted by future covered projects/activities.

With implementation of the Plan, very few impacts are anticipated of occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing island green dudleya population within the Preserve. Overall, the Plan's measures are expected to expand the number and distribution of island green dudleya populations within the Plan Area.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs as relatively small stands of habitat that will be subject to edge effects. However, the NCCP/HCP

includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and required measures for Covered Projects and Activities adjacent to the Preserve (Section. 5.6 of the Plan) to reduce potential edge effects within the Preserve.

Effects on Population Viability and Species' Distribution. With implementation of the Plan, very few impacts to island green dudleya are anticipated to occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing island green dudleya population in the Plan area. Active management, which is the best safeguard against indirect impacts that are likely the primary threats, would occur under the Plan's PHMP. The PHMP will create additional habitat for this species in Pelican Cove and Abalone Cove Reserves and other suitable locations, and is expected to increase this species' distribution in the Reserve.

Adaptive Management Program. PVPLC has already implemented a program to grow and out-plant island green dudleya in restoration plots, including a project at the Abalone Cove Reserve. Monitoring and adaptive management strategies will be continued as part of this Plan. Areas restored with island green dudleya are required to be monitored and reported for 5 years (Section 7.5.5 of the Plan).

Santa Catalina Island Desert-Thorn (*Lycium brevipes* var. *hassei*)

USFWS: No status
CDFW: No status
CNPS: List 1B.1

Background

Santa Catalina Island desert-thorn is a deciduous shrub that can reach 4 meters (13 feet) in height (Nee 2013). It requires insects for pollination. It is found on slopes in coastal bluff scrub and coastal sage scrub habitats at elevations below 300 meters (1,000 feet; CNPS 2001, Nee 2013). Santa Catalina Island desert-thorn is known from Los Angeles County, on San Clemente Island and Santa Catalina Island (CNPS 2001). Due to the small population numbers, this species is threatened by development, recreational foot traffic, and stochastic events. Effective conservation of Santa Catalina Island desert-thorn must include protection from trampling and other soil surface disturbance.

Potential habitat for Santa Catalina Island desert-thorn is defined as southern coastal bluff scrub. There are 133.2 acres of potential Santa Catalina Island desert-thorn habitat in the Plan Area, of which 81.6 acres (61%) are in the Preserve and 46.7 acres (35%) are in Neutral Lands. Of the 81.6 acres of Santa Catalina Island desert-thorn habitat within the Preserve, 55.0 acres (67%) are within Previous Mitigation Lands. Due to its specific habitat requirements, Santa Catalina Island desert-thorn often occurs in specific microhabitats (e.g., coastal bluff slopes) within southern coastal bluff scrub habitat.

According to surveys covering the Plan Area through 1997 (Table 2), there were 3 observations of Santa Catalina Island desert-thorn within the Plan Area, all within the Abalone Cove Preserve. Each observation represented either multiple or individual plants. Subsequent surveys conducted by PVPLC that counted each individual found 750 individuals in 2006, 300 in 2007, and 605 in 2011 (Table 3).
PVPLC planted Santa Catalina Island desert-thorn at Abalone Cove and in Ocean Front Estates Property (within Vicente Bluffs Reserve) in 2013.

Conservation Goals

At a minimum, conserve and manage the existing Santa Catalina Island desert-thorn population within the Abalone Cove Reserve. Additionally, restoration projects should include efforts to expand this population (in terms of occupied area as well as number of individuals) and efforts to establish at least three populations in new locations within the Preserve to guard against stochastic events. The establishment of Santa Catalina Island desert-thorn populations into unoccupied habitat as part of ongoing restoration will be considered whenever feasible.

Conservation Strategy

- The known populations of Santa Catalina Island desert-thorn within the Preserve will continue to be surveyed by the Preserve Manager every 3 years and managed to protect against threats, particularly from unauthorized recreational uses and competition with invasive plants.
- Suitable, unoccupied habitat within the Preserve (e.g., Abalone Cove Reserve and Ocean Front Estates Property) within restoration project areas will be targeted to establish new populations to protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Avoid/minimize impacts to the existing population at Abalone Cove and to expanded and/or new population(s) in the Preserve through pre-project surveys and establishment of measures to avoid impacts from public access, brush clearing, and operation/maintenance activities.

Coverage Determination

Coverage Determination. **Covered**

Rationale. All but 4.8 (3%) of 133.1 acres of southern coastal bluff scrub within the Plan Area are either in the Preserve or Neutral Lands. Although there is no commitment for active Santa Catalina Island desert-thorn management within Neutral Lands, no impacts are authorized. The City has committed to limiting impacts within the 81.6 acres of southern coastal bluff scrub to 2 acres in the Preserve (Table 5-1 in the Plan). Given the highly restricted distribution of Santa Catalina Island desert-thorn and limitation on anticipated impacts to suitable southern coastal bluff scrub in the Preserve, direct impacts from Covered Projects are highly unlikely. For proposed impacts to potential habitat within the Preserve where Santa Catalina Island desert-thorn exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. The primary threats to the species are

indirect anthropogenic threats that best be ameliorated with active habitat management. Therefore, through the commitment for habitat management, enhancement, and restoration, the Plan is anticipated to benefit to Santa Catalina Island desert-thorn and that any potential impacts to the species will be offset by active management and impact avoidance/mitigation measures.

Conditions. Surveys will continue to be conducted every 3 years within established locations to monitor trends in population dynamics, and potential habitat restoration actions that may benefit this species will be evaluated during routine habitat management.

Pre-project surveys will be conducted within potential Santa Catalina Island desert-thorn habitat prior to any Covered Project or Activity to assess occupancy, and to determine avoidance and minimization measures. If this species is detected during surveys, impacts to this plant are expected to be avoided. If an existing population, as defined in Figure 3, will be impacted by Covered Projects/Activities, the project applicant will engage the Preserve Manager and work with the Wildlife Agencies to prepare and implement a habitat restoration plan, to be approved by the City and the Wildlife Agencies, that will ensure no net loss of Santa Catalina Island desert-thorn within the population. Habitat restoration will include transplantation or use of seedlings propagated from previously collected seed. Impacts to newly discovered or established populations throughout the Plan Area will be offset with equivalent habitat restoration. No more than one population will be impacted, unless additional populations are located or successfully established in advance of the impact, and the City, PVPLC and Wildlife Agencies, through annual coordination meetings, document that the status of the species in the Preserve is stable and adequately conserved. The PVPLC has a successful propagation program for this species at the PVPLC nursery, and this program will continue as part of the NCCP/HCP. This species can be successfully planted in suitable habitat. Trails will be maintained, posted, and patrolled to avoid/minimize encroachment into occupied habitat.



Figure 3. Distribution of Santa Catalina Island desert-thorn within Plan Conservation Lands.

Conservation Analysis

Conservation and Impact Levels. All 3 known locations of Santa Catalina Island desert-thorn are within the Abalone Cove Reserve. No direct impacts to Santa Catalina Island desert-thorn are anticipated under this Plan because no Covered Projects/Activities are currently planned that would affect this species within the Abalone Cove Reserve. However, the Miscellaneous Drainage Repair in Landslide Area Project has the potential to impact Santa Catalina Island desert-thorn if new populations are discovered or established in other areas of the Reserve. The location of this project is dependent on hydrogeological conditions that cannot be precisely anticipated until site-specific studies are completed. The Abalone Cove Beach Project has the potential to result in direct and/or indirect impacts to Santa Catalina Island desert-thorn; however, the City will avoid impacts to the known population through project design and implementation of the impact avoidance/mitigation measures for Covered Projects and Activities identified in the NCCP/HCP (Section 5.5 of the Plan).

The PHMP provides measures to enhance habitat for Santa Catalina Island desert-thorn and this species' distribution within the Preserve is anticipated to expand as a result. Through coordination with the City, PVPLC will focus habitat enhancement efforts in areas that are unlikely to be impacted by future covered projects. Suitable, unoccupied habitat within the Preserve within restoration project areas will be targeted to establish new populations.

Pre-project surveys will be conducted throughout potential Santa Catalina Island desert-thorn habitat prior to approval of any Covered Projects/Activities to assess occupancy and determine avoidance and minimization measures. These measures are intended avoid, or to minimize if

total avoidance is not feasible, impacts to the existing or any newly established population(s). For Covered Projects/Activities, this species will be avoided from areas to be impacted, if feasible. Where avoidance of Santa Catalina Island desert-thorn is not feasible, impacts will be offset with equivalent habitat restoration. Trails will be maintained, posted and patrolled to avoid/minimize encroachment into occupied habitat.

For Covered Projects/Activities located in suitable areas within southern coastal bluff scrub habitat, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed to further minimize potential impacts.

With implementation of the Plan, very few impacts are anticipated to occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing population within the Preserve. Overall, the Plan is expected to benefit Santa Catalina Island desert-thorn by expanding its numbers and distribution within the Plan Area.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs as relatively small stands of habitat that may be subject to edge effects. However, the NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and required measures for Covered Projects and Activities adjacent to the Preserve (Section. 5.6 of the Plan) that will reduce potential edge effects to this species.

Effects on Population Viability and Species' Distribution. With implementation of the Plan, very few impacts to Santa Catalina Island desert-thorn are anticipated of occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing island green dudleya population in the Plan area. Active management, which is the best safeguard against indirect impacts that are the primary threats to this species, would occur under the Plan's PHMP. The PHMP will create additional habitat for this species in the Abalone Cove Reserve and Ocean Front Estates Property (Vicente Bluffs Reserve), and possibly other suitable locations, and provide the opportunity to increase this species' distribution in the Preserve.

Adaptive Management Program. PVPLC has already successfully established Santa Catalina Island desert-thorn in their nursery and are using stock in restoration projects within the Preserve. PVPLC planted Santa Catalina Island desert-thorn at the Abalone Cove Reserve and at the Ocean Front Estates Property. Monitoring is continuing, and management actions will be recorded to ensure an adaptive management approach will guide subsequent restoration efforts. Areas restored with Santa Catalina Island desert-thorn are required to be monitored and reported for 5 years (Section 7.5.5 of the Plan), and will thereafter be subject to monitoring every 3 years.

***Woolly Seablite* (*Suaeda taxifolia*)**

USFWS: No status
CDFW: No status
CNPS: List 4.2

Background

Woolly seablite is an herbaceous perennial usually restricted to coastal salt marsh; it rarely grows in peripheral scrublands adjacent to salt marshes or as isolated plants along beaches (Reiser 1994) from elevations below 50 meters (CNPS 2001) or below 15 meters as reported by Schenk and Ferren (2013). This evergreen subshrub flowers January-December (CNPS 2001). Historically, woolly seablite occurred from Ventura County and most of the Channel Islands southward to Baja California, Mexico (CNPS 2001). This species currently is known from Santa Barbara County to Baja California, Mexico and on Santa Barbara, San Clemente, Santa Cruz, Santa Catalina, San Nicholas, and Santa Rosa islands, and on Guadalupe Island, Mexico (CNPS 2001). On the Palos Verdes Peninsula, woolly seablite occurs as isolated plants along the Peninsula shoreline from Torrance Beach to San Pedro.

Proposed development and potential landslides and cliff retreat along coastal bluffs threaten this species. Foot traffic is also presumably a threat in the Preserve.

Potential habitat for woolly seablite is defined as southern coastal bluff scrub. There are 133.2 acres of woolly seablite habitat in the Plan Area, of which 81.6 acres (61%) are in the Preserve and 46.7 acres (35%) are in Neutral Lands. Of the 81.6 acres of woolly seablite habitat within the Preserve, 55.0 acres (67%) are within Previous Mitigation Lands. Due to its specific habitat requirements, woolly seablite occurs in specific microhabitats (e.g., coastal bluff slopes) within southern coastal bluff scrub.

Woolly seablite was not included in the database that includes the entire Plan Area; therefore, there is no specific information about the distribution of this species in Neutral Lands or other areas outside of the Preserve. Woolly seablite is found in Abalone Cove Reserve and Pelican Cove (within the Vicente Bluffs Reserves) (Plan Conservation Lands) and within Trump National/Ocean Trails HCP Property, Shoreline Park, and the Ocean Front Estates Property (Previous Mitigation Lands). Surveys conducted by PVPLC within the Preserve found 455 individuals in 2006, 55 in 2007, 48 in 2008, and 122 in 2010 (Table 3). According to PVPLC (2013), woolly seablite is broadly distributed throughout the bluffs where it is found.

Conservation Goals

At a minimum, conserve and manage all existing woolly seablite populations in the Preserve to protect against recreation impacts (authorized and unauthorized public access) and invasive plants. Expand and establish new populations within suitable southern coastal bluff scrub by incorporating this species in restoration planting pallets, where appropriate. The establishment of

woolly seablite populations into unoccupied habitat as part of ongoing restoration will be considered whenever feasible.

Conservation Strategy

- Sample populations of woolly seablite within the Preserve will continue to be surveyed every 3 years and managed to protect against threats, particularly from unauthorized recreational uses and competition with invasive plants.
- Suitable, unoccupied habitat within the Preserve (e.g., Abalone Cove Reserve and Pelican Cove) will be targeted for restoration which is expected to provide natural opportunities for woolly seablite to expand its occupied area. At this time it is not believed to be necessary to perform seeding to expand the existing populations to protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Avoid/minimize impacts to the existing populations at Abalone Cove Reserve and Pelican Cove, and to any new populations in the Reserve, through pre-project surveys and establishment of measures to avoid impacts from public access, brush clearing and operation/maintenance activities.

Coverage Determination

Coverage Determination. **Covered**

Rationale. All but 4.8 (3%) of 133.1 acres of southern coastal bluff scrub within the Plan Area are either in the Preserve or Neutral Lands. Although there is no commitment for active woolly seablite management within Neutral Lands, no impacts are authorized. The City has committed to limiting impacts within the 81.6 acres of southern coastal bluff scrub to 2 acres within the Preserve (Table 5-1 in the NCCP/HCP). Given the restricted distribution of woolly seablite and limitation on anticipated impacts within suitable southern coastal bluff scrub in the Preserve, direct impacts from Covered Projects and Activities are highly unlikely. For proposed impacts to habitat within the Preserve where woolly seablite exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. The primary threats to the species are indirect anthropogenic threats that can best be ameliorated with active habitat management. Therefore, through the commitment for management and habitat restoration, the Plan is anticipated to benefit to woolly seablite, and potential impacts to the species will be offset by active management and impact avoidance/mitigation measures.

Conditions. Surveys will continue to be conducted at fixed locations every 3 years within the Preserve by the Preserve Manager to monitor trends in population dynamics, and potential habitat restoration actions that may benefit this species will be evaluated during routine habitat management activities. Pre-project surveys will be conducted within potential woolly seablite habitat for any Covered Project to assess occupancy and determine avoidance and minimization measures. For Covered Projects/Activities, this species will be avoided from areas to be impacted, if feasible. The project applicant will engage the Preserve Manager and work with the Wildlife Agencies to prepare and implement a habitat restoration plan, to be approved by the

Wildlife Agencies, that will ensure the impacts will be offset with equivalent habitat restoration. No more than 0.25 acre of occupied woolly seablite habitat will be impacted, and no more than one impact per Reserve, unless additional populations are located or successfully established in advance of the impact, and/or the City, PVPLC and Wildlife Agencies, through annual coordination meetings, document that the status of the species in the Preserve is stable and adequately conserved. Trails will be maintained, posted and patrolled to avoid/minimize encroachment into occupied habitat.

Conservation Analysis

Conservation and Impact Levels. There are no known woolly seablite populations outside of the Preserve. No direct impacts to woolly seablite are anticipated under this Plan because no covered projects are currently planned in Abalone Cove Reserve and Pelican Cove that would affect this species. However, the Miscellaneous Drainage Repair in the Landslide Area project has the potential to impact woolly seablite if impacts were to occur within suitable southern coastal bluff habitat. The location of this project is dependent on hydrogeological conditions that cannot be precisely anticipated until site specific studies are completed. The Abalone Cove Beach Project also has the potential to result in direct and/or indirect impacts to woolly seablite; however, impacts to the known population will be avoided or minimized through project design and implementation of the impact avoidance/mitigation measures for Covered Projects and Activities identified in the NCCP/HCP. Because woolly seablite is patchily distributed where it is found, the City may not be able to avoid all individual plants. Where any unavoidable impacts occur, they would be mitigated in accordance with the NCCP/HCP.

Pre-project surveys will be conducted in potential habitat for woolly seablite prior to any Covered Project and Activities within southern coastal bluff scrub to assess occupancy and determine avoidance and minimization measures. These measures are intended to prevent any Covered Project and Activity from impacting an existing or any newly established population(s). Where it is demonstrated that avoidance of woolly seablite is not feasible, an area equivalent to the impact area will be restored in the vicinity of an existing population. The goal will be passive recruitment into restored habitat although seeding or transplantation may also be employed. With implementation of the Plan, very few impacts are anticipated of occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing population within the Preserve. For proposed impacts to habitat within the Preserve where woolly seablite exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. Overall, the Plan provides measures to increase the number and distribution of woolly seablite within the Plan Area.

The conservation required by the Plan will contribute to the viability of the species by removing invasive plants within the Preserve and protecting existing populations. The PHMP will enhance habitat for woolly seablite and this species' distribution and numbers are expected to increase as a result. Through coordination with the City, PVPLC will focus habitat enhancement efforts in areas that are unlikely to be impacted by future Covered Projects/Activities.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs as relatively small stands of habitat that will be subject to edge effects. However, the NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and requires measures for Covered Projects and Activities adjacent to the Preserve (Section. 5.6 of the Plan) to reduce potential edge effects within the Preserve.

Effects on Population Viability and Species' Distribution. With implementation of the Plan, very few impacts to woolly seablite are anticipated of occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing woolly population in the Plan Area. Active management, which is the best safeguard against indirect impacts that are likely the primary threats, would occur under the Plan's PHMP. Further assessment will be performed of the Abalone Cove Reserve and Pelican Cove to determine if improved conditions and/or additional suitable habitat can be provided. Other suitable locations will also be considered for introduction of woolly seablite; however, the existing numbers and distribution of this plant do not necessitate prioritization of enhancement measures at this time.

Adaptive Management Program. Given woolly seablite's current distribution and abundance within the Preserve, it is currently not necessary to propagate this species in their nursery facilities for inclusion in restoration projects. PVPLC will continue to monitor woolly seablite populations and will respond with habitat enhancement or restoration, and/or propagation as necessary (e.g., in the event of declining trend in populations, catastrophic fire, landslides, cliff retreat, or other factors).

***El Segundo Blue Butterfly* (*Euphilotes battoides allyni*)**

USFWS: Endangered
CDFW: No status

Background

The El Segundo blue butterfly (ESB) is a federally endangered subspecies of the square-spotted blue butterfly in the family Lycaenida. The coast buckwheat (*Eriogonum parvifolium*) is the larval hostplant of ESB, and ESB effectively spend their entire life cycle on this plant. At the time of listing in 1976, the ESB was restricted to relic and remnant coastal dune habitats at four locations: Ballona Wetlands south of Marina del Rey, Los Angeles International Airport (LAX) Dunes, Chevron El Segundo Preserve and adjacent habitat in El Segundo, and Torrance Beach/Malaga Cove (Mattoni *et al.* 1997). Each of these areas represents a Recovery Unit within the ESB Recovery Plan (USFWS 1998). The Recovery Plan for ESB was prepared with the Malaga Cove population as the most southern management unit (Torrance Recovery Unit). The Malaga Cove population is small, between 10 and 30 individuals utilizing between 50 and 100 individuals of coast buckwheat (R. Arnold, *pers. comm*.).

The El Segundo dunes complex historically covered an area of about 4.5 square miles, stretching from the mouth of Ballona Creek south to the Peninsula (USFWS 1998). The dunes were bordered on the west by the Pacific Ocean and continued inland approximately 0.5 mile. Museum specimens of ESB were collected in El Segundo, Redondo Beach, Manhattan Beach, and on the Peninsula (Donahue 1975).

The LAX Recovery Unit is the largest remaining undeveloped coastal sand dune system in southern California (USFWS 1998). It also contains what is believed to be the largest remaining population of ESB. Population estimates for ESB vary greatly from year to year and there is disagreement regarding the survey methods employed to estimate the ESB population. From 1998 through 2013, estimated maximum population numbers varied from a low of 39,282 in 1999 to a high of 142,727 in 2006 (Arnold 2014); however, the population estimate model used by LAX likely overestimated the size of the ESB population (Longcore and Rich 2001). The LAX Recovery Unit is a cornerstone for the survival and recovery of ESB due to the population size and the status of the LAX dunes as a preserve for ESB and other coastal dune dependent species (USFWS 1998).

The Torrance Recovery Unit is the southern-most unit extending south to the Peninsula. There are several scattered areas along the beach bluffs that support coast buckwheat and ESB. These areas are located primarily on private property. A "Safe Harbors Agreement" has been implemented for this Recovery Unit. The agreement, administered by the Urban Wildlands Group, allows private landowners to carry out some low-impact shoreline development while maintaining and improving ESB habitat. Coastal habitat has been restored along beachfronts in Torrance and Redondo Beach, and ESB have been observed in these restored areas. In the Plan area, there was one ESB observation through 2000 (in Neutral Lands south of the Pelican Cove

within the Vicente Bluffs Reserve), and between 2006 and 2011 ESB were identified at 2 locations in the Vicente Bluffs Reserve (Ocean Front Estates Property and Pelican Cove).

The primary cause of the decline of the ESB is attributed to the loss of habitat from urban development and loss of hostplants (Mattoni 1990). Competition with plants which are not native to the coastal dunes ecosystem can also have a detrimental impact on the El Segundo blue butterfly hostplant, *Eriogonum parvifolium* or coast buckwheat (USFWS, 2008). Arnold (2009) expressed concern about a long-term trend of senescence among coast buckwheat at the LAX dunes. Depending on the rates of recruitment and senescence, the population of coast buckwheat may not replace itself naturally. The senescence of coast buckwheat populations along with the isolation of potential habitat for ESB, a relatively small number of individuals, and limited dispersal ability could result in a catastrophic collapse of the ESB population. Small and isolated populations can be particularly sensitive to even the most mild habitat perturbation, disease outbreak, natural catastrophe, or demographic stochasticity (Gilpin and Soulé 1986). Management of occupied ESB habitat requires protection from invasives and public access, maintenance of the distribution of hostplants, an awareness of hostplant senescence and competition, and overall management to provide the early successional stage habitat optimal for ESB.

Potential habitat for the El Segundo blue butterfly (ESB) is defined as southern coastal bluff scrub. There are 133.2 acres of potential ESB habitat in the Plan Area, of which 81.6 acres (61%) are in the Preserve and 46.7 acres (35%) are in Neutral Lands. Of the 81.6 acres of ESB habitat within the Preserve, 55.0 acres (67%) are within Previous Mitigation Lands. Due to its specific habitat requirements, ESB is more likely to occur in specific microhabitats (e.g., coastal dunes and bluff slopes with sufficient coastal buckwheat and loose sand and/or cliff faces comprised of hard-packed sand) within southern coastal bluff scrub habitat that exhibit these conditions.

There is no dune habitat within the Plan Area; however, coast buckwheat is known to occur within the coastal bluff scrub habitat between Ocean Front Estates Property within the Vicente Bluffs Reserve and the Abalone Cove Reserve. Dr. Richard Arnold conducted a butterfly survey in the summer of 1998 with negative results for ESB in this area of the City. Subsequent biological surveys in 2000 for proposed development of the York Long Point site detected a small population of ESB in coastal bluff scrub habitat (RBF Consulting 2001); this location is now within the Terranea Resort, and the occupied habitat was avoided by the development and surrounding habitat was restored. Additional focused surveys for the ESB in 2006 resulted in two confirmed populations (Pratt 2006): one location was just north of Point Vicente in a large patch of coast buckwheat (36 ESB), and the other southeast of Point Vicente at the Fisherman's access area (13 ESB). There was also one ESB observation through 2000, and this observation was in the Neutral Lands south of the Pelican Cove (within Vicente Bluffs Reserve). Subsequent surveys between 2006 and 2011 identified ESB in the Vicente Bluffs Reserve (Ocean Front Estates Property and Pelican Cove).

Conservation Goals

Protect the existing populations from project impacts and indirect effects of recreation, and manage habitat to be suitable for ESB occupation. Overall, facilitate the existing trend for ESB to recolonize southern coastal bluff scrub habitat throughout the Preserve.

Conservation Strategy

- The known populations of ESB within the Preserve will be surveyed every three years (standardized surveys) and managed for persistence.
- Protect and maintain areas of the larval hostplant, coast buckwheat, within the Preserve.
- Suitable, unoccupied habitat within the Preserve [e.g., Vicente Bluffs Reserve (Pelican Cove and Ocean Front Estates Property)] will continue to be targeted for restoration and active planting with coast buckwheat in an effort to establish or re-establish additional population(s) of ESB and to ensure genetic diversity and protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Implement species-specific management actions (e.g., invasive species removal) to increase hostplant numbers, overall habitat quality, and thereby increase ESB population size.
- Include coast buckwheat in restoration projects throughout suitable habitat in the Preserve; actively plant ESB's hostplant coast buckwheat in appropriate locations (and avoid the use of flat-topped buckwheat in such locations).
- Minimize impacts to the existing populations and suitable habitat at the Vicente Bluffs Reserve (Pelican Cove and Ocean Front Estates Property), and any expanded or new populations, through surveys and avoidance measures including controlling for public access, brush clearing and operation/maintenance activities.
- As part of recommended research on this species (where grants are available), contribute to conducting taxonomic research combining morphological, ecological, and genetic analyses to help determine its relationship to other known populations.

Coverage Determination

Coverage Determination. **Covered**

Rationale. All but 4.8 (3%) of 133.1 acres of southern coastal bluff scrub within the Plan Area are either in the Preserve (81.6 acres) or Neutral Lands (46.7 acres). Although there is no commitment for active ESB management within Neutral Lands, no impacts are authorized. The City has committed to limiting impacts within the 81.6 acres of southern coastal bluff scrub to 2 acres in the Preserve (NCCP/HCP Table 5-1). Given the highly restricted distribution of ESB and limitation on anticipated impacts in southern coastal bluff scrub in the Preserve, direct impacts from Covered Projects and Activities are unlikely. For proposed impacts to habitat within the Preserve where ESB or its hostplant coast buckwheat exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5of the Plan) would be followed. By including coast buckwheat in habitat enhancement and restoration work

within the Preserve (active seeding/planting), the Plan is expected to benefit ESB and likely result in expansion of its distribution within the Plan Area. Therefore, through the commitment for habitat management, enhancement, and restoration, the Plan is expected to benefit ESB. Active management and impact avoidance/mitigation measures will offset any potential impacts to the species.

Conditions. Surveys will be conducted by the Preserve Manager every 3 years within the existing populations, as defined in Figure 4, to monitor trends in population dynamics. The Preserve Manager shall evaluate potential opportunities to expand this species' habitat. The host plant for this species will be included in the seed mix for restoration (active planting) within the Preserve in suitable areas, particularly in areas similar to the existing known ESB locations.

Pre-project surveys will be conducted throughout the project area in potential ESB habitat, defined by presence of coast buckwheat, prior to any Covered Activity to assess occupancy and determine avoidance and minimization measures. Occupied ESB habitat will be defined by the extent of host plants in an area known to be occupied by ESB (i.e., any coast buckwheat within 50 feet of a shrub where ESB were observed), and impacts to occupied habitat will be avoided if possible. Where ESB is detected and impacts are unavoidable, the Wildlife Agencies will be provided the opportunity (with sufficient advanced notice) to relocate any and all larvae, pupae, or adults. Survey data will be used to assess the distribution of ESB within the host plant patch, and the City will work with the Wildlife Agencies to minimize impacts to ESB. No more than 5% of any existing ESB occurrence polygon, as defined in Figure 4, will be impacted. Impacts to newly discovered or established occupied habitat patches will not exceed 10% of their distribution at the time of impact based on a habitat evaluation conducted within 1 year of the anticipated impact. For any impact to occupied habitat, host plants will be established onsite to offset the number of host plants lost during the project. Trails will be maintained, posted and patrolled to avoid/minimize encroachment into occupied habitat.

Conservation Analysis

Conservation and Take Levels. There are no known ESB populations outside of the Preserve and Neutral Lands. The known ESB population within Neutral Lands is protected through a conservation easement to the City and managed by the Terranea Resort as a habitat enhancement area under a prior HCP. No direct impacts to ESB are anticipated under this Plan because no Covered Projects and Activities are currently planned in Vicente Bluffs Reserve (Pelican Cove and Ocean Front Estates Property) that would affect this species. However, because ESB may become established in additional areas within the Preserve, the following projects may impact ESB depending on their ultimate location: Miscellaneous Fissure Filling, Miscellaneous Damaged Drain Repair, Miscellaneous Drainage Projects, Abalone Beach Project, and RPV Trails Plan Implementation. Management actions (such as clearing for restoration, etc.) inside the Preserve could result in the removal of very small amounts of coastal sage scrub, which could include some hostplants for ESB.

No more than 5% of any existing ESB occurrence polygon, as defined in Figure 2, will be impacted. Impacts to newly discovered or established populations will not exceed 10% of their

distribution at the time of impact based on current surveys, and the loss of hostplants will be offset with onsite habitat restoration. Trails will be maintained, posted and patrolled to avoid/minimize encroachment into occupied habitat.

Pre-project surveys within the entire Plan Area will be conducted throughout southern coastal bluff scrub in potential ESB habitat prior to any Covered Project and Activity to assess occupancy and to determine avoidance and minimization measures. If ESB is discovered during surveys, the Wildlife Agencies will be notified immediately. Occupied ESB hostplants will be avoided when possible. Where ESB is detected and impacts are clearly demonstrated to be unavoidable, the Wildlife Agencies will be provided the opportunity (with sufficient advanced notice) to relocate any and all larvae, pupae, or adults.

With implementation of the Plan, very few impacts are anticipated of occur, and where impacts would occur they would be minor and limited in scope/distribution and unlikely to substantially affect the viability or likelihood for persistence of ESB within the Plan Area. For proposed impacts to habitat within the Preserve where ESB exists or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. Where any unavoidable impacts occur, they would be mitigated in accordance with the NCCP/HCP. Overall, the Plan is expected to benefit ESB by securing and expanding occupancy within the Plan Area.

The conservation required by the Plan will contribute to the viability of the species by removing invasive plants within the Preserve, active planting of coast buckwheat, and protecting existing ESB and hostplant populations. It is anticipated that the PHMP will enhance habitat for ESB and result in an expansion of this species' occupied area within the Preserve. Habitat restoration is expected to improve habitat quality for ESB and result in larger, more stable populations in the Plan Area. Additional habitat patches may be colonized as habitat restoration continues and existing populations get larger and are more likely to produce founder individuals. PVPLC will focus habitat enhancement efforts in areas that are unlikely to be impacted by Covered Projects and Activities. Prior to any habitat enhancement efforts for this species, PVPLC shall coordinate with the City to verify that the proposed location is not anticipated to be impacted by any Covered Projects and Activities.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs as relatively small stands of habitat that will be subject to edge effects. However, the NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and requires measures for Covered Projects and Activities adjacent to the Preserve (Section 5.6 of the Plan) to reduce edge effects into the Preserve. The hostplant for ESB will also be included in the PHMP seed mix, where appropriate, to aid in establishing more suitable habitat for this species within the Preserve. The majority of historical point locations for ESB and coast buckwheat are included within the Preserve. The Preserve will be managed for ESB and other southern coastal bluff scrub associate species.

Effects on Population Viability and Species Recovery. With implementation of the Plan, very few impacts to ESB and its hostplant coast buckwheat are anticipated to occur, and where

impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing ESB population in the Plan Area. Active management for this species, which is the best safeguard against indirect impacts that are likely the primary threats, would occur under the Plan's PHMP. The PHMP will create and enhance habitat for the species in the Vicente Bluffs Reserve (Pelican Cove and Ocean Front Estates Property), and other suitable locations, and provide opportunity to expand the population size and distribution in the Preserve to increase the regional population viability. For Covered Projects/Activities located in suitable areas within southern coastal bluff scrub habitat, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed to further minimize potential impacts.

Adaptive Management Program. PVPLC has already included coast buckwheat in their restoration projects and initiated ESB surveys within potential habitat in the Preserve Area. PVPLC will continue to monitor ESB populations and will respond with habitat enhancement restoration, active planting and/or propagation of coast buckwheat as necessary. As part of recommended research on this species (where grants are available), the City and PVPLC will participate in, support, or otherwise facilitate taxonomic research addressing morphological, ecological, and genetic analyses to help determine the Preserve's ESB population's relationship to other known populations.

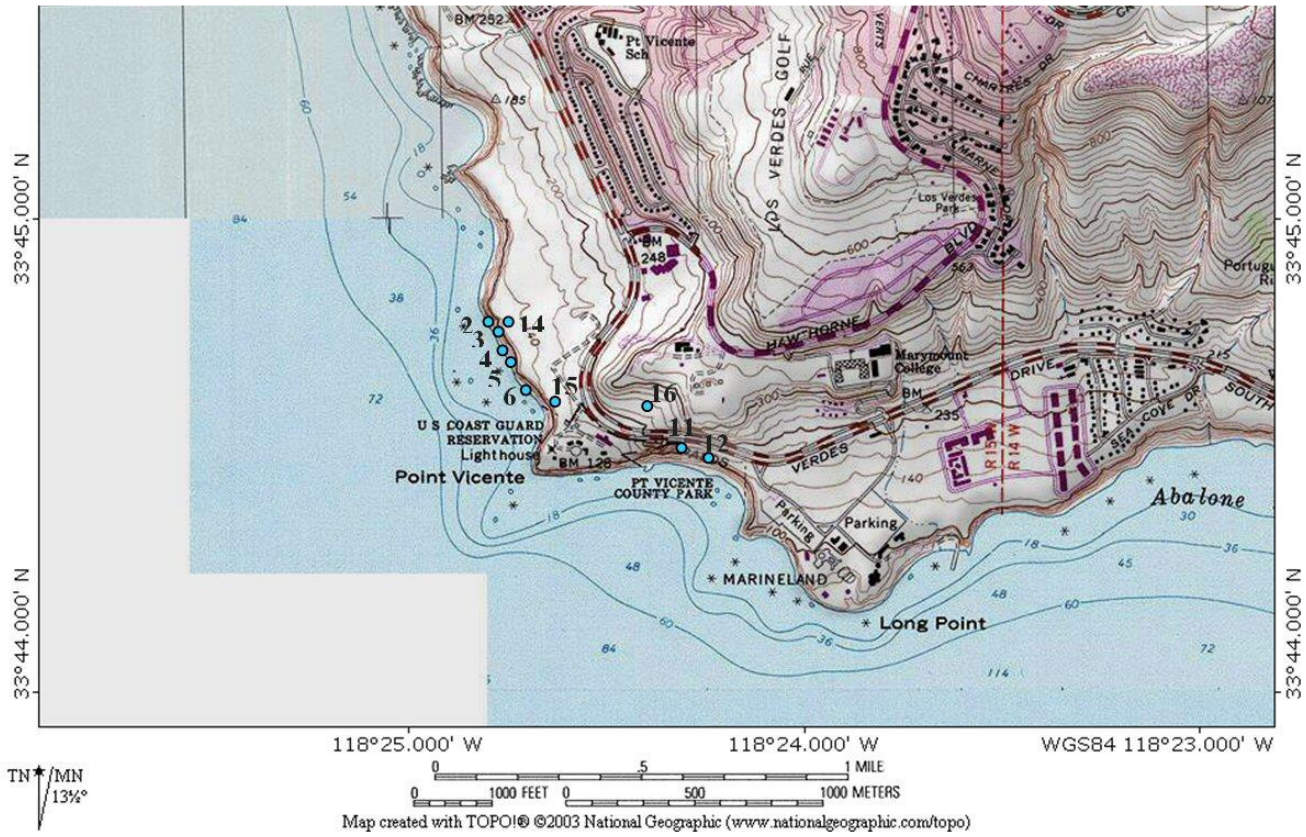


Figure 4. Known locations of El Segundo blue butterflies within the Plan Area.

***Palos Verdes Blue Butterfly* (*Glaucopsyche lygdamus palosverdesensis*)**

USFWS: Endangered
CDFW: No status

Background

The Palos Verdes blue (PVB) butterfly is a rare subspecies of the silvery blue butterfly in the family Lycaenidae (Perkins and Emmel 1977, Arnold 1987). The PVB is restricted to habitats that support larval hostplants, either ocean locoweed or deerweed (Mattoni 1992). Habitat for PVB is typified by open coastal sage scrub and ecotone areas between sage scrub and grasslands. Locoweed is the primary larval hostplant present in the Plan Area. Deerweed does not generally occur within RPV and is mostly restricted to the northeast slope of the Palos Verdes Peninsula. Locoweed and deerweed are early successional or disturbance-associated species; thus, these species will decline if there is an extended period of time without disturbance (e.g., mechanical disturbance and fire). Habitat loss and fragmentation associated with agriculture and residential development, fire suppression (e.g., fuel modification activities), severe weather conditions, and over-collecting by butterfly enthusiasts contributed to the current endangered status of the PVB (Arnold 1987, Mattoni 1992). Federally designated critical habitat includes the San Ramon/Switchbacks Reserve, Agua Amarga Canyon Reserve, and Fred Hesse Park (USFWS 1980); however, none of these sites is currently occupied by PVB.

PVB are currently known to occupy the DFSP San Pedro (Mattoni 1992), the Chandler Preserve in Rolling Hills Estates, and potentially the Malaga Dune in Palos Verdes Estates. Historically, the PVB occurred throughout the Palos Verdes Peninsula. When the PVB was recognized as a distinct subspecies in the 1970s, its range and distribution were already reduced by grazing, agriculture, and residential and urban development (USFWS 1984, Arnold 1987; Mattoni 1992). The type locality on the Alta Vista Terrace was developed for residential use in 1978, and the PVB population was extirpated (USFWS 1984). By the early 1980s, PVB were found at only 10 locations (Arnold 1987). Until its rediscovery in 1994 on the DFSP, the PVB had not been seen since 1983 and was thought to be extinct (Arnold 1987, Mattoni 1992).

PVB surveys were conducted on the DFSP San Pedro from 1994 to 2015 and on the adjacent Palos Verdes Navy housing area from 1999 to 2015 (Longcore and Osborne 2015). The estimated population size at the fuel depot and housing area for 1994 to 2015 varied annually, ranging between 0 and 282 individuals. In 1994, a captive rearing program was established from the population at the DFSP (Longcore *et al.* 2002). The captive breeding facility provides stock for reintroductions and acts as a safeguard against extinction.

In 2009, following habitat restoration efforts, PVB from the captive rearing program were introduced to the 28.5-acre Linden H. Chandler Preserve in Rolling Hills Estates. Reintroduction at this site continued until 2013, and locally produced progeny were observed in 2014 and 2015. Thus, this reintroduction effort appears successful at this time.

Two male and one female PVB were discovered at the Malaga Dune in 2001 (Rudi Mattoni and Jeremiah George, personal communication, 2001). Previous surveys at the Malaga Dune did not detect PVB; therefore, PVB abundance is assumed to be very low at this site (Rudi Mattoni, personal communication, 2001). The Malaga Dune is within the City of Palos Verdes Estates.

In summary, there is one fairly robust population of PVB at the DFSP and Palos Verdes Navy housing area, and a reintroduction effort at the Linden H. Chandler Preserve appears to be successful. A captive rearing program funded by the U.S. Navy provides some protection against impacts from catastrophic events to wild populations. The Malaga Dune may support a low density population. In the Plan Area, PVB are currently not known to be present; however, this species was historically observed in the Agua Amarga Reserve, Upper Filiorum, Portuguese Bend Property, Forrestal Reserve, San Ramon Reserve (Switchbacks Property), and Neutral Lands near Ocean Trails Reserve. PVB's hostplants (ocean locoweed and deerweed) have been observed in all known historic PVB sites within the Plan Area, as well as within the Preserve (Three Sisters/Barkentine Reserve, Ocean Trails Reserve, and Alta Vicente Reserve (Upper Point Vicente). Federally designated critical habitat for the PVB includes the San Ramon Reserve (Switchbacks Property) of Palos Verdes Drive East, Fred Hesse Park, and Agua Amarga Canyon (USFWS 1980).

Threats described at the time the PVB was listed as endangered are still concerns throughout its known and potential range, including continued urban and residential development, weed abatement and control, fire prevention practices, and non-native plant invasion. PVB's primary hostplant (ocean locoweed) has also declined throughout its range, which precipitated the decline of PVB. Competition with plants which are not native to the coastal sage scrub and grassland ecosystems can also have a detrimental impact on the PVB hostplants (ocean locoweed and deerweed). Given the extremely limited range of the PVB, the primary threats to this species are demographic stochasticity and catastrophic events (e.g., fires, landslides). One extreme disturbance event or a series of years with negative population growth could eliminate the existing populations. At this time, the captive breeding program offers protection against range-wide extinction.

Current conservation efforts depend on habitat restoration techniques to establish potential habitat for the PVB. Because both ocean locoweed and deerweed are early successional species, restoration plots may naturally convert into later successional coastal sage scrub communities. If natural succession is allowed to proceed, potential PVB habitat may be lost. Management of occupied PVB habitat requires protection from invasives and public access, maintenance of the distribution of hostplants, an awareness of hostplant senescence and competition, and overall management to provide the early successional stage habitat optimal for PVB.

Habitat for the Palos Verdes blue butterfly (PVB) is defined by the presence of its obligate hostplants, ocean locoweed (*Astragalus trichopodus var. lonchus*) and deerweed (*Acmispon glaber*), which are found within coastal sage scrub and grassland communities within the Plan Area. There are 1,975.9 acres of potential PVB habitat in the Plan Area, of which 1,052.5 acres (53%) are in the Preserve and 570.8 acres (28%) are in Neutral Lands. Of the 1,052.5 acres of PVB habitat within the Preserve, 154.1 acres (14%) are within Previous Mitigation Lands. Due

to PVB's obligate relationship to hostplants and its specific habitat requirements, PVB is more likely to occur in specific areas (e.g., with ocean locoweed and deerweed in sufficient amount with appropriate structure), within coastal sage scrub that exhibit these conditions.

PVB are not currently known to be present within the Plan Area; however, this species was historically observed through the mid-1980s in the Agua Amarga Reserve, Filiorum Reserve, Portuguese Bend Reserve, Forrestal Reserve, the San Ramon Reserve (Switchbacks Property), and Neutral Lands near Ocean Trails Reserve. Ocean locoweed has been observed in all known historic PVB sites within the Plan Area, as well as within the Three Sisters/Barkentine Reserve, Ocean Trails Reserve, Alta Vicente Reserve (Upper Point Vicente), and Ocean Trails Reserve. Deerweed has not been mapped in the Plan Area, but it is generally less common than ocean locoweed in the Plan Area and more common farther inland.

Conservation Goals

Protect the existing suitable habitat, and expand suitable habitat by managing for the hostplant to support potential recolonization and future active reintroduction, and continued occupation by PVB in suitable habitat if/when PVB butterflies become established in the Preserve.

Conservation Strategy

- Areas within the Preserve that have known populations of PVB hostplants ocean locoweed and deerweed will be managed for persistence
- Protect large areas of potential habitat where larval hostplants are plentiful within the Preserve system.
- Target suitable area in the Preserve for restoration and active planting with ocean locoweed and deerweed to establish or re-establish additional viable population(s) of PVB and to ensure genetic diversity and protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Implement species-specific management actions (e.g., invasive species removal) to increase habitat quality and population size for PVB.
- Limit impacts to suitable habitat within the Plan area, and implement habitat avoidance and minimization measures where unavoidable impacts could occur.
- As part of recommended research on this species (where grants are available), contribute to conducting taxonomic research combining morphological, ecological, and genetic analyses to help determine its relationship to other known populations.

Coverage Determination

Coverage Determination. **Covered**

Rationale. At the time of its listing as a federally endangered species in 1980, the entire range of the subspecies was thought to be within the Plan Area; however, it has not been observed in the Plan Area since 1983 (Arnold 1987, Mattoni 1992). A disjunct population was found at the Defense Fuel Support Point (DFSP) San Pedro in 1994 (Mattoni 1992) [located adjacent (to the

east) of the northernmost portion of the City of Rancho Palos Verdes (near Green Hills Memorial Park)], and PVB continue to occupy this site. Despite it not being documented in the Plan Area since 1983, most potential habitat for PVB throughout its range remains within the Plan Area. Accordingly, recovery of the PVB may depend on natural recolonization or active reintroduction and management within the Plan Area. PVB coverage in the Plan will provide a commitment to encourage reintroduction of PVB into its historic range and greatly increase the likelihood of recovery and provide regulatory assurance in the event PVB does recolonize in the Plan area. Because PVB is not currently found in the Plan Area (but has historically occurred), it is anticipated that there would be no direct impacts to this species until it is reintroduced or naturally recolonizes the Plan Area.

The City has committed to limiting impacts within coastal sage scrub habitats throughout the Preserve (NCCP/HCP Table 5-1 of the Plan). For proposed impacts to habitat within the Preserve where PVB or its hostplant ocean locoweed and/or deerweed exist or may occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. By including ocean locoweed and deerweed in habitat enhancement and restoration work within the Preserve (active planting), we expect that the Plan will benefit PVB and result in reintroduced or a natural recolonization within the Plan Area. Therefore, through the commitment for habitat management, enhancement, and restoration, we expect the Plan to benefit PVB and that active management and impact avoidance/mitigation measures will offset any potential impacts to the species.

Conditions. The PVPLC shall regularly evaluate potential opportunities to expand this subspecies' habitat. The host plant for this species will be included in the seed mix for restoration (active planting) within the Preserve in suitable areas within coastal sage scrub and grassland habitat, particularly in historic areas. Pre-project host plant surveys will be conducted in potential PVB habitat prior to any Covered Project/Activities to assess occupancy and determine avoidance and minimization measures. If host plants are identified, a 5-foot buffer around host plants will be avoided if feasible. If avoidance of host plants is not feasible, focused PVB surveys will be conducted. If PVB is discovered during surveys, , the Wildlife Agencies will be provided the opportunity (with sufficient advanced notice) to relocate any and all larvae, pupae, or adults. Occupied PVB host plants will be avoided when possible. Occupied habitat will be defined as host plants, including a 5-foot buffer, within a 50-foot buffer around any PVB observation. Trails will be maintained, posted and patrolled to avoid/minimize encroachment into occupied habitat. Because PVB host plants readily establish in disturbed areas, they may become established in trails and dirt roads throughout the Plan Area. Routine trail and road maintenance may impact host plants and potentially PVB individuals, and there will be no additional restrictions placed on trail or road maintenance based on presence of PVB.

Conservation Analysis

Conservation and Take Levels. There are no known PVB populations in the Plan Area; therefore, there is no current threat of direct impacts from Covered Projects/Activities. However, if PVB colonize the Plan Area (naturally or through active reintroduction), the following Covered Projects and Activities have the potential to impact PVB depending on their ultimate location:

Altamira Canyon Drainage Project, Miscellaneous Drainage Projects, Preserve Trails Plan Implementation, Palos Verdes Drive South Road Repair, Landslide Abatement Measures, Portuguese Bend Club Remedial Grading, or Plumtree Development.

Due to the rarity of PVB, special precautions will be implemented to protect the initial new populations introduced or found in the Preserve. With the exception of projects necessary to protect infrastructure and habitat (e.g., drainage projects), there will be no impacts to occupied PVB habitat until three separate populations are established. However, some project locations may necessarily impact areas that cannot currently be predicted (e.g., Miscellaneous Drainage Projects, RPV Trails Implementation, and Landslide Abatement Measures). If Covered Projects and Activities are proposed near occupied PVB habitat, measures will be employed to minimize or avoid impacts. Pre-project surveys within the entire Plan area will be conducted throughout potential PVB habitat prior to any Covered Project and Activity to assess occupancy and determine avoidance and minimization measures. If PVB is discovered during surveys, the Wildlife Agencies will be notified immediately. Occupied PVB hostplants will be avoided when possible. To prevent impacts to PVB eggs, larvae, and pupae, PVB hostplants and a 5-foot border around hostplants will be avoided. Where PVB is detected and impacts are demonstrated to be unavoidable, the Wildlife Agencies will be provided the opportunity (with sufficient advanced notice) to relocate larvae, pupae, and/or adults.

Once three separate populations are established in the Preserve, impacts will be authorized with appropriate minimization measures. Populations for PVB are defined as occupied habitat patches on separate Preserve properties that show evidence of reproduction through observation of immature PVB (e.g., eggs, larvae, or pupae). Occupied patches on the same Preserve segment can be considered separate populations if they are separated by at least 2,000 feet on the larger segments such as Portuguese Bend. No more than one population will be impacted annually provided it is not the only occurrence with a particular Reserve Area. Prior to any impact, the population boundary will be delineated based on hostplant distribution, and no more than 10% of that boundary based on current surveys will be impacted for any Covered Project and Activity. If impacts are temporary, PVB hostplants will be included in the restoration plans. If impacts are permanent, equivalent offsite PVB habitat will be restored within the Preserve through the PHMP.

It is possible that habitat management actions (such as clearing for restoration, etc.) inside the Preserve could result in the removal of very small amounts of coastal sage scrub, which may impact some hostplants for PVB. The net benefit of these impacts will be evaluated in annual work plans submitted to the Wildlife Agencies.

For proposed impacts to habitat within the Preserve where PVB hostplants exists or PVB may occur in the future, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed. Where any unavoidable impacts occur, they would be mitigated in accordance with the NCCP/HCP. Overall, the Plan is expected to facilitate establishment and continued support of PVB populations within the Plan Area, thereby expanding the distribution of PVB and significantly contribute to the conservation and recovery of PVB.

The conservation required by the Plan will contribute to the viability of the species by removing invasive plants within the Preserve, active planting of PVB hostplants, and protecting existing populations. It is anticipated that the PHMP will enhance habitat for PVB, lead to the establishment of this species, and promote an expansion of the species' distribution and overall numbers within the Preserve over time. Habitat restoration is expected to improve habitat quality and help PVB colonize the Plan Area (naturally or through active reintroduction). PVPLC will focus habitat enhancement and reintroduction efforts in areas that are unlikely to be impacted by covered projects. Prior to any habitat enhancement efforts for this species, PVPLC shall coordinate with the City to verify that the proposed location is not anticipated to be impacted by any Covered Projects/Activities.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs in areas within coastal sage scrub and grassland habitats that have ocean locoweed and deerweed in sufficient amount with appropriate structure. These areas could be subject to direct and/or indirect effects from covered projects and activities that could occur throughout the Preserve. However, the NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and measures for Covered Projects and Activities adjacent to the Preserve (Section. 5.6 of the Plan) that would be implemented for projects in existing and/or potential habitat for PVB to increase the likelihood that direct and indirect edge effects within the Preserve would not occur. Hostplants for PVB will be included in the PHMP seed mix, where appropriate, to aid in establishing more suitable habitat for this species within the Preserve. The majority of historical point locations for PVB and ocean locoweed are included within the Preserve. The Preserve will be managed for PVB and other coastal sage scrub associate species.

Effects on Population Viability and Species Recovery. With implementation of the Plan, very few impacts to PVB's hostplants (ocean locoweed and deerweed) are anticipated to occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of the existing hostplant population in the Plan Area. Active management for this species, which is the best safeguard against indirect impacts that are likely the primary threats, would also occur under the Plan's PHMP. The PHMP will create and enhance habitat for the species in suitable locations throughout the Preserve and provide opportunity to expand the population size and distribution in the Preserve to increase the regional population viability. The Plan will encourage the active reintroduction of PVB into its historic range and may be a primary factor in its recovery range wide. For Covered Projects/Activities located in suitable areas within coastal sage scrub and grassland habitat, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed to further minimize potential impacts to PVB.

Adaptive Management Program. PVPLC has already included PVB hostplants in restoration efforts throughout the Preserve. PVPLC will continue to monitor PVB hostplant populations and will respond with habitat enhancement restoration, active planting and/or propagation of ocean locoweed and deerweed as necessary. As part of recommended research on this species (where grants are available), the Plan will contribute to conducting taxonomic research combining

morphological, ecological, and genetic analyses to help determine its relationship to other known populations.

Coastal California Gnatcatcher (*Polioptila californica californica*)

USFWS: Threatened
CDFW: Species of Special Concern, NCCP Focal Species

Background

The coastal California gnatcatcher or gnatcatcher typically occurs in or near coastal sage scrub, which is composed of relatively low-growing, dry-season deciduous and succulent plants. Characteristic plants of these communities include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), lemonade berry (*Rhus integrifolia*), *Salvia* spp., *Encelia* spp., and *Opuntia* spp. (Atwood 1990, Beyers and Wirtz 1997, Braden *et al.* 1997, Weaver 1998). Gnatcatchers are found in moderately dense stands of coastal sage scrub (Atwood 1980, 1988). Beyers and Wirtz (1997) found that nesting territories typically have greater than 50% shrub cover and an average shrub height that exceeds 1 m (3.28 ft). The relative density of shrub cover influences gnatcatcher territory size, with territory size increasing as shrub cover decreases, likely due to limited resource availability. Gnatcatchers will use sparsely vegetated coastal sage scrub as long as perennial shrubs are available, although there appears to be a minimum cover threshold below which habitat becomes unsuitable (Beyers and Wirtz 1997).

The gnatcatcher is found on the coastal slopes of southern California, from southern Ventura southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties into Baja California, Mexico to approximately 30 degrees North latitude near El Rosario (Atwood 1980, 1990; USFWS 2000). Within its range, the distribution of coastal California gnatcatcher is further defined by relatively narrow elevation limits (Atwood and Bolsinger 1992). Atwood and Bolsinger (1992) found that of 324 sites occupied by the gnatcatcher between 1960 and 1990, 84% were located below 250 m (820 ft) elevation. In general, inland populations of the gnatcatcher can be found below 500 m (1,640 ft) elevation and coastal populations tend to be found below 250 m (820 feet) elevation.

In 1993, the USFWS estimated that approximately 2,562 pairs of gnatcatchers remained in the United States. Of these, 30 pairs (1.2%) occurred in Los Angeles County, 757 pairs (29.5%) occurred in Orange County, 261 pairs (10.2%) occurred in Riverside County, and 1,514 pairs (59.1%) occurred in San Diego County. Based on surveys conducted from 1993-1997, the gnatcatcher population within the Plan Area was estimated at 35 to 46 pairs (Atwood *et al.* 1998). This range is consistent with subsequent surveys throughout the Preserve, which documented 65 territories in 2006, 40 in 2009, and 33 in 2012 (PVPLC 2013).

The abundance of gnatcatchers at a given locale can fluctuate extensively on an annual basis (Atwood *et al.* 1998, Erickson and Miner 1998, Preston *et al.* 1998). These fluctuations can be

relatively extreme, resulting in population sizes that double or halve in a single year (Atwood and Bontrager 2001). Cold, wet winters appear to reduce over-wintering survivorship, and wet springs increase gnatcatcher reproductive success through increased plant productivity and corresponding increases in food availability (Erickson and Miner 1998, Patten and Rotenberry 1999). Drought conditions may reduce gnatcatcher productivity, as suggested by reduced levels of nest success and reduced number of broods during drought conditions (Grishaver *et al*. 1998).

Gnatcatchers were considered locally common in the mid-1940s, but they had declined substantially in the United States by the 1960s (Atwood 1980). The direct loss of habitat reduces the amount of breeding, sheltering and foraging area available, thereby reducing reproductive capacity and ultimately the population size. Development within and near gnatcatcher habitat has increased recreational use of habitats, fire frequency, waste dumping, air pollution, exotic plant and animal species, predators, cowbird parasitism, domestic pets, and night lighting, all of which can have adverse impacts on the quality of habitat for the gnatcatcher. In addition, changes in global climate conditions have the potential to alter the quality and distribution of habitats suitable for the gnatcatcher.

Large blocks of habitat on public and private lands have been secured and are being managed for the benefit of the gnatcatcher. Long-term management will likely be required in most conserved areas to address the numerous threats posed by the urban edge and ensure the persistence of the species. Some long-term management actions that will address identified threats include predator control, cowbird trapping, routine invasive vegetation removal, limited public access in areas of high quality habitat, and control of irrigation water and other urban run-off adjacent to preserved habitat. Monitoring of the species' distribution over time will assist in determining the effectiveness of management actions at reducing threats and will allow for management to be adapted in the event that threats have not been adequately reduced.

Potential habitat for the gnatcatcher is defined as coastal sage scrub, southern cactus scrub, and southern coastal bluff scrub. There are 1,259.0 acres of gnatcatcher habitat in the Plan Area, of which 730.1 acres (51%) are in the Preserve and 429.3 (34%) acres are in Neutral Lands. Of the 730.1 acres of gnatcatcher habitat within the Preserve, 113.7 acres (15%) are within Previous Mitigation Lands.

According to Table 2, surveys covering the Plan Area, there were 191 observations of gnatcatchers within the Plan Area, of which 148 (77%) were within the Preserve and 39 (20%) were within Neutral Lands. Of the 148 observations in the Preserve, 27 (18%) were within Previous Mitigation Lands. Gnatcatchers have been documented in all Preserve areas except Pelican Cove and Lower Point Vicente Property within the Vicente Bluffs Reserve, and Malaga Canyon Reserve. With the exceptions of the Crestridge Property within the Vista Del Norte Reserve, the Filiorum Reserve, and the Donation Parcel, each of these Preserve areas have been consistently occupied in recent surveys (PVPLC 2013).

Conservation Goals

Ensure species persistence within the Plan Area and contribute to local metapopulation viability and species recovery by ensuring genetic and demographic connectivity within the Plan Area.

Conservation Strategy

- Conserve and manage sufficient breeding habitat in relatively large, contiguous patches, and sufficient habitat linkages and dispersal stepping-stones between breeding areas to maintain connectivity within the Plan Area.
- Target suitable area in the Preserve for restoration and active planting with coastal sage scrub to establish or re-establish additional viable population(s) of gnatcatcher across the Preserve to protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Restoration and/or enhancement of 250 acres of degraded and disturbed areas throughout the Preserve will include substantial areas high quality gnatcatcher habitat, at locations which will increase gnatcatcher carrying capacity of the Preserve, and functionality of linkages between areas occupied by gnatcatchers.
- Areas within the Preserve that have known populations of gnatcatcher will be surveyed (standardized surveys every 3 years) and the occupied habitat will be evaluated for potential threats including the presence of exotic plants, recreation impacts, urban edge effects, or risk of fire.
- Implement species-specific management actions (e.g., invasive species removal) to protect or enhance habitat quality in order to increase the Preserve population size for gnatcatcher.
- Limit impacts to occupied gnatcatcher habitat within the Preserve and implement habitat avoidance and minimization measures where unavoidable impacts from Covered Projects and Activities could occur.

Coverage Determination

Coverage Determination. **Covered**

Rationale. 1,159.4 of 1,259.0 acres (92%) of gnatcatcher habitat and 187 of 191 gnatcatcher observations (98%) within the Plan Area are in either the Preserve or Neutral Lands. Although there is no commitment for active gnatcatcher management within Neutral Lands, no impacts are authorized. Although the Neutral Lands are expected to contribute to the overall gnatcatcher population in the Plan Area, they are primarily recognized to contribute to functional connectivity between Preserve areas supporting populations of the gnatcatcher and other Covered Species. The City has committed to limiting impacts within the 730.1 acres of gnatcatcher habitat to no more than 73.5 acres throughout the Preserve (66.5 acres of coastal sage scrub, 5 acres of southern cactus scrub, and 2 acres of southern coastal bluff scrub) (NCCP/HCP Table 5-1, Total Loss of Habitat by City-Covered Projects and Activities). Based on the latest surveys, gnatcatchers are broadly distributed throughout the Preserve (PVPLC 2013). For proposed impacts to habitat within the Preserve where gnatcatcher exists or may

occur, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed.

Given the broad distribution of gnatcatchers throughout the Plan Area, it is likely that Covered Projects and Activities will impact this subspecies by loss of habitat rather than by direct loss of individuals. With implementation of the Plan, very limited direct impacts to gnatcatcher are anticipated of occur, and where impacts would occur they would be small and limited in scope/distribution to not substantially affect the viability of a local population, nor the overall population in the Plan Area. In addition, the PHMP will manage and restore habitat specifically for the benefit of gnatcatchers, and this is anticipated to result in a net increase in occupied gnatcatcher habitat throughout the Preserve. The PHMP will create and/or enhance up to 250 acres of habitat for the species in locations chosen to expand the size and distribution of the gnatcatcher population in the Preserve, thereby increasing the regional population viability. We do not anticipate any impacts to gnatcatchers within Neutral Lands, but habitat quality may degrade over time without active management. The remaining 99.6 acres of gnatcatcher habitat outside of the Preserve and Neutral Lands is scattered throughout the Plan Area in fragments smaller than 5 acres (Figure 5). Presence of brown-headed cowbirds (*Molothrus ater*) will be monitored, and restrictions (or other off-setting measures) will be implemented on new equestrian facilities as required in the PHMP.

Conditions. Surveys will be conducted every 3 years within the Preserve to monitor trends in population dynamics and to evaluate potential habitat restoration actions to benefit this species. The Preserve Manager shall regularly evaluate potential opportunities to expand and enhance gnatcatcher habitat, and the Plan will provide a net increase in gnatcatcher habitat within the Preserve. Implementation of species-specific management actions as part of the PHMP (e.g., invasive species removal) will also occur under the Plan.

Pre-project surveys will be conducted in areas that contain potential gnatcatcher habitat. Construction for Covered Projects and Activities that may impact gnatcatchers will be scheduled to avoid the bird breeding season (February 15-August 31). If, due to an urgent or emergency public health or safety concern determined by the City and Wildlife Agencies, these activities must occur from February 15-August 31 within and/or adjacent to gnatcatcher habitat, gnatcatcher pre-project surveys will be conducted to determine nesting activity. Survey results will be submitted to the Wildlife Agencies for review. If nesting activity is detected, then all construction activity must occur outside of a 300-foot buffer surrounding each nest. Reductions in the nest buffer may be possible depending on site-specific factors (e.g., topography, screening vegetation, ambient noise levels, etc.), in coordination with the Wildlife Agencies. Construction noise levels should not exceed 60 dBA Leq within the 300-foot buffer zone unless authorized by the Wildlife Agencies. The buffer zones and noise limits will be implemented until the nestlings fledge or the nest fails. Status of the nest will be monitored by a qualified biologist. A report will be submitted to the Wildlife Agencies for review prior to discontinuing the noise limits and nest buffers. If grubbing or other construction related activities associated with Miscellaneous Drain Repair, Palos Verdes Drive South Road Repair, or Alta Vicente Reserve (Upper Point Vicente) must occur from February 15-August 31 within and/or adjacent to gnatcatcher habitat, gnatcatcher pre-project surveys will be conducted to determine nesting activity. If nesting

activity is detected, all construction activity must occur outside of a 50-foot buffer surrounding each nest. Construction noise levels should not exceed 65 dBA Leq within the 50-foot buffer zone. The buffer zones and noise limits will be implemented until the nestlings fledge or the nest fails. Status of the nest will be monitored by a qualified biologist. A report will be submitted to Wildlife Agencies for review prior to discontinuing the noise limits and nest buffers. Trails will be maintained, posted, and patrolled to avoid/minimize encroachment into suitable habitat.

Conservation Analysis

Conservation and Take Levels. For this analysis, we use the definition of "territory" from PVPLC (2013), which includes "any discrete location where a territorial bird (male, in the case of the gnatcatcher) or pair was present on at least one visit."

Because gnatcatchers are broadly distributed throughout the Plan Area, Covered Projects and Activities are likely to impact portion(s) of a gnatcatcher use area. Most impacts will be very small relative to the size of a pair's use area and not expected to reduce habitat quality/resources to the point of affecting its viability. Given the measures that will be implemented to minimize and avoid impacts to gnatcatchers within the Preserve, we anticipate that the maximum 73.5 acres of impacts within suitable gnatcatcher habitat will be concentrated in unoccupied habitat. The 99.6 acres of suitable gnatcatcher habitat outside of the Preserve and Neutral Lands is scattered in small fragments that are both unlikely to be targeted for development and unlikely to render territories non-viable.

As a worst case scenario, this analysis assumes that impacts will be randomly distributed throughout suitable habitat, and up to 14% of the habitat will be impacted by Covered Projects/Activities. By extrapolating the latest survey results within the Preserve, which found between 33 and 65 territories in the 730 acres of suitable habitat surveyed, there are between 57 and 114 territories in the total 1,259 acres of suitable habitat in the Plan Area. In a worst case scenario, a loss of up to 14% of these territories would leave between 49 and 98 territories if we consider only impacts from Covered Projects and Activities. Due to the nature of the individual Covered Projects and Activities, it is not expected a loss of habitat (14%) would cause such a commensurate decline in the gnatcatcher population.

The City and PVPLC have committed to restore or enhance a minimum of 250 acres of native habitat within the Preserve. Although restoration will not exclusively target gnatcatcher habitat, most of the native vegetation is dominated by shrub communities, and most of the restoration is expected to directly benefit gnatcatchers. Gnatcatchers successfully colonized and bred following habitat restoration at Ocean Front Estates within the Vicente Bluffs Reserve and Ocean Trails Reserve, and similar results are expected from implementation of the PHMP. Through coordination with the City, PVPLC will focus habitat enhancement and reintroduction efforts in areas that are unlikely to be impacted by Covered Projects and Activities. Overall, it is anticipated the Plan will result in a net increase in gnatcatcher habitat within the Reserve and increase the number of gnatcatcher territories.

Active management and recovery of suitable habitat in the Preserve is considered the best mechanism to off-set the threats from non-native plants, indirect impacts, and local minor direct impacts from covered projects. The PHMP will create and enhance habitat for the species in suitable locations of the Preserve and provide opportunity to expand the population size and distribution in the Preserve to increase the regional population viability. For Covered Projects/Activities located in gnatcatcher occupied areas, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed to further minimize potential impacts to the gnatcatcher.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs in areas within coastal sage scrub with appropriate structure. These areas could be subject to direct and/or indirect effects from Covered Projects and Activities. However, the NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and measures for Covered Projects and Activities adjacent to the Preserve (Section 5.6 of the Plan) that will reduce direct and indirect effects on gnatcatchers and their occupied habitat within the Preserve. Restoration will occur throughout designated Preserve areas. Restoration and/or enhancement and management of 250 acres of coastal sage scrub, southern cactus scrub, and southern coastal bluff scrub will benefit the gnatcatcher by maintaining and creating suitable habitat within the Preserve. Preserve areas will subsequently indirectly benefit gnatcatchers elsewhere on the Peninsula.

Effects on Population Viability and Species' Recovery. Because vegetation restoration under the PHMP will be targeted to provide suitable breeding habitat in important locations, it is expected to benefit local gnatcatcher populations, increasing the overall number and distribution of gnatcatchers in the Reserve. This will increase the regional (i.e., Peninsula-wide) population viability. Conversely covered projects and activities are generally expected to have minor effects on gnatcatchers and not substantially affect local populations. Cowbird parasitism will be monitored and managed within the Preserve, also improving the conservation of the species. For Covered Projects/Activities located in suitable areas within occupied gnatcatcher habitat, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed to further avoid/minimize potential impacts to the gnatcatcher.

Adaptive Management Program. PVPLC has already initiated habitat restoration throughout the Plan Area that has and will continue to benefit gnatcatchers, and they have adjusted the restoration targets in response to a recent fire. PVPLC will continue to monitor gnatcatcher populations and will respond with habitat enhancement restoration, active planting and/or propagation of coastal sage scrub, southern cactus scrub, and southern coastal bluff scrub habitat as necessary. PVPLC also coordinates with the Wildlife Agencies and other regional entities performing monitoring and adaptive management activities related to California gnatcatcher conservation. This will ensure that efforts in Palos Verdes will be integrated with results from other efforts in coastal southern California.

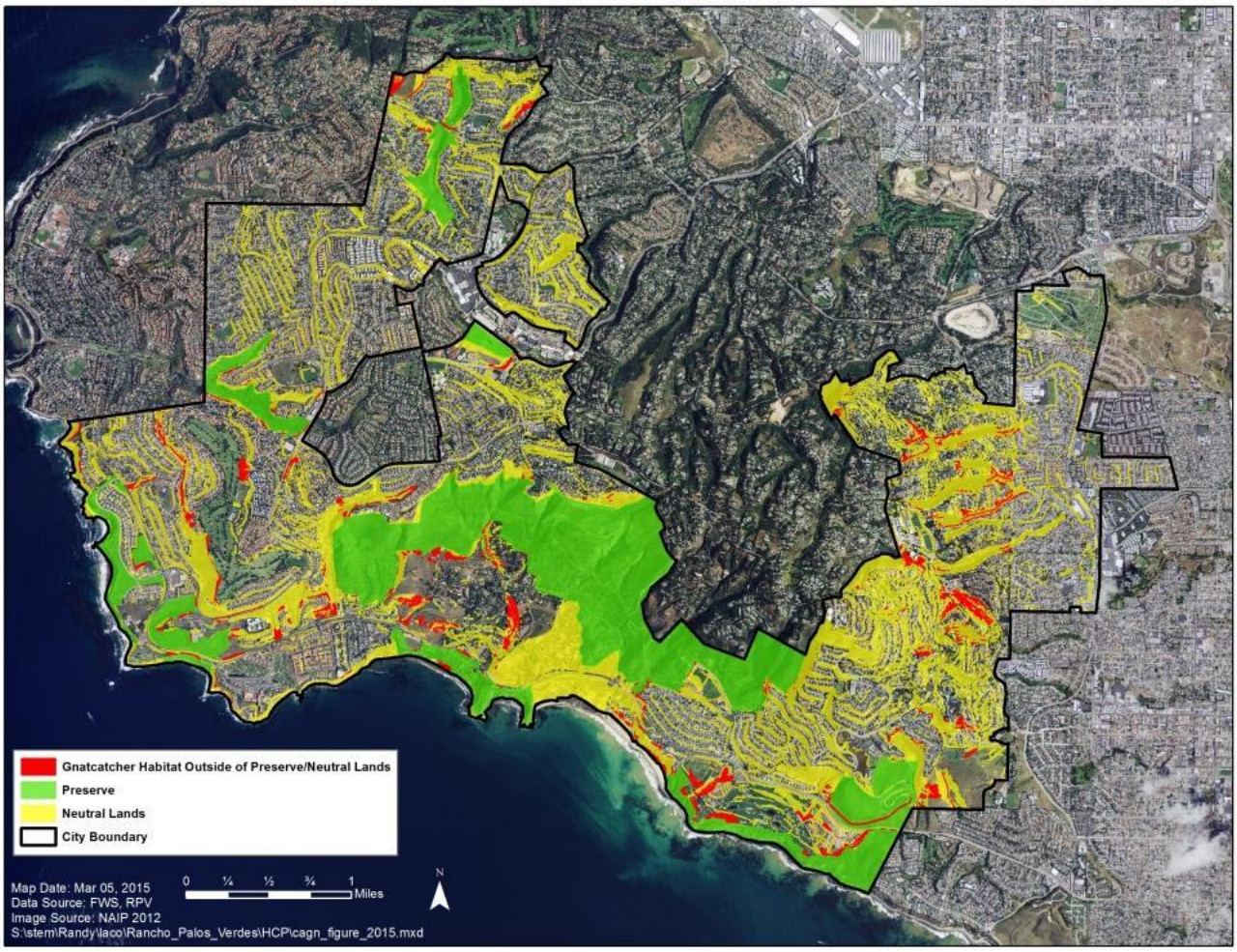


Figure 5. Distribution of coastal California gnatcatcher habitat within the Plan Area.

Cactus Wren (*Campylorhynchus brunneicapillus*)

USFWS: No status
CDFW: Species of Special Concern, NCCP Focal Species

Background

The cactus wren is a resident species from southern California south to southern Baja California, southern Nevada, southwestern Utah, western and south central Arizona, southern New Mexico, and central Texas south to Mexico (Hamilton *et al*. 2011). The coastal population is found in arid parts of westward-draining slopes from San Diego County northwest to Ventura County. Occupied areas occur on mesas and lower slopes of the coastal ranges below elevations of approximately 460 meters (1,290 feet). Coastal populations of cactus wrens occur in stands of coastal sage scrub (or similar scrubland types such as maritime succulent scrub, or sometimes

delineated as cactus scrub) dominated by thickets of cholla (*Opuntia prolifera*) and prickly pear (*Opuntia littoralis, Opuntia oricola*). This species nests only in cactus patches at least 1-3 feet tall. Unoccupied potential habitat may be recolonized in future years.

Once widespread in coastal southern California, by 1990 cactus wrens had been reduced to fewer than 3,000 pairs scattered into colonies of widely varying size; many colonies are isolated by distance from other colonies (Ogden 1993). Removing observations outside of the Plan Area from Atwood *et al.* (1997), the cactus wren population was estimated at 47 to 58 pairs from 1993 to 1997. In the Plan Area, there were 279 observations of cactus wrens, of which 189 (67%) were within the Preserve and 71 (25%) were within Neutral Lands. These surveys documented cactus wrens throughout the Preserve except the Vicente Bluffs Reserve (Ocean Front Estates Property, Pelican Cove, and Lower Point Vicente) Reserve, Crestridge Property (Vista Del Norte Reserve), and the Malaga Canyon Reserve. With the exception of the Abalone Cove Reserve, each of Reserve Area has been consistently occupied in recent surveys (PVPLC 2013). Although variation in previous survey methodology makes comparisons difficult, it appears that the cactus wren population size in the Preserve dropped by 2006 (11 pairs and 41 additional adults) and 2009 (18 pairs excluding Alta Vicente Reserve and Upper Filiorum within the Filiorum Reserve) but recovered by 2012 (48 territories; PVPLC 2013). Because the surveys from the 2000s were not designed to distinguish mating pairs, they are poor approximations of carrying capacity for the Plan Area, and Atwood *et al.* (1997) is believed to be the best data to estimate cactus wren pair abundance for the purposes of the conservation analysis.

The primary threats to the cactus wren are habitat loss and fragmentation from urbanization, agricultural development, and wildfires. Increasing habitat fragmentation and isolation of populations decreases dispersal ability and inter-population connections of the cactus wren and reduces the overall genetic viability of the species (Ogden 1993). Cactus wrens that are confined to isolated patches of habitat in urban areas are subject to increased levels of predation pressures as reductions in the populations of keystone predators are replaced by higher population levels of smaller predators and domestic animals (e.g., Crooks and Soulé 1999). As a result of invasive plant competition, grazing, weather patterns, and other natural and human-influenced disturbances, the reestablishment of cactus patches essential to this species may take many years. Intense fires may kill cactus plants and eliminate habitat for the cactus wren for extended periods of time. This species is therefore especially vulnerable to stochastic events, especially wildland fires which are the chief limiting factor in the distribution of cacti in southern California (Rea and Weaver 1990, Benson 1969).

Potential habitat for the cactus wren in the Plan Area is defined as coastal sage scrub, southern cactus scrub, and southern coastal bluff scrub. There are 1,259.0 acres of cactus wren habitat in the Plan Area, of which 730.1 acres (51%) are in the Preserve and 429.3 acres (34%) are in Neutral Lands. Of the 730.1 acres of cactus wren habitat within the Preserve, 113.7 acres (15%) are within Previous Mitigation Lands. Due to the cactus wren's specific micro-habitat requirements (e.g., extensive cacti patches with individual cactus being at least 1-3 feet tall), much of the native shrublands (i.e., coastal sage scrub, southern cactus scrub, and southern coastal bluff scrub) in the Plan Area are not suitable for occupation by cactus wrens.

Conservation Goals

Ensure this species' persistence within the Plan Area by maintaining habitat patches that support cactus wren breeding as well as connectivity for dispersal between occupied patches. As part of the coastal sage scrub restoration requirement, incorporate planting of cactus to foster establishment of additional habitat suitable, throughout the Preserve, for occupation by cactus wrens.

Conservation Strategy

- Conserve existing large populations of cactus wrens and all coastal sage scrub, southern cactus scrub, and southern coastal bluff scrub habitats with patches of tall cacti (at least 1-3 feet) in the Plan Area.
- Conserve and manage sufficient breeding habitat in relatively large, contiguous patches, and sufficient habitat linkages and dispersal stepping-stones between breeding areas to maintain connectivity within the Plan Area.
- Target suitable area in the Preserve for restoration and active planting with cacti (cholla, prickly pear) to establish or re-establish populations of cactus wren to protect against catastrophic events (e.g., fire, landslides, bluff retreat).
- Create or enhance cactus habitat to increase the carrying capacity (population size) and distribution of cactus wrens across the Reserve.
- Include cacti in portions of the 250 acres of restoration and/or enhancement that is required under the Plan to increase the size of breeding populations and functionality of linkages.
- Cactus wren monitoring will be performed every 3 years as part of the coastal California gnatcatcher monitoring.
- Remove invasive species which threaten cactus habitat; particularly in proximity to cactus wren populations.
- Limit impacts to occupied habitat within the Preserve and implement habitat avoidance and minimization measures where unavoidable impacts will occur.
- Retain mature cacti stands in fuel management areas to provide potential nesting and dispersal habitat for cactus wren. Taller (1-3 feet) cactus that cannot be avoided should be salvaged where feasible and transplanted to suitable areas within the Preserve.
- Locate new public access points and operational/maintenance activities to minimize/avoid areas occupied by cactus wren and where large stands of mature cactus (at least 1-3 feet tall) exist within the Preserve.
- As part of recommended research on this species, if funding or collaborations allow, contribute to conducting taxonomic research combining morphological, ecological, and genetic analyses to help determine its relationship to other regional populations.

Coverage Determination

Coverage Determination. **Covered**

Rationale. 1,159.4 of 1,259.0 acres (92%) of cactus wren habitat and 260 of 279 cactus wren observations (93%) within the Plan Area are in either the Preserve or Neutral Lands. Although there is no commitment for active cactus wren management within Neutral Lands, no impacts are authorized. The City has committed to limiting impacts within the 730.1 acres of cactus wren habitat to no more than 73.5 acres throughout the Preserve (66.5 acres of coastal sage scrub, 5 acres of southern cactus scrub, and 2 acres of southern coastal bluff scrub) (NCCP/HCP Table 5-1).

Based on the latest surveys, cactus wrens are broadly distributed throughout the Preserve (PVPLC 2013). Given the broad distribution, it is likely that Covered Activities will impact habitat used by this species; however, cactus wren habitat is concentrated in the Preserve and Neutral Lands, and impacts from Covered Projects and Activities will not exceed 73.5 acres. For Covered Projects/Activities located in suitable areas within occupied cactus wren habitat, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed to further minimize potential impacts to the cactus wren.

Active management for this species would also occur under the Plan's PHMP. The PHMP will create and enhance cactus in suitable locations in order to expand the population size and distribution of cactus wrens in the Preserve. This in turn will increase the regional population viability. By also including cactus in habitat restoration plant palettes, the Plan will further provide potential cactus wren habitat throughout the Preserve. The remaining 99.6 acres of cactus wren habitat outside of the Preserve and Neutral Lands is scattered throughout the Plan Area in fragments smaller than 5 acres and generally considered to be of low value to cactus wrens (Figure 5).

Conditions. Surveys will be conducted every 3 years by the Preserve Manager within the Preserve to monitor trends in population dynamics and to evaluate potential habitat restoration actions that may benefit this species. The Preserve Manager shall evaluate potential opportunities to expand and enhance cactus wren habitat, and the expectation is that the Plan will increase cactus wren habitat within the Preserve. Implementation of species-specific management actions as part of the PHMP (e.g., invasive species removal, cactus planting) will also occur under the Plan, which will protect and enhance existing habitat.

Pre-project surveys will be conducted in areas that contain potential habitat for the cactus wren. Construction or constructions related activities for Covered Projects and Activities that may impact cactus wrens will be scheduled to avoid the bird breeding season (February 15-August 31) and to avoid or minimize direct impacts to mature cactus (i.e., greater than 1 foot in height), and preferentially avoid the most mature cactus in a particular stand). If, due to an urgent or emergency public health or safety concern determined by the City and Wildlife Agencies, these activities must occur from February 15-August 31 and within 100 feet of any coastal sage scrub and cactus wren pre-project surveys will be conducted to determine nesting activity. Pre-

project surveys will consist of 3 survey days over a one-week period, including one survey within 3 days of construction. Survey results will be submitted to the City, PVPLC, and Wildlife Agencies. If nesting activity is detected, then all construction activity must occur outside of a 100-foot avoidance buffer/barrier zone to attenuate noise surrounding each nest. No birds shall be disturbed or taken. Construction noise levels should not exceed 65 dBA Leq within the buffer zone. The buffer zones and noise limits will be implemented until the nestlings fledge. The status of the nest will be monitored, and a report with recommendations will be submitted to the Wildlife Agencies for review prior to discontinuing the noise limits and nest buffers.

Other measures in the Plan to conserve populations of cactus wren include the following:

- Trails will be posted and patrolled to avoid/minimize encroachment into occupied cactus wren habitat;
- Locate new public access points and operational/maintenance activities to minimize/avoid areas occupied by cactus wren and where large stands of mature cactus (at least 1-3 feet tall) exist within the Preserve; and,
- Impacts to cacti and other succulents within any required fuel clearing areas shall be minimized to maintain habitat for the coastal cactus wren and other species. Taller (1-3 feet) cactus that cannot be avoided should be salvaged where feasible and transplanted to suitable areas within the Preserve.

Conservation Analysis

Conservation and Take Levels. Atwood *et al.* (1997) is used to estimate cactus wren abundance within the Plan Area for the purposes of this analysis as it is the most recent comprehensive survey effort of lands throughout the Plan Area. More recent data are available for within Preserve areas, but they were not collected in a manner that provides meaningful demographic comparisons.

Because of their broad distribution throughout the Plan Area, Covered Projects and Activities may impact occupied cactus wren habitat. Although true territory sizes are typically smaller, for the purposes of estimating impacts, this analysis assumes that cactus wren pairs are evenly spaced within suitable habitat throughout the Plan Area. This assumption produces an estimate of between 12 (730 acres of habitat in the Preserve/60 pairs) and 15 (730 acres/47 pairs) acres of territory size based on the data in Atwood *et al.* (1997). Thus, while most impacts to cactus from individual projects are very small, and there would be a concerted effort to avoid the more mature (taller) cactus individuals, and thus it is unlikely a Covered Project or Activity would to lead to the direct loss of a viable territory, the cumulative loss of cactus wren habitat within the Plan Area may reduce carry capacity of the local environment and lead to an overall reduction in the number of pairs. Given the inter-annual variability in cactus wren distribution within the Plan Area, it is not possible to directly measure the long-term impact of Covered Projects and Activities on cactus wren pairs. Using the estimate of territory size, this analysis assumes no more than six (6) pairs will be lost due to the loss of 73.5 acres of cactus wren habitat in the Preserve, and up to an additional eight (8) pairs could be lost due to impacts to 99.6 acres of cactus wren habitat outside of the Preserve and Neutral Lands. Thus, this analysis estimates that

a maximum of 14 pairs could be lost as a result of Covered Projects and Activities. This estimate assumes the smallest recorded average territory size, 12 acres, which would predict 105 pairs (1,259 acres of cactus wren habitat/12 acres per pair) within the Plan Area. By this reasoning, up to 13% of the cactus wren pairs in the Plan Area could be lost as a result of Covered Projects and Activities.

The City and PVPLC have committed to restore and/or enhance a minimum of 250 acres of native habitat within the Preserve. Although restoration will not exclusively target cactus habitat, most of the native vegetation is dominated by shrub communities, and most of the restoration will directly benefit cactus wrens. By including cactus in habitat restoration plant pallets, PVPLC will further the recovery of cactus wren breeding habitat. Following the habitat restoration at Alta Vicente Reserve (Upper Point Vicente) and Portuguese Bend Reserve, cactus wrens successfully colonized and bred, and similar results are expected from implementation of the PHMP elsewhere in the Preserve. Through coordination with the City, PVPLC will focus habitat enhancement and reintroduction efforts in areas that are unlikely to be impacted by future covered projects. Overall, it is anticipated the Plan result in a net increase in cactus wren habitat within the Plan Area and a corresponding increase in cactus wren pairs.

Preserve Configuration Issues. Within the Plan Area, potential habitat for this species occurs in areas within coastal sage scrub, southern cactus scrub, and southern coastal bluff scrub with appropriate cacti structure. These areas could be subject to direct and/or indirect effects from covered projects and activities that could occur throughout the Preserve. However, the NCCP/HCP includes impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) and measures for Covered Projects and Activities adjacent to the Preserve (Section 5.6 of the Plan) that would be implemented for projects in suitable habitat for cactus wren; these will reduce direct and indirect effects within the Preserve. Restoration will occur throughout designated Reserve Areas. Restoration of shrub communities will occur throughout the Preserve, which will increase carrying capacity for cactus wrens by providing foraging habitat. Targeted restoration that includes cactus will maintain or expand nesting habitat for cactus wrens. The configuration of the Preserve will maintain connectivity between potential habitat areas on the Peninsula for the cactus wren.

Effects on Population Viability and Species Recovery. The cactus wren population is expected to increase as a result of an increase of suitable habitat restored during the permit period. With implementation of the Plan, few impacts to cactus wren are anticipated of occur, and where impacts would occur they would be minimized to not substantially affect the viability of the existing territory. Additionally, the PHMP will create and enhance habitat for the species in suitable locations throughout the Preserve and provide opportunity to expand the population size and distribution in the Preserve to increase the regional population. For Covered Project/Activities located in suitable areas within occupied cactus wren habitat, the impact avoidance/mitigation measures for Covered Projects and Activities (Section 5.5 of the Plan) would be followed to further minimize potential impacts to cactus wren. The conservation actions included in the Plan are therefore considered to maintain and subsequently improve the viability of the cactus wren population by creating, restoring, and enhancing habitat within the Preserve.

Adaptive Management Program. PVPLC has already initiated cactus wren habitat restoration and control of invasive plants in the Preserve. Monitoring of these actions, particularly in regard to the number and distribution of cactus wrens, will guide decisions for future restoration/enhancement actions to benefit cactus wren and other covered species. As part of recommended research on this species (where grants are available), PVPLC will participate in taxonomic research combining morphological, ecological, and genetic analyses to help determine its relationship to other known populations. PVPLC also coordinates with the Wildlife Agencies and other regional entities performing monitoring and adaptive management activities related to cactus wren conservation. This will ensure that efforts in Palos Verdes will be integrated with results from other efforts in coastal southern California.

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APPENDIX C

Management Budget Analysis

City of Rancho Palos Verdes
Finance Advisory Committee Agenda & Staff Reports

AGENDA

CITY OF RANCHO PALOS VERDES

REGULAR MEETING OF THE FINANCE ADVISORY COMMITTEE

June 22, 2004

CITY HALL

COMMUNITY ROOM

7:00 P.M. Call To Order

1. Roll Call.
2. Approval of Agenda.
3. Approval of Draft Minutes for the meeting conducted May 26, 2004. (McLean)
4. Proposed Natural Communities Conservation Plan (NCCP) And Proposed Purchase Of Approximately 700 Acres Of Open Space. (McLean)
5. Update – Infrastructure Renewal and Maintenance project - Update. (McLean)
6. Liaison reports. (Clark)
7. State Budget Update. (Gyves)
8. Public Comments.
9. Adjournment.

Charts for Staff Report A
Charts for Staff Report B
NCCP presentation prepared by Barbara Dye, Executive Director, Palos Verdes Peninsula Land Conservancy

TO: HONORABLE CHAIR AND MEMBERS OF THE FINANCE ADVISORY COMMITTEE

FROM: DENNIS McLEAN, DIRECTOR OF FINANCE AND INFORMATION TECHNOLOGY

DATE: JUNE 22, 2004

SUBJECT: PROPOSED NATURAL COMMUNITIES CONSERVATION PLAN AND PROPOSED PURCHASE OF APPROXIMATELY 700 ACRES OF OPEN SPACE

Staff Coordinator: Kathryn Downs, Accounting Manager

THE FOLLOWING IS A DRAFT OF THE PROPOSED REPORT TO THE CITY COUNCIL:

RECOMMENDATION BY THE FINANCE ADVISORY COMMITTEE

Pursuant to direction from the Open Space Acquisition Ad-Hoc Committee of the City Council, we have reviewed the financial information provided to us regarding the proposed NCCP, open space purchase and the establishment of a habitat preserve and have not noted anything problematic. Based on that review, we believe there may be savings to the City resulting from implementation of the NCCP that would mitigate additional costs. We recommend that the City Council move forward expeditiously with the completion of the NCCP and the related land acquisition.



BACKGROUND AND DISCUSSION

Direction From Open Space Acquisition Ad-Hoc Committee of the City Council

During its conference call on March 27, 2004, the Open Space Acquisition Ad-Hoc Committee of the City Council (Mayor Pro Tem Clark and Councilman Stern) agreed that it would be a good idea for Staff and the Executive Director of the Palos Verdes Peninsula Land Conservancy ("PVPLC") to brief the Finance Advisory Committee ("FAC") about the proposed purchase of approximately 700 acres of open space (see the areas shaded in red and brown on the map on Page 1) and the City's Natural Communities Conservation Plan ("NCCP"). In the event the purchase is completed, the open space land would be transferred to a habitat preserve ("Preserve") established by the NCCP Subarea Plan. The City would own the land and the PVPLC would hold the conservation easements and have the responsibility for managing the Preserve.

Presentation to Finance Advisory Committee, April 28, 2004

At the meeting of the FAC on April 28, 2004, Barbara Dye, Executive Director of the PVPLC, presented an overview about the NCCP, the proposed purchase of approximately 700 acres of open space and the establishment of a Preserve.

Subsequent to Ms. Dye's presentation, the Director of Finance & IT presented a verbal overview of the staff report describing what the City has paid to date, as well as expected future costs, for the development of the NCCP and the estimated cost and funding sources for the proposed open space purchase.

The Director stated that he and the Director of Planning, Building & Code Enforcement expected to present estimated operating and maintenance cost information about the Preserve at the next meeting of the FAC. After the Director's presentation, it was the consensus of the FAC members to defer questions until the next meeting of the FAC.

Presentation to Finance Advisory Committee, May 26, 2004

At the meeting of the FAC on May 26, 2004, The Director of Finance & Information Technology and the Director of Planning, Building and Code Enforcement presented a staff report that provided details of the following topics:

- The process necessary to complete the NCCP, open space purchase and establishment of the Preserve;
- Estimates regarding on-going operating and maintenance costs, including the City's share, in the event of the implementation of the NCCP, purchase of the proposed open space and establishment of the Preserve; and
- Estimates of additional costs and benefits to the City in the event of the implementation of the NCCP, purchase of the proposed open space and establishment of the Preserve.

Barbara Dye, Executive Director of the PVPLC, attended the meeting and answered questions asked by the FAC.

Costs Expended To Date, As Well As The Future Costs Expected Leading to the Proposed Purchase and NCCP

The City paid its open space lobbyist $15,000 during FY02-03 and expects to pay an additional $60,000 during FY03-04 for lobbyist services associated with securing state Proposition 50 grant funds (described later in this report). The FY04-05 budget includes $30,000 for additional lobbyist services. Additionally, a necessary second appraisal of the open space was recently performed at a cost of about $17,000.

The City received a federal NCCP grant of $275,000 during FY97-98 and FY99-00 to match ($1 for $1) the City's cost for developing the NCCP. The Director of Planning, Building & Safety and Code Enforcement expects that the balance of the grant funds will be completely expended during FY04-05, including about $25,000 of interest earned on the $275,000 grant. Most all of the monies have been paid to or appropriated for consultants who have assisted staff with the development of the NCCP Subarea Plan and the draft environmental impact report ("DEIR") documents. The grant monies were also expended for the development of aerial photographs of the proposed open space. All of the City's costs associated with the development of the NCCP and proposed purchase of open space (described herein) have been budgeted and paid for within the General fund. A summary titled "Costs Expended To Date, As Well As The Future Costs Expected Leading to the Proposed Purchase and NCCP" (Table 1) follows:

Table 1

Summary of Costs Expended To Date, As Well As The Future Costs Expected Leading to

the Proposed Purchase and NCCP	
	Amount Paid &/or Budgeted
Lobbyist services through FY03-04	$75,000
Lobbyist services budgeted for FY04-05	$30,000
Second appraisal	$17,000
City's share of expenditures for NCCP, including consulting services and aerial photographs, matched by $275,000 federal grant plus about $25,000 of interest	$300,000
Total Estimated Costs Expended To Date, As Well As The Future Costs Expected Leading to the Proposed Purchase and NCCP	**$422,000**

Note: All of the City's costs associated with the development of the NCCP and proposed purchase of open space (described herein) have been budgeted and paid for within the General fund

Proposed Purchase of Approximately 700 Acres of Open Space

The City, the PVPLC, Los Angeles County, and the Wildlife Agencies (the "Resource Agencies") have been collaborating towards the proposed purchase of 684.5 acres of privately owned lands considered regionally important for habitat preservation. In the event the purchase is completed, the open space land would be transferred to the Preserve established by the NCCP Subarea Plan. The City would own the land and the PVPLC would hold the conservation easements and have the responsibility for managing the Preserve.

Purchase agreements between the City and the two private landowners expired several years ago, but new agreements are close to being finalized and the property owners continue to express a willingness to sell their land. The City and the PVPLC continue to pursue the financing necessary to complete the purchase of the open space by the City. A schedule titled "Proposed Sources For Financing The Proposed Purchase" (Table 2) follows:

Table 2

Sources for Financing Proposed Purchase	**(Millions)**
USFWS "Section 6" funds	$ 2.0
Proposition 50	$ 17.0
Los Angeles County	$ 1.0
City of Rancho Palos Verdes	$ 1.0
Private funding (PVPLC)	$ 6.0
Total Sources for Financing Proposed Purchase	**$ 27.0**

It should be noted that the Resource Agencies have approved the list of funds as shown in Table 2 above, as well as the NCCP Subarea Plan. However, none of the grant sources described above are fully committed by the respective agency at this time, and a material shortfall of the financing sources would require a re-assessment of the proposed purchase by all entities involved.

USFWS Section 6 (Cooperative Endangered Species) funds were appropriated by the federal government to support multi-species regional conservation plans such as the NCCP Subarea Plan. The current administration and Congress have continued to appropriate funds for this purpose because of the bipartisan support for this type of regional planning. Proposition 50 authorized the issuance of $3.44 billion of bonds to be deposited in the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 created by the state ballot initiative in 2002. The fund contains approximately

$50 million to be spent for land acquisition in coastal areas of Los Angeles County.

$1 million is budgeted in FY03-04 for the City's participation towards the proposed purchase. Based on a staff report prepared by the Director of Public Works, dated March 4, 2003, the City Council adopted a revised spending plan for the $1 million budgeted, including the appropriation of $538,878, $332,500 and $128,622 from Proposition 12, Proposition 40 and Measure A funds, respectively, for the proposed open space purchase. No General fund monies are budgeted for the proposed land purchase. The 2004 Five Year Financial Model includes the use of these funds for the proposed open space purchase.

Summary Of Estimated Costs, Tax Increment Revenue Reduction And Potential Savings Associated With Implementation Of The Proposed NCCP, Purchase Of The Proposed Open Space And Establishment Of A Habitat Preserve

Estimated Costs – Management of the Preserve

The Draft Subarea Plan for the NCCP outlines the expected economic and operational responsibilities for both the City and the PVPLC. Staff expects that a pending revision of the Draft Subarea Plan will be presented to the City Council on August 17, 2004 concurrently with this report. As outlined in the Draft Subarea Plan, the City's commitment to fund habitat maintenance costs of the proposed Preserve includes an annual cash payment of $100,000 to the PVPLC for management of the Preserve (adjusted annually for inflation), as well as in-kind costs described below.

The Center for Natural Lands Management (CNLM), a non-profit organization engaged in management of numerous habitat and open space preserves in California, developed a procedure to estimate costs of habitat management. This procedure, called a Property Analysis Record (PAR), has been prepared and revised by the City's NCCP consultant, URS Corp. Based upon the PAR estimates (see Attachment A), the City's first year in-kind costs have been estimated to be $90,355. In-kind costs would include brush management, public safety and sanitation control. Staff has identified $58,836 of the in-kind costs already being paid for by the City (e.g. public safety). Therefore, the net incremental increase of first year in-kind costs is estimated to be $31,519 (see Attachment A). The net incremental increase of subsequent years' in-kind costs is estimated to be $32,118 (see Attachment A).

The PAR includes an estimated cost of Public Safety of $51,173 annually for the Preserve, based upon a standard rate of $33.80/per acre. Staff is not aware of any expectation for additional services to be provided by the Los Angeles County Sheriff's Department in the event the open space purchase is consummated. An increase of surveillance and enforcement responsibilities in the open space area of the City occurred when the number of Core Deputies was increased from 2 to 3 during FY99-00. The annual cost of a Core Deputy is approximately $112,000.

Estimated Costs - Assessment District Fees

The property owners in two separate landslide areas of the City formed the Abalone Cove Landslide Assessment District (ACLAD) and the Klondike Canyon Geologic Hazard Abatement District (Klondike AD) to perform landslide abatement projects and maintenance (e.g. installation and subsequent repair of de-watering wells) within the boundaries of their respective districts. Five of the nine open space parcels under consideration for purchase are within the boundaries of the two Districts. The assessments for the five open space parcels total $25,126 for FY04-05. The City would assume responsibility for these assessments in the event the proposed open space purchase is consummated.

Summary of Estimated Additional Annual Costs:

Table 3

Summary Of Estimated Additional Annual Costs	
Cash payment to PVPLC for operation and maintenance of the Preserve	$ 100,000

Additional in-kind costs paid by the City for operation and maintenance of the Preserve	$ 31,519
ACLAD assessment payments assumed	$ 22,789
Klondike AD assessment payments assumed	$ 2,337
Total Estimated Additional Annual Costs	**$ 156,645**

Note: None of the Staff's presentations of estimated costs or potential savings have been adjusted for inflation.

The estimated annual cash payment of $100,000 (plus annual adjustment for inflation) to PVPLC for Preserve operation and maintenance was included in the 2004 Five Year Financial Model submitted to the City Council on May 4, 2004. The other estimated additional annual costs to maintain the Preserve, totaling $56,645, included in the staff report to the FAC on May 26, 2004 (as well as Table 3 above) and subsequent to the preparation of the 2004 Model, were not included in the 2004 Model.

Tax Increment Revenue Reduction

Seven of the nine parcels for the proposed open space purchase exist within the project area boundaries of the City's Redevelopment Agency (RDA). The expected tax increment revenue for the open space parcels is $30,708 during FY03-04. Of this amount, $24,566 will be recorded as revenue within the RDA Debt Service fund and $6,142 will be deposited into the RDA Housing Set-Aside fund. General fund property tax revenue for the remaining two parcels is expected to be $1,227 during FY03-04.

The FY04-05 budgeted for the Debt Service fund includes tax increment revenue of $478,600. In the event the proposed open pace purchase is consummated, tax increment revenue available to pay outstanding debt would decrease by about $25,000 annually. Therefore, in the event the proposed open space is purchased during FY04-05, it appears as though there would still be a sufficient amount of tax increment revenue available in excess of the scheduled bond indebtedness payments to satisfy the scheduled 1997 RDA Bond payments during FY04-05, and all years thereafter. Although the amount of the scheduled bond payment increases during the term of the 1997 RDA bonds, tax increment revenue will still exceed the scheduled bond payments by more than $100,000 annually, even if the open space parcels are purchased.

Table 4

Summary Of Annual Tax Increment Revenue Reduction Based Upon FY03-04	
Reduction of RDA tax increment to Debt Service fund (rounded to $25,000 in report above)	$ 24,566
Reduction of RDA tax increment to RDA Housing Set-Aside fund	$ 6,142
Estimated Annual Tax Increment Revenue Reduction Based Upon FY03-04	**$ 30,708**

Note: None of the Staff's presentations of estimated costs or potential savings have been adjusted for inflation.

On December 2, 2003, Staff presented a staff report to the City Council regarding various matters about the RDA, including its projection of future tax increment revenues. The projection indicated that upon the complete payment and satisfaction of the 1997 RDA Bonds (scheduled in FY27-28), about $7.7 Million of future tax increment revenue would be available to repay loans made by the RDA to the General fund of the City prior to FY34-35, the year the RDA is expected to terminate. In the event the

proposed open space purchase is consummated, about $6.9 Million of future tax increment would be available to repay loans made by the RDA to the General fund of the City prior to FY34-35. The reduction of about $800,000 would be a result of the tax increment reductions from the open space parcels purchased.

Potential Savings of Federal and State Habitat Costs

One of the motivations behind the City's decision to enter into an agreement in 1996 with the resource agencies to prepare an NCCP, was the desire to reduce the cost and time delays experienced by the City in carrying out public infrastructure improvements and landslide abatement activities. Because of the existence of federally protected Coastal Sage Scrub (CSS) habitat in and around the landslide, the coastal bluffs and most canyon areas, Public Works projects in these areas are required to prepare biological studies and assess the biological impacts of the proposed project before the project can proceed. If it is determined that a City project will result in impacts to sensitive habitat (state or federally protected habitat), a state and/or federal permit must be obtained and the project's habitat impacts mitigated by the City.

As a result, the City's NCCP has been written in manner to provide the required mitigation for past City projects that have impacted CSS since1996 and future City projects that are anticipated to impact CSS. The pending revision of the Draft NCCP Subarea Plan identifies 21 such City projects that will be covered by the plan. The 21 City projects identified in the NCCP result in impacts to 33.7 acres of CSS and 94.30 acres of grassland habitat. The mitigation for 33.7 acres of CSS loss is the provision of 95.5 (approximately a 3:1 ratio) acres of habitat and the mitigation for the 94.30 acres of grassland habitat would be the provision of 47.15 acres of habitat (approximately a 0.5:1 ratio). The mitigation for these past and future losses is being provided by the dedication of 298.8 acres of City-owned land into the Reserve and 5.6 acres of re-vegetation (2.1 acres which already has been completed).

Typically, mitigation for the loss of habitat is provided by the re-vegetation of new habitat, which is then actively managed for a 5-year period. According to the City's NCCP consultant, this typically costs $25,000-35,000 per acre over the 5-year period. For comparison purposes, the CSS re-vegetation for the Ocean Trails project is costing approximately $33,000/acre/5-years and the recently completed CSS re-vegetation for the City's San Ramon landslide stabilization project is costing approximately $80,000/acre/5-years. As a result of the mitigation that the NCCP is providing for City projects, the typical re-vegetation that would have been required for these past and future projects is not necessary. This will provide a substantial cost savings to the City. Using the consultant's most conservative estimate of $25,000/acre/5-years, and applying it to the number of acres required for mitigation of CSS and grassland vegetation, not having to perform this re-vegetation equates to a potential savings of $3,566,250 to the City ($25,000 x 142.65 acres (95.50 acres of CSS + 47.15 acres of grassland). A table that shows the breakdown of these savings is provided as Attachment B.

It should also be noted that in addition to the costs of planting new habitat and managing it for 5 years (weeding, etc), there are costs associated with the preparation of a re-vegetation plan and the monitoring of the work by biologist over the 5-year period. These costs vary by project. For example, for a 10-acre re-vegetation project these costs would typically total about $75,000. For the recently completed San Ramon project, which involved 1.5 acres of re-vegetation, the costs are expected to be $100,000. Using an estimate of $75,000 per project, the costs for the 21 City projects would be approximately $1,575,000 (see Attachment B). This represents an additional potential cost savings to the City.

Table 5

Summary Of Potential Savings of Federal and State Habitat Costs	
Habitat mitigation	$ 3,566,250
Habitat monitoring	$ 1,575,000

Total Potential Savings of Federal and State Habitat Costs	$ 5,141,250

Note: None of the Staff's presentations of estimated costs or potential savings have been adjusted for inflation.

Although none of the proposed projects presented in Attachment B (and summarized in Table 5 above) are currently included in the Capital Improvement Plan (CIP) fund budget for FY03-04 or the 2004 Five Year Financial Model, Staff believes that several projects (i.e. storm drain projects), will be completed during the next 2-10 years. Due to the uncertainty of the completion of future CIP projects, as well as their timing, the presentation of the **annual** potential savings to the City has not been prepared.

Additional Observations That The FAC Requested To Be Included In The Report To The City Council

After Staff's oral presentation on May 26, 2004, the FAC discussed the costs and benefits of the proposed NCCP and Preserve. The members of the FAC made the following observations and asked that they be included in a report to the City Council:

- Generally, the City's costs associated with providing services to developed land are greater than costs associated with undeveloped land. Therefore, the amount of additional costs associated with any development of any portion of the open space may be more than the additional incremental costs associated with the Preserve.

- As noted in the April 28, 2004 staff report to the FAC, none of the grant sources are fully committed by the respective agencies at this time, and a material shortfall of financing sources would require a reassessment of the proposed purchase by all entities involved.
- Future grants (e.g. Measure A Park Maintenance monies) might be available to pay a portion of operating and maintenance costs of the Preserve.

END OF PROPOSED REPORT TO THE CITY COUNCIL

Revision of Recommendation Subsequent To The May 26, 2004 FAC Meeting

During the May 26, 2004 FAC meeting, the FAC approved the recommendation to the City Council as follows:

"Pursuant to direction from the City Council subcommittee, we have reviewed the financial information provided to us regarding the NCCP and have not noted anything problematic. Based on that review, we believe there will be savings to the City resulting from implementation of the NCCP. We recommend that the City Council move forward expeditiously with the completion of the NCCP and the related land acquisition."

Subsequent to the May 26, 2004 FAC meeting, the FAC Chair and Staff agreed that it seemed appropriate to further clarify the FAC's draft recommendation to the City Council. FAC members were notified via email that the matter would be placed on the June meeting agenda. Staff offers the following revised recommendation (already included in the Proposed Report to City Council), for the FAC's consideration. Revised text is underlined below:

"Pursuant to direction from the Open Space Acquisition Ad-Hoc Committee of the City Council, we have reviewed the financial information provided to us regarding the proposed NCCP, open space purchase and the establishment of a habitat preserve and have not noted anything problematic. Based on that review, we believe there may be savings to the City resulting from implementation of the NCCP that would mitigate additional costs. We recommend that the City Council move forward expeditiously with the completion of the NCCP and the related land acquisition."

Recommendation to the FAC

1. Discuss and revise the Proposed Report to the City Council, including the proposed revision of the FAC's recommendation to the City Council; and
2. Approve the draft report to City Council (as revised by the FAC) for presentation to the City Council in conjunction with the NCCP staff report that will be presented by the Director of Planning, Building & Code Enforcement on August 17, 2004, or a subsequent meeting thereafter.

Respectfully submitted,

Dennis McLean

Director of Finance and Information Technology

Attachment A

Year 1	City In-Kind Identified Costs	City's Existing Costs	Net Increase to City for In-Kind Costs
Non-organic Debris Removal	$ 4,000	$ -	$ 4,000
Brush Management	7,500	-	7,500
Brush Hog Tractor Mower	2,200	-	2,200
Public Safety (per acre basis)	51,173	51,173	-
Community Outreach	1,280	1,280	-
Sanitation Control	6,000	2,633	3,367
Toilets, Portable	7,500	1,500	6,000
Other	1,000	-	1,000
GIS/CAD Data Management	800	-	800
Fire Management Plan	250	250	-
Monitoring Reports	900	900	-
Office Operations Administration	720	720	-
Miscellaneous Supplies	200	-	200
GPS (Rover & Base Unit)	400	-	400
Produce Contracts	180	180	-
Miscellaneous Operations	200	200	-
Subtotal	84,303	58,836	25,467
10% of 6% Contingency	1,513	-	1,513
10% of 18% Administration	4,539	-	4,539
Totals	**$ 90,355**	**$ 58,836**	**$ 31,519**

Subsequent Years	City In-Kind Identified Costs	City's Existing Costs	Net Increase to City for In-Kind Costs
Non-organic Debris Removal	$ 4,800	$ -	$ 4,800
Brush Management	7,500	-	7,500
Brush Hog Tractor Mower	2,200	-	2,200
Public Safety (per acre basis)	51,173	51,173	-
Community Outreach	1,280	1,280	-
Sanitation Control	6,000	2,633	3,367
Toilets, Portable	7,500	1,500	6,000
Other	1,000	-	1,000
GIS/CAD Data Management	800	-	800
Aerial Photo Flight	133	-	133
Fire Management Plan	250	250	-
Monitoring Reports	1,125	1,125	-
Office Operations Administration	1,440	1,440	-
Miscellaneous Supplies	200	-	200
GPS (Rover & Base Unit)	80	-	80
Produce Contracts	180	180	-
Miscellaneous Operations	200	200	-
Subtotal	85,861	59,781	26,080
10% of 6% Contingency	1,509	-	1,509
10% of 18% Administration	4,528	-	4,528
Totals	**$ 91,899**	**$ 59,781**	**$ 32,118**

Attachment A

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Habitat Mitigation Savings **Attachment B**

City Project	Project Status	Habitat Loss (acres) Coastal Sage Scrub	Habitat Loss (acres) Grassland	Offsite Mitigation Acreage Coastal Sage Scrub	Offsite Mitigation Acreage Grassland	Potential Savings Coastal Sage Scrub	Potential Savings Grassland
25th Street Road Repair (Phase 1)	Completed	0.10	N/A2	0.20	N/A2	$ 5,000	N/A2
25th Street Road Repair (Phase 2)	Completed	0.40	N/A2	0.80	N/A2	20,000	N/A2
Forrestal Property Trail Clearing	Completed	0.10	N/A2	0.30	N/A2	7,500	N/A2
McCarrell Canyon Outlet Improvement	Completed	0.20	N/A2	0.60	N/A2	15,000	N/A2
Portuguese Canyon Drainage Project	Completed	0.50	N/A2	1.50	N/A2	37,500	N/A2
PVDS Emergency Washout Project	Completed	0.40	N/A2	1.20	N/A2	30,000	N/A2
PVDS Roadway Rehabilitation	Completed	0.20	N/A2	0.60	N/A2	15,000	N/A2
Sacred Cove Geologic Investigation	Completed	0.10	N/A2	0.30	N/A2	7,500	N/A2
San Ramon Canyon Repair	Completed	1.00	N/A2	1.00	N/A2	25,000	N/A2
Tarapaca Sewer Line Relocation	Completed	0.50	N/A2	1.50	N/A2	37,500	N/A2
Subtotals for Completed Projects		3.50	0.00	8.00	0.00	200,000	-
Abalone Cove Beach Public Access & Amenities	Proposed	0.20	1.00	0.00	0.50	-	12,500
Active Recreation Area For Accessing Reserve Trail System	Proposed	1.00	13.60	3.00	6.80	75,000	170,000
Altamira Canyon Drainage Project	Proposed	2.50	3.00	5.00	1.50	125,000	37,500
Dewatering Wells (10							

Wells) Within The Landslide Area	Proposed	2.50	2.50	7.50	1.25	187,500	31,250	
Additional Recreational Facilities at Lower Point Vicente	Proposed	1.00	11.20	3.00	5.60	75,000	140,000	
Lower San Ramon Canyon Grading	Proposed	2.00	6.00	6.00	3.00	150,000	75,000	
Misc Drainage Improvement Projects	Proposed	4.00	12.00	12.00	6.00	300,000	150,000	
Misc. Damaged Drain Repair Within The Landslide Area	Proposed	5.00	15.00	15.00	7.50	375,000	187,500	
Misc. Fissure Filling Within The Landslide Area	Proposed	3.00	3.00	9.00	1.50	225,000	37,500	
PVDE Drainage Improvement Projects (17 Projects)	Proposed	4.00	12.00	12.00	6.00	300,000	150,000	
RPV Conceptual Trails Plan Implementation	Proposed	5.00	15.00	15.00	7.50	375,000	187,500	
Subtotals for Proposed Projects		30.20	94.30	87.50	47.15	2,187,500	1,178,750	
Totals for All City Projects		**33.70**	**94.30**	**95.50**	**47.15**	**$ 2,387,500**	**$1,178,750**	**Attachment B**

City of Rancho Palos Verdes
Finance Advisory Committee Agenda
& Staff Reports

AGENDA
CITY OF RANCHO PALOS VERDES
ADJOURNED REGULAR MEETING OF THE FINANCE ADVISORY COMMITTEE

May 26, 2004
CITY HALL
COMMUNITY ROOM

7:00 P.M. Call To Order

1. Roll Call.
2. Approval of Agenda.
3. Approval of Draft Minutes for the meeting conducted April 28, 2004. (McLean)
4. Proposed Natural Communities Conservation Plan (NCCP) And Proposed Purchase Of Approximately 700 Acres Of Open Space. (Rojas/McLean/Downs/Dye)
5. Revenue derived from franchising rights of City owned facilities and other assets - Update. (McLean)
6. Update – Infrastructure Renewal and Maintenance project - Update. (McLean)
7. Liaison reports. (Clark)
8. State Budget Update. (McLean)
9. Public Comments.
10. Adjournment.

TO: HONORABLE CHAIR AND MEMBERS OF THE FINANCE ADVISORY COMMITTEE

FROM: DENNIS McLEAN, DIRECTOR OF FINANCE AND INFORMATION TECHNOLOGY

JOEL ROJAS, DIRECTOR OF PLANNING, BUILDING SAFETY AND CODE ENFORCEMENT

DATE: MAY 26, 2004

SUBJECT: PROPOSED NATURAL COMMUNITIES CONSERVATION PLAN AND PROPOSED PURCHASE OF APPROXIMATELY 700 ACRES OF OPEN SPACE

Staff Coordinator: Kathryn Downs, Accounting Manager

RECOMMENDATION

1. To receive and file this report; or
2. Direct Staff to provide answers to any remaining significant questions about the proposed City's Natural Communities Conservation Plan and proposed open space purchase at a subsequent meeting of the Finance Advisory Committee; and/or
3. Direct Staff to report any noteworthy finding, if any, or the lack of any noteworthy findings, about the City's proposed Natural Communities Conservation Plan and proposed open space purchase to the City Council via a staff report.

BACKGROUND AND DISCUSSION

Presentation to Finance Advisory Committee, April 28, 2004

Finance and IT Staff has attached a copy of its staff report to the Finance Advisory Committee (FAC), dated April 28, 2004, titled "Proposed Natural Communities Conservation Plan And Proposed Purchase Of Approximately 700 Acres Of Open Space". At the meeting of the FAC on April 28, 2004, Barbara Dye, Executive Director of the Palos Verdes Peninsula Land Conservancy (PVPLC), presented an overview about the proposed Natural Communities Conservation Plan (NCCP), the proposed purchase of approximately 700 acres of open space and the proposed habitat reserve.

Subsequent to Ms. Dye's presentation, Staff presented a verbal overview about the City's cost to date for the development of the NCCP and the proposed open space purchase. Staff stated that it expected to present estimated operating and maintenance cost information about the proposed reserve at the next meeting of the FAC. After Staff 's presentation, it was the consensus of the FAC members to defer its questions until the next meeting of the FAC.

The Process Necessary to Complete the NCCP, Open Space Purchase and Establish the Habitat Reserve

The NCCP is essentially a citywide Habitat Conservation Plan that must be approved by the California Department of Fish and Game and the U.S. Fish and Wildlife Service (the Resource Agencies). The City's NCCP proposes to create a habitat reserve (Reserve) through acquisition and dedications, and then actively manage the reserve by performing limited amounts of enhancement and re-vegetation. In exchange for a approving the City's NCCP, the Resource Agencies would issue the City a permit, giving the City the authority to ensure that all future uses and activities in the Reserve are consistent with the NCCP. To make this happen, the following 3 documents need to be prepared by the City and approved by the Resource Agencies: 1) the NCCP Subarea Plan; 2) The Implementing Agreement; and 3) The NCCP EIR/EIS.

The Subarea Plan describes the Reserve, how it will be assembled and how the Reserve will be managed. A draft was made available to the public in June 2003 and Staff expects an updated Draft will be released in mid-June 2004. The Implementing Agreement is the legal document that is entered into by

the City and the Resource Agencies and explains the legal obligations of both parties. The PVP Land Conservancy will also be a party to this agreement. This document is currently being prepared. The EIR is required by State law to analyze the environmental impacts of implementing the NCCP. A Draft EIR has been publicly circulated and a Final EIR is currently being prepared. It is expected that all three documents will be available to the public in mid-June and presented to the City Council for conceptual approval on July 6, 2004.

If and when the three NCCP documents are approved by the City Council, the documents will be forwarded to the U.S. Fish and Wildlife Service so that the NCCP can go through the federal review process. According to the Wildlife Service, the federal review would typically take 9 months to complete. Once the federal process is completed and a federal permit issued to the City, the City's NCCP will be in effect and the habitat management can begin. The proposed land acquisition, which is an integral component of the NCCP, can occur at any time. However, Staff has been notified by State officials that the State share for the acquisition would likely not be approved until the State is satisfied that the City's NCCP is sufficiently complete or making substantial progress. Staff believes that obtaining City Council conceptual approval of the three NCCP documents and forwarding them to the Resource Agencies would meet that criteria.

On-Going Operating and Maintenance Costs of the City In the Event of the Implementation of the Proposed NCCP, Purchase of the Proposed Open Space and Establishment of a Habitat Reserve

The Draft Subarea Plan for the NCCP outlines the expected economic and operational responsibilities for both the City and the PVPLC. Staff expects that a pending revision of the Draft Subarea Plan will be presented to the City Council on July 6, 2004, including the following economic commitments to maintain habitat within the Reserve as follows:

	City	PVPLC
Cash payment for operating and maintenance of the Reserve	$100,000	
In-kind services provided by City staff and contractors	$90,000	
Cash payment for operating and maintenance of the Reserve		$50,000
Services to be provided by volunteer staff of PVPLC		$75,000
Totals	**$190,000**	**$125,000**

Property Analysis Record (PAR)

Notwithstanding the City and PVPLC's commitments for funding habitat maintenance costs of the proposed reserve, a PAR has been prepared and revised by the City's NCCP consultant, URS Corp. An excerpt from the Draft NCCP Subarea Plan serves to offer some background about the PAR:

"...Cost of habitat management and biological monitoring varies according to habitat type, condition, and specific tasks needed to maintain biological value. Generally, tasks include trash removal, control of invasive species, installation and maintenance of fences, signs, and trails, and monitoring of biological resources. Center for Natural Lands Management (CNLM), a non-profit organization engaged in management of numerous habitat and open space preserves in California, developed a procedure (called Property Analysis Record, or PAR, and licensed to users) to estimate costs of habitat management."

A copy of the proposed PAR, revised subsequent to the April 28, 2004 meeting of the FAC, accompanies this staff report as Attachment A. In addition to various minor cost revisions, the revised PAR (compared with the PAR included in the June 2003 Draft Subarea Plan) clarifies the expectation that "Start-Up/One-Time" costs are included in total Year 1 costs. The City will not experience both Start-up/One Time Costs and additional on-going costs during Year 1.

It's important to understand that the PAR has been prepared using standard unit costs established by the CNLM. Accordingly, the PAR does not consider whether or not the City is already paying for existing costs that would continue to be incurred after the same open space land is transferred to the proposed Reserve. The revised PAR represents that the City's Year 1 in-kind costs will be $90,355. Of this amount, staff has identified $58,836 of costs already being paid for by the City. Only the estimated increase to the City's in-kind costs totaling $31,519 would have to be included in the operating budget of the General fund of the City.

Year 1	City In-Kind Identified Costs	City's Existing Costs	Net Increase to City for In-Kind Costs
Non-organic Debris Removal	$ 4,000	$ -	$ 4,000
Brush Management	7,500	-	7,500
Brush Hog Tractor Mower	2,200	-	2,200
Public Safety (per acre basis)	51,173	51,173	-
Community Outreach	1,280	1,280	-
Sanitation Control	6,000	2,633	3,367
Toilets, Portable	7,500	1,500	6,000
Other	1,000	-	1,000
GIS/CAD Data Management	800	-	800
Fire Management Plan	250	250	-
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Totals	**$ 90,355**	**$ 58,836**	**$ 31,519**

For example, the PAR includes an estimated cost of Public Safety for the Reserve of $51,173 annually, based upon a standard rate of $33.80/per acre. Staff is not aware of any expectation for any additional services to be provided by the Los Angeles County Sheriff's Department in the event the open space purchase is consummated. An increase of surveillance and enforcement responsibilities in the open

space area of the City were included when the number of Core Deputies was increased from 2 to 3 during FY99-00. The annual cost of a Core Deputy is approximately $112,000.

Additional existing in-kind costs primarily include staff time to participate in community outreach, prepare reports, and provide sanitation maintenance. Based upon discussion among Staff, no additional costs are expected for staff time associated with community outreach and report preparation. The PAR estimates that subsequent years in-kind costs to the City would be $91,899. Similarly, staff has identified $59,781 of costs already being paid by the City. Therefore, the estimated increase to the City's subsequent years in-kind costs within the General fund would be $32,118.

Subsequent Years	**City In-Kind Identified Costs**	**City's Existing Costs**	**Net Increase to City for In-Kind Costs**
Non-organic Debris Removal	$ 4,800	$ -	$ 4,800
Brush Management	7,500	-	7,500
Brush Hog Tractor Mower	2,200	-	2,200
Public Safety (per acre basis)	51,173	51,173	-
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Additional Costs and Benefits in the Event the Implementation of the Proposed NCCP, Purchase of the Proposed Open Space and Establishment of a Habitat Reserve

ACLAD and Klondike Canyon Assessment District Fees

The property owners in two separate landslide areas of the City formed the Abalone Cove Landslide

Assessment District (ACLAD) and the Klondike Canyon Geologic Hazard Abatement District (Klondike AD) to perform landslide abatement projects (e.g. installation of de-watering wells) and landslide abatement maintenance (e.g. repairing de-watering wells) within the boundaries of their respective districts. Five of the open space parcels that are under consideration for purchase are within the boundaries of the two Districts.

The total FY04-05 assessment for the open space parcels is $22,789 for ACLAD and $2,337 for Klondike AD, totaling $25,126. The City would assume responsibility for these assessments in the event the proposed open space purchase is consummated. Although the Portuguese Bend fund of the RDA currently pays the assessments for the properties already owned by the City, the Improvement Authority derives its funding from the General fund of the City. Based upon an inquiry made with the Director of Public Works, Staff is not aware of any expectations of any future material increases or decreases of the assessment fees as a result of changes in the operating and maintenance costs, or future capital improvements in both ACLAD and Klondike AD.

Property Tax Revenues

Based upon Staff's inquiry with the Los Angeles County Controller's Office, the assessed valuation of the open space parcels for FY03-04 is $5,506,657. Seven of the nine parcels for the proposed open space purchase exist within the project area boundaries of the City's Redevelopment Agency (the "RDA"). The tax increment revenue expected from the open space parcels during FY03-04 is $30,708. Of this amount, $24,566 will be recorded as revenue within the RDA Debt Service fund and $6,142 will be deposited into the RDA Housing Set-Aside fund.

Parcel Number	Parcel Location	Reduction of Annual Property Tax City's General fund	Reduction of Annual Tax Increment RDA Debt Service	Reduction of Annual Tax Increment RDA Housing Set-Aside
7572-001-001	RDA	$ 38	$ 2,292	$ 573
7572-001-002	RDA	367	1,651	413
7572-001-003	RDA	204	914	228
7572-001-004	RDA	354	1,587	397
7572-001-007	RDA	159	3,802	950
7572-002-022	RDA	0	8	2
7581-023-031	RDA	29	14,312	3,578
7572-001-006	City	4	-	-
7581-023-029	City	72	-	-
Total Estimated Losses		**$ 1,227**	**$ 24,566**	**$ 6,142**

In accordance with the 1997 bond restructuring between the County of Los Angeles and the City of Rancho Palos Verdes, the tax increment attributable to the RDA Debt Service fund is entirely intercepted by the County to pay the 1997 RDA Bond Indebtedness issued by the RDA for the benefit of the County. The budget for FY04-05 includes the expectation that the RDA Debt Service fund tax increment revenue will be slightly less than $480,000, net of the 20% deposit to the RDA Housing Set-Aside fund. The scheduled 1997 RDA bond principle and interest for FY04-05 is $277,625. In the event the proposed open pace purchase is consummated during FY04-05, tax increment revenue to pay outstanding debt would decrease by about $25,000. Therefore, in the event the proposed open space is purchased during FY04-05, it appears as though there would still be a sufficient amount of tax increment revenue in excess of the scheduled bond indebtedness payments to satisfy the scheduled 1997 RDA Bond payments during FY04-05, and all years thereafter.

On December 2, 2003, Staff presented a staff report to the City Council regarding various matters about the RDA, including its projection of future tax increment revenues. The projection indicated that upon the complete payment and satisfaction of the 1997 RDA Bonds (scheduled in FY27-28), about $7.7 Million of future tax increment revenue would be available to repay loans made by the RDA to the General fund of the City prior to FY34-35, the year the RDA is expected to terminate. In the event the proposed open space purchase is consummated, about $6.9 Million of future tax increment would be available to repay loans made by the RDA to the General fund of the City prior to FY34-35. The reduction of about $800,000 would be a result of the tax increment reductions from the open space parcels purchased.

Reduction of the Cost of Federal and State Habitat Permit Costs

One of the driving forces behind the City's decision to enter into an agreement in 1996 with the Resource Agencies to prepare an NCCP, was the cost and time delays experienced by the City in carrying out public infrastructure improvements and landslide abatement activities. Because of the existence of federally protected Coastal Sage Scrub (CSS) habitat in and around the landslide, the coastal bluffs and most canyon areas, public works projects in these areas are required to prepare biological studies and assess the biological impacts of the proposed project before the project can proceed. If it is determined that a City project will result in impacts to sensitive habitat (state or federally protected habitat), a State and/or federal permit must be obtained and the project's habitat impacts mitigated by the City.

As a result, the City's NCCP has been written in manner to provide the required mitigation for past City projects that have impacted CSS since1996 and future City projects that are anticipated to impact CSS. The pending revision of the Draft NCCP Subarea Plan identifies 21 such City projects that will be covered by the plan. The 21 City projects identified in the NCCP result in impacts to 33.7 acres of CSS and 94.30 acres of grassland habitat. The mitigation for 33.7 acres of CSS loss is the provision of 95.5 (approximately a 3:1 ratio) acres of habitat and the mitigation for the 94.30 acres of grassland habitat would be the provision of 47.15 acres of habitat (approximately a 0.5:1 ratio). The mitigation for these past and future losses is being provided by the dedication of 298.8 acres of City-owned land into the Reserve and 5.6 acres of re-vegetation (2.1 acres which already has been completed).

Typically, mitigation for the loss of habitat is provided by the re-vegetation of new habitat, which is then actively managed for a 5-year period. According to the City's NCCP consultant, this typically costs $25,000-35,000 per acre per 5-year period. For comparison purposes, the CSS re-vegetation for the Ocean Trails project is costing approximately $33,000/acre/5-years and the recently completed CSS re-vegetation for the City's San Ramon landslide stabilization project is costing approximately $80,000/acre/5-years. As a result of the mitigation that the NCCP is providing for City projects, the typical re-vegetation that would have been required for these past and future projects is not necessary. This is a substantial cost savings to the City. Using the consultant's most conservative estimate of $25,000/acre/5-years, and applying it to the cost of CSS and grassland vegetation, not having to perform this re-vegetation equates to a potential savings of $3,566,250 to the City ($25,000 x 142.65 acres (95.50 acres of CSS + 47.15 acres of grassland). A table that shows the breakdown of these savings is provided as Attachment B.

It should also be noted that in addition to the costs of planting new habitat and managing it for 5 years (weeding, etc), there are associated costs that involve the preparation of a re-vegetation plan and the monitoring of the work by biologist over the 5-year period. These costs vary by project. For example, for a 10-acre re-vegetation project these costs would typically total around $75,000. For the recently completed San Ramon project, which involved 1.5 acres of re-vegetation, the costs are expected to be $100,000. Using an estimate of $75,000 per project, the costs for the 21 City projects would be approximately $1,575,000. This represents an additional potential cost savings to the City.

Although none of the proposed projects presented in Attachment B are currently included in the Capital Improvement Plan (CIP) fund budget for FY03-04, Staff believes that several projects (i.e. drainage projects), will be completed during the next 2-10 years. Due to the uncertainty of future CIP projects, as well as their timing, the presentation of the annual potential savings to the City has not been prepared.

FISCAL IMPACT

Summary of City Costs and Benefits

The proposed annual cash payment of $100,000 by the City from the General fund (see A below) has been included in the 2004 Five Year Financial Model of the City. The increase of the In-kind costs (see B below) and assessments assumed (see C and D above) totaling $56,645 annually, have not been included in the 2004 Model. The reduction of property tax revenue to the General fund of the City (see E below) is immaterial.

The reduction of tax increment to the Debt Service fund of the City in the amount of $24,566 annually (see F below) would have no impact on the payment of the 1997 RDA Bonds. Nor would it impact current expenditures of the City. Based upon Staff's calculations, it could reduce the amount of loan repayments from the RDA to the City by about $800,000 over many years prior to FY34-35.

The reduction of tax increment to the RDA Housing Set-Aside fund of the City in the amount of $6,142 annually (see G below) would have no significant impact of the City's low and moderate income housing plan.

Using the consultant's most conservative estimate of $25,000/acre/5-years, and applying it to the cost of CSS and grassland vegetation, not having to perform this re-vegetation equates to a potential savings of $3,566,250 (see H below) to the City ($25,000 x 142.65 acres (95.50 acres of CSS + 47.15 acres of grassland). Using an estimate of $75,000 per project, the costs for the 21 City projects would be approximately $1,575,000 (see I below). This represents an additional potential cost savings to the City. A summary of estimated costs and benefits to the City follows:

	Annually	One-Time
A - Cash payment for operating and maintenance of the Reserve	$ (100,000)	
B - Increase of in-kind costs	(31,519)	
C - ACLAD assessment assumed	(22,789)	
D - Klondike District assessment assumed	(2,337)	
E - Reduction of property tax revenue to General fund	(1,227)	
F - Reduction of RDA tax increment to Debt Service fund	(24,566)	
G - Reduction of RDA tax increment to RDA Housing Set-Aside fund	(6,142)	
H - Habitat mitigation savings		$3,566,250
I - Habitat monitoring savings		1,575,000
Total Estimated City Costs and Benefits	**$ (188,580)**	**$5,141,250**

Note: None of the Staff's presentations of costs have been adjusted for inflation.

Draft Report Of Findings Regarding The Proposed City's Natural Communities Conservation Plan And Proposed Open Space Purchase

The FAC may wish to direct Staff to report any noteworthy finding, if any, or the lack of any noteworthy findings, about the proposed City's Natural Communities Conservation Plan and proposed open space purchase to the City Council via a staff report. If the FAC elects to direct Staff to provide a written staff report to the City Council, perhaps it could contain a statement as follows:

Staff has briefed the FAC regarding the proposed City's Natural Communities Conservation Plan and proposed open space purchase. Except for XXXX, nothing else that is noteworthy came to the attention of the FAC during the briefing about the proposed City's Natural Communities Conservation Plan and proposed open space purchase.

Respectfully submitted,
Joel Rojas
Director of Planning, Building Safety and Code Enforcement

Dennis McLean
Director of Finance and Information Technology

Attachment A
Attachment B

NCCP PRESERVE PAR ANALYSIS - INITIAL COSTS

Attachment A

	Specifications	10.5	number	cost/unit	total	PVPLC	City
SITE CONSTRUCTION/MAINT				$ -		$ -	$ -
Salvage Plant Materials		hours	40	$ 15	$ 600	$ 600	
Salvage /stockpile Topsoil		hours	40	$ 15	$ 600	$ 600	
Fence, Protective Plastic	high visibility	feet	2000	$ 1.25	$ 2,500	$ 2,500	
Fence - Installed	chain link for plant yard	feet	200	$ 20	$ 4,000	$ 4,000	
Subtotal				**$ -**	**$ 7,700**	**$ 7,700**	**$ -**
						$ -	
BIOTIC SURVEYS	Baseline Reports monitoring					$ -	
Landscape Ecologist	PVPLC staff	hours	300	$ 25	$ 7,500	$ 7,500	
Plant Ecologist	Restoration Ecologist	hours	330	$ 50	$ 16,500	$ 16,500	
Wildlife Biologist	outside expert	hours	200	$ 65	$ 13,000	$ 13,000	
Entomologist	outside expert	hours	80	$ 75	$ 6,000	$ 6,000	
Science Director	PVPLC staff	hours	50	$ 40	$ 2,000	$ 2,000	
Monitor Climate	local resource	hours	16	$ 25	$ 400	$ 400	
Subtotal					**$ 45,400**	**$ 45,400**	**$ -**
						$ -	
HABITAT RESTORATION	5 & 5 Restoration					$ -	
Site Analysis	field survey & report	hours	16.0	$ 50	$ 800	$ 800	
Restoration Plan	plan/report	hours	200.0	$ 50	$ 10,000	$ 10,000	
Organic Debris Removal	5 acres clearing	acre	5.0	$ 600	$ 3,000	$ 3,000	
Non-organic Debris Removal	dumpsters	fee	10.0	$ 400	$ 4,000		$ 4,000
Soil Amendments	misc	yard	5.0	$ 50	$ 250	$ 250	
Straw	for erosion control	bale	50.0	$ 10	$ 500	$ 500	
Seed Collection	native seed	hours	160.0	$ 25	$ 4,000	$ 4,000	
Exotic Plant Control	hand removal	hours	200.0	$ 15	$ 3,000	$ 3,000	
Exotic Plant Control	herbicide	gallon	10.0	$ 100	$ 1,000	$ 1,000	
Exotic Plant Control	backpack spraying	hours	50.0	$ 25	$ 1,250	$ 1,250	
Other	misc. supplies	item	1.0	$ 1,000	$ 1,000	$ 1,000	
Subtotal					**$ 28,800**	**$ 24,800**	**$ 4,000**
						$ -	
HABITAT MAINTENANCE	Targeted Exotic Removal &					$ -	
Erosion Control	slope stabilization	hours	10.0	$ 15	$ 150	$ 150	
Straw	erosion control	bale	10.0	$ 10	$ 100	$ 100	
Exotic Plant Control	hand removal	hours	1000.0	$ 15	$ 15,000	$ 15,000	
Exotic Plant Control	herbicide	gallon	20.0	$ 75	$ 1,500	$ 1,500	
Exotic Plant Control	weed whip	hours	80.0	$ 15	$ 1,200	$ 1,200	
Exotic Animal Control	cowbird trapping	hours	250.0	$ 25	$ 6,250	$ 6,250	

NCCP PRESERVE PAR ANALYSIS - INITIAL COSTS

Attachment A

	Specifications	10.5	number	cost/unit	total	PVPLC	City
Feral Animal Control	traps	item	3.0	$ 200	$ 600	$ 600	
Feral Animal Control	checking traps	hours	40.0	$ 15	$ 600	$ 600	
Brush Management	fuel modification zones	hours	500.0	$ 15	$ 7,500	$ -	$ 7,500
Brush Hog Tractor Mower	hire mower	week	2.0	$ 1,100	$ 2,200	$ -	$ 2,200
Other	misc supplies	item	1.0	$ 2,500	$ 2,500	$ 2,500	
Subtotal					**$ 37,600**	**$ 27,900**	**$ 9,700**
						$ -	
PUBLIC SERVICES						$ -	
Access Control	public safety	acre	1514.0	$ 34	$ 51,173	$ -	$ 51,173
Patrolling	patrol	hours	240.0	$ 15	$ 3,600	$ 3,600	
Trail	maintenance	hours	100.0	$ 15	$ 1,500	$ 1,500	
Sign	boundary	item	30.0	$ 50	$ 1,500	$ 1,500	
Sign, Metal	informational	item	40.0	$ 50	$ 2,000	$ 2,000	
Sign, Metal	trail markers	item	200.0	$ 20	$ 4,000	$ 4,000	
Sign	interpretive	item	4.0	$ 2,000	$ 8,000	$ 8,000	
Volunteer Coordinator	meetings	hours	200.0	$ 25	$ 5,000	$ 5,000	
Docent Training	meetings	hours	40.0	$ 25	$ 1,000	$ 1,000	
Interpretive Literature	labor	hours	20.0	$ 25	$ 500	$ 500	
Interpretive Literature	copy	page	2000.0	$ 0.10	$ 200	$ 200	
Community Outreach	meetings	hours	80.0	$ 40	$ 3,200	$ 1,920	$ 1,280
Other	misc. supplies	item	1.0	$ 1,000	$ 1,000	$ 1,000	
Subtotal					**$ 82,673**	**$ 30,220**	**$ 52,453**
						$ -	
GENERAL MAINTENANCE						$ -	
Sanitation Control	collection & disposal	hours	400.0	$ 15	$ 6,000	$ -	$ 6,000
Toilets, Portable	yearly rental	rental	5.0	$ 1,500	$ 7,500	$ -	$ 7,500
Other	misc. maintenance	misc.	1.0	$ 1,000	$ 1,000	$ -	$ 1,000
Subtotal					**$ 14,500**	**$ -**	**$ 14,500**
						$ -	
REPORTING	Report production					$ -	
Database Management	data imput	hours	80.0	$ 50	$ 4,000	$ 4,000	
GIS/CAD Management	data management	hours	40.0	$ 50	$ 2,000	$ 1,200	$ 800
Photodocmentation	field survey	hours	80.0	$ 25	$ 2,000	$ 2,000	
Agency Report	annual report	hours	50.0	$ 45	$ 2,250	$ 2,250	
Fire Management Plan	report	hours	20.0	$ 25	$ 500	$ 250	$ 250
Monitoring Reports	monitoring documentation	hours	120.0	$ 45	$ 5,400	$ 4,500	$ 900
Report Production	labor	hours	12.0	$ 25	$ 300	$ 300	

NCCP PRESERVE PAR ANALYSIS - INITIAL COSTS

Attachment A

	Specifications	10.5	number	cost/unit	total	PVPLC	City
Subtotal					**$ 16,450**	**$ 14,500**	**$ 1,950**
						$ -	
OFFICE MAINTENANCE						$ -	
Administrative	operations	hours	40.0	$ 45	$ 1,800	$ 1,080	$ 720
Telephone Charges, Annual	phone charges	person	0.5	$ 1,200	$ 600	$ 600	
Office Supplies, Year	stationery	person	1.0	$ 100	$ 100	$ 100	
Office Supplies, Year	supplies	person	1.0	$ 200	$ 200	$ 200	
Copier	copier	item	0.5	$ 400	$ 200	$ 200	
Fax Machine	fax	item	0.5	$ 400	$ 200	$ 200	
Deskjet Printer	printer	item	1.0	$ 400	$ 400	$ 400	
Other	misc supplies	item	1.0	$ 1,000	$ 1,000	$ 800	$ 200
Subtotal					**$ 4,500**	**$ 3,580**	**$ 920**
						$ -	
FIELD EQUIPMENT						$ -	
GPS, Rover & Base Unit	gps w. mapping capability	item	2.0	$ 400	$ 800	$ 400	$ 400
Vehicle	mileage	mile	12000.0	$ 0.38	$ 4,560	$ 4,560	
Vehicle Insurance	insurance	year	0.5	$ 3,500	$ 1,750	$ 1,750	
Camera 35mm lens	digital	item	1.0	$ 350	$ 350	$ 350	
Chemical Sprayer	backpack sprayer	item	1.0	$ 200	$ 200	$ 200	
Other	misc. supplies	item	1.0	$ 2,500	$ 2,500	$ 2,500	
Subtotal				**$ -**	**$ 10,160**	**$ 9,760**	**$ 400**
						$ -	
OPERATIONS						$ -	
Audit	CPA audit	item	0.5	$ 5,000	$ 2,500	$ 2,500	
Contracts	produce contracts	hours	30.0	$ 30	$ 900	$ 720	$ 180
Other	misc items	item	1.0	$ 1,000	$ 1,000	$ 800	$ 200
Subtotal					$ 4,400	$ 4,020	$ 380
SUBTOTAL					**$ 252,183**	**$ 167,880**	**$ 84,303**
						$ -	
CONTINGENCY & ADMINISTRATION						$ -	
Contingency	6% of total			$ -	$ 15,131	$ 13,618	$ 1,513
Administration	18% of total			$ -	$ 45,393	$ 40,854	$ 4,539
Subtotal				**$ -**	**$ 60,524**	**$ 54,472**	**$ 6,052**
						$ -	
TOTAL				**$ -**	**$ 312,707**	**$ 222,352**	**$ 90,356**

NCCP PRESERVE PAR ANALYSIS FOR ONGOING EXPENSES

Attachment A

	Specifications	unit	number	cost/unit	interval	total	PVPLC	City
SITE CONSTRUCTION/MAINT							$ -	$ -
Salvage Plant Materials		hours	40.0	$ 15.00	1	$ 600	$ 600	
Salvage /stockpile Topsoil		hours	40.0	$ 15.00	1	$ 600	$ 600	
Fence, Protective Plastic	high visibility	feet	2000.0	$ 1.25	5	$ 500	$ 500	
Fence - Installed	chain link for plant yard	feet	200.0	$ 20.00	30	$ 133	$ 133	
Subtotal						**$ 1,833**	**$ 1,833**	**$ -**
							$ -	
BIOTIC SURVEYS	Monitoring for Reports						$ -	
Landscape Ecologist	PVPLC staff	hours	300.0	$ 25	1	$ 7,500	$ 7,500	
Plant Ecologist	Restoration Ecologist	hours	330.0	$ 50	3	$ 5,500	$ 5,500	
Wildlife Biologist	outside expert	hours	200.0	$ 65	3	$ 4,333	$ 4,333	
Entomologist	outside expert	hours	80.0	$ 75	3	$ 2,000	$ 2,000	
Science Director	PVPLC staff	hours	40.0	$ 50	1	$ 2,000	$ 2,000	
Monitor Climate	local resource	hours	16.0	$ 25	1	$ 400	$ 400	
Subtotal						**$ 21,733**	**$ 21,733**	**$ -**
							$ -	
HABITAT RESTORATION	5 & 5 Restoration					$ -	$ -	
Site Analysis	field survey & report	hous	16.0	$ 50	1	$ 800	$ 800	
Restoration Plan	plan/report	hours	200.0	$ 50	3	$ 3,333	$ 3,333	
Organic Debris Removal	5 acres clearing	acre	5.0	$ 600	1	$ 3,000	$ 3,000	
Non-organic Debris Removal	dumpsters	fee	12.0	$ 400	1	$ 4,800		$ 4,800
Soil Amendments	misc	yard	5.0	$ 50	1	$ 250	$ 250	
Straw	for erosion control	bale	50.0	$ 10	1	$ 500	$ 500	
Seed Collection	native seed	hours	160.0	$ 25	1	$ 4,000	$ 4,000	
Plant Procurement	native plants	4" pot	9000.0	$ 2	1	$ 18,000	$ 18,000	
Revegetation	flag plant locations	hours	24.0	$ 25	1	$ 600	$ 600	
Revegetation	plant installation	hours	600.0	$ 15	1	$ 9,000	$ 9,000	
Plant Protection Device	collar & screen	item	4000.0	$ 3	3	$ 3,333	$ 3,333	
Irrigation System	DriWater	item	8000.0	$ 2	1	$ 16,000	$ 16,000	
Exotic Plant Control	hand removal	hours	200.0	$ 15	1	$ 3,000	$ 3,000	
Exotic Plant Control	herbicide	gallon	10.0	$ 100	1	$ 1,000	$ 1,000	
Exotic Plant Control	backpack spraying	hours	50.0	$ 25	1	$ 1,250	$ 1,250	
Other	misc. supplies	item	1.0	$ 1,000	1	$ 1,000	$ 1,000	
Subtotal						**$ 69,867**	**$ 65,067**	**$ 4,800**
HABITAT MAINTENANCE	Targeted Exotic Removal & Predator Control							
Erosion Control	slope stabilization	hours	10.0	$ 15.00	1	$ 150	$ 150	
Straw	erosion control	bale	10.0	$ 10.00	1	$ 100	$ 100	
Exotic Plant Control	hand removal	hours	1000.0	$ 15.00	1	$ 15,000	$ 15,000	
Exotic Plant Control	herbicide	gallon	20.0	$ 75.00	1	$ 1,500	$ 1,500	

NCCP PRESERVE PAR ANALYSIS FOR ONGOING EXPENSES

Attachment A

	Specifications	unit	number	cost/unit	interval	total	PVPLC	City
Exotic Plant Control	weed whip	hours	80.0	$ 15.00	1	$ 1,200	$ 1,200	
Exotic Animal Control	cowbird trapping	hours	250.0	$ 25.00	1	$ 6,250	$ 6,250	
Feral Animal Control	traps	item	3.0	$ 200.00	5	$ 120	$ 120	
Feral Animal Control	checking traps	hous	40.0	$ 15.00	1	$ 600	$ 600	
Brush Management	fuel modification zones	hours	500.0	$ 15.00	1	$ 7,500	$ -	$ 7,500
Brush Hog Tractor Mower	mowing	week	2.0	$ 1,100.00	1	$ 2,200	$ -	$ 2,200
Other	misc supplies	item	1.0	$ 2,500.00	1	$ 2,500	$ 2,500	
Subtotal						**$ 37,120**	**$ 27,420**	**$ 9,700**
							$ -	
PUBLIC SERVICES							$ -	
Access Control	public safety	acre	1514.0	$ 33.80	1	$ 51,173		$ 51,173
Patrolling	patrol	hours	240.0	$ 15.00	1	$ 3,600	$ 3,600	
Trail	maintenance	hours	100.0	$ 15.00	1	$ 1,500	$ 1,500	
Sign	boundary	item	30.0	$ 50.00	10	$ 150	$ 150	
Sign, Metal	metal	item	40.0	$ 50.00	10	$ 200	$ 200	
Sign, Metal	trail markers	item	200.0	$ 20.00	10	$ 400	$ 400	
Sign	interpretive	item	4.0	$ 2,000.00	20	$ 400	$ 400	
Volunteer Coordinator	meetings	hours	200.0	$ 25.00	1	$ 5,000	$ 5,000	
Docent Training	meetings	hours	40.0	$ 25.00	1	$ 1,000	$ 1,000	
Interpretive Literature	labor	hours	20.0	$ 45.00	1	$ 900	$ 900	
Interpretive Literature	copy	page	2000.0	$ 0.10	1	$ 200	$ 200	
Community Outreach	meetings	hours	80.0	$ 40.00	1	$ 3,200	$ 1,920	$ 1,280
Other	misc. supplies	item	1.0	$ 1,000.00	1	$ 1,000	$ 1,000	
Subtotal						**$ 68,723**	**$ 16,270**	**$ 52,453**
GENERAL MAINTENANCE								
Sanitation Control	collection & disposal	hours	400.0	$ 15.00	1	$ 6,000	$ -	$ 6,000
Toilets, Portable	yearly rental	item	5.0	$ 1,500.00	1	$ 7,500	$ -	$ 7,500
Other	misc. maintenance	misc.	1.0	$ 1,000.00	1	$ 1,000	$ -	$ 1,000
Subtotal						**$ 14,500**	**$ -**	**$ 14,500**
							$ -	
REPORTING	Report production						$ -	
Database Management	data imput	hours	80.0	$ 50.00	1	$ 4,000	$ 4,000	
GIS/CAD Management	data management	hours	40.0	$ 50.00	1	$ 2,000	$ 1,200	$ 800
Photodocumentation	field survey	hours	80.0	$ 25.00	1	$ 2,000	$ 2,000	
Aerial photos	flight	item	1.0	$ 1,000.00	3	$ 333	$ 200	$ 133
Agency Report	annual report	hours	50.0	$ 45.00	1	$ 2,250	$ 2,250	
Fire Management Plan	report	hours	20.0	$ 25.00	1	$ 500	$ 250	$ 250
Monitoring Reports	monitoring documentation	hours	120.0	$ 45.00	1	$ 5,400	$ 4,275	$ 1,125
Report Production	labor	hours	12.0	$ 25.00	1	$ 300	$ 300	

NCCP PRESERVE PAR ANALYSIS FOR ONGOING EXPENSES

Attachment A

	Specifications	unit	number	cost/unit	interval	total	PVPLC	City
Subtotal						**$ 16,783**	**$ 14,475**	**$ 2,308**
OFFICE MAINTENANCE								
Administrative	operations	hours	80.0	$ 45.00	1	$ 3,600	$ 2,160	$ 1,440
Telephone Charges, Annual	phone charges	person	0.5	$ 1,200.00	1	$ 600	$ 600	
Office Supplies, Year	stationery	person	1.0	$ 100.00	1	$ 100	$ 100	
Office Supplies, Year	supplies	person	1.0	$ 200.00	1	$ 200	$ 200	
Copier	copier	item	0.5	$ 400.00	8	$ 25	$ 25	
Fax Machine	fax	item	0.5	$ 400.00	5	$ 40	$ 40	
Deskjet Printer	printer	item	1.0	$ 400.00	6	$ 67	$ 67	
Other	misc supplies	item	1.0	$ 1,000.00	1	$ 1,000	$ 800	$ 200
Subtotal						$ 5,632	$ 3,992	$ 1,640
FIELD EQUIPMENT								
GPS, Rover & Base Unit	gps w. mapping capability	item	2.0	$ 400.00	5	$ 160	$ 80	$ 80
Vehicle	pickup truck	item	0.5	$ 16,000.00	5	$ 1,600	$ 1,600	
Vehicle	mileage	mile	12000.0	$ 0.38	1	$ 4,560	$ 4,560	
Vehicle Insurance	insurance	year	0.5	$ 3,500.00	1	$ 1,750	$ 1,750	
Camera 35mm lens	digital	item	1.0	$ 350.00	5	$ 70	$ 70	
Chemical Sprayer	backpack sprayer	item	1.0	$ 200.00	5	$ 40	$ 40	
Other	misc. supplies	item	1.0	$ 2,500.00	1	$ 2,500	$ 2,500	
Subtotal						**$ 10,680**	**$ 10,600**	**$ 80**
OPERATIONS								
Audit	CPA audit	item	0.5	$ 5,000.00	1	$ 2,500	$ 2,500	
Contracts	produce contracts	hours	30.0	$ 30.00	1	$ 900	$ 720	$ 180
Endowment	process endowment	hours	10.0	$ 30.00	1	$ 300	$ 300	
Other	misc items	item	1.0	$ 1,000.00	1	$ 1,000	$ 800	$ 200
Subtotal						**$ 4,700**	**$ 4,320**	**$ 380**
SUBTOTAL						$ 251,572	$ 165,710	$ 85,862
CONTINGENCY & ADMINISTRATION								
Contingency	6% of total					$ 15,094	$ 13,585	$ 1,509
Administration	18% of total					$ 45,283	$ 40,755	$ 4,528
Subtotal						**$ 60,377**	**$ 54,339**	**$ 6,038**
							$ -	
TOTAL						**$ 311,949**	**$ 220,049**	**$ 91,899**

Habitat Mitigation Savings

Attachment B

City Project	Project Status	Habitat Loss (acres) Coastal Sage Scrub	Habitat Loss (acres) Grassland	Offsite Mitigation Acreage Coastal Sage Scrub	Offsite Mitigation Acreage Grassland	Potential Savings Coastal Sage Scrub	Potential Savings Grassland
25th Street Road Repair (Phase 1)	Completed	0.10	N/A2	0.20	N/A2	$ 5,000	N/A2
25th Street Road Repair (Phase 2)	Completed	0.40	N/A2	0.80	N/A2	20,000	N/A2
Forrestal Property Trail Clearing	Completed	0.10	N/A2	0.30	N/A2	7,500	N/A2
McCarrell Canyon Outlet Improvement	Completed	0.20	N/A2	0.60	N/A2	15,000	N/A2
Portuguese Canyon Drainage Project	Completed	0.50	N/A2	1.50	N/A2	37,500	N/A2
PVDS Emergency Washout Project	Completed	0.40	N/A2	1.20	N/A2	30,000	N/A2
PVDS Roadway Rehabilitation	Completed	0.20	N/A2	0.60	N/A2	15,000	N/A2
Sacred Cove Geologic Investigation	Completed	0.10	N/A2	0.30	N/A2	7,500	N/A2
San Ramon Canyon Repair	Completed	1.00	N/A2	1.00	N/A2	25,000	N/A2
Tarapaca Sewer Line Relocation	Completed	0.50	N/A2	1.50	N/A2	37,500	N/A2
Subtotals for Completed Projects		3.50	0.00	8.00	0.00	200,000	-
Abalone Cove Beach Public Access & Amenities	Proposed	0.20	1.00	0.00	0.50	-	12,500
Active Recreation Area For Accessing Reserve Trail System	Proposed	1.00	13.60	3.00	6.80	75,000	170,000
Altamira Canyon Drainage Project	Proposed	2.50	3.00	5.00	1.50	125,000	37,500
Dewatering Wells (10 Wells) Within The Landslide Area	Proposed	2.50	2.50	7.50	1.25	187,500	31,250
Additional Recreational Facilities at Lower Point Vicente	Proposed	1.00	11.20	3.00	5.60	75,000	140,000
Lower San Ramon Canyon Grading	Proposed	2.00	6.00	6.00	3.00	150,000	75,000
Misc Drainage Improvement Projects	Proposed	4.00	12.00	12.00	6.00	300,000	150,000
Misc. Damaged Drain Repair Within The Landslide Area	Proposed	5.00	15.00	15.00	7.50	375,000	187,500
Misc. Fissure Filling Within The Landslide Area	Proposed	3.00	3.00	9.00	1.50	225,000	37,500
PVDE Drainage Improvement Projects (17 Projects)	Proposed	4.00	12.00	12.00	6.00	300,000	150,000
RPV Conceptual Trails Plan Implementation	Proposed	5.00	15.00	15.00	7.50	375,000	187,500
Subtotals for Proposed Projects		30.20	94.30	87.50	47.15	2,187,500	1,178,750
Totals for All City Projects		**33.70**	**94.30**	**95.50**	**47.15**	**$ 2,387,500**	**$ 1,178,750**

Estimated Management Costs

Estimated costs of habitat restoration and management for Alternative C was obtained from a "Property Analysis Record" (or PAR, a program by Center for Natural Lands Management) prepared by URS and Palos Verdes Peninsula Land Conservancy (PVPLC). Endowment necessary to fund annual costs in perpetuity was also estimated by the PAR analysis, using net interest revenue of 5 percent. Restoration and management costs for the other alternatives were estimated from those of Alternative C, adjusted in proportion to the total acres of conserved land.

Estimated Land Values for Open Space Acquistion

To estimate the probable market value of acquisition areas, prices of 2,406 acres of open space and habitat land sales in Los Angeles and Orange Counties from 1995 to 2000 were reviewed (Table C-1). These are generally lands without subdivision maps, where important biological resources and frequently physical constraints are present. Average price, adjusted for inflation and weighted by land area, was $23,600 per acre, or $0.54 per square foot.

Figure C-1 is a plot of average land price per square foot, where the transactions (after adjustment to 2001 dollars) were arranged in order of ascending price, and the vertical axis indicates the cumulative percent of land sold at or below a given price. For example, of the 2,406 acres reviewed, approximately one-half by area were sold for $0.48 per square foot or less. For this analysis and considering the high market value of housing, it is assumed that acquisition of land in the City of Rancho Palos Verdes for open space or habitat use would range between $0.75 to $1.05 per square foot, or approximately $32,700 to $45,700 per acre. Approximately 80 to 90 percent of open space land sales shown in Table C-1 and Figure C-1 occurred at prices equal to or less than these amounts.

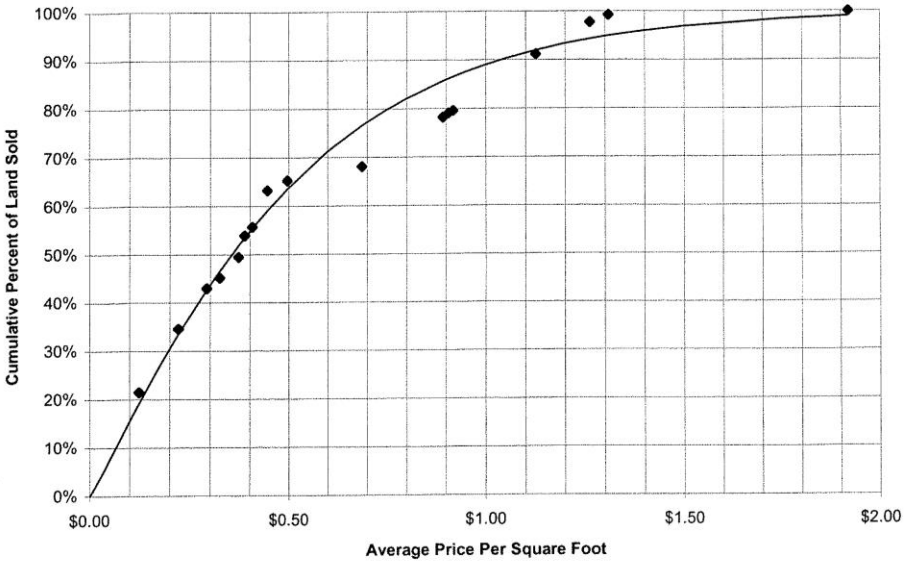
Table C-1
COMPARABLE SALES OF HABITAT AND OPEN SPACE LAND
IN LOS ANGELES AND ORANGE COUNTIES, 1995 - 2000

Recording Date	Property / Owner	Location	Zip Code	Land Area (Ac.)	Sales Price	Price as of Record Date		Inflated to 2001 Price [1]	
						Per Acre	Per Sq.Ft.	Per Acre	Per Sq.Ft.
03/04/97	OH, RS1 Zone; hazard; City of Rancho Palos Verdes	Rancho Palos Verdes	90275	160.0	$7,700,000	$48,110	$1.10	$55,032	$1.26
01/12/95	A25-A11 Zone; park land	LA Co., nr. Malibu	90265	182.6	$3,000,000	$16,428	$0.38	$19,435	$0.45
08/21/97	Open space; Mountain Restoration Trust	Malibu	90265	278.1	$12,000,000	$43,147	$0.99	$49,089	$1.13
07/15/98	A11 Zone; Malibu Canyon L.P.	Calabasas	91302	315.0	$2,755,000	$8,746	$0.20	$9,667	$0.22
09/23/98	A11 Zone; State of California	Malibu	90265	242.5	$8,600,000	$35,460	$0.81	$38,899	$0.89
10/26/99	A11 Zone; Charles E. Fitzgerald	Malibu	90265	52.3	$700,000	$13,382	$0.31	$14,165	$0.33
06/06/97	R1 Zone; City of Sierra Madre	Sierra Madre	91024	12.1	$425,000	$35,037	$0.80	$40,030	$0.92
04/25/96	HR Zone; rolling, steep; City of Whittier	Whittier	90601	18.8	$1,350,000	$71,732	$1.65	$83,666	$1.92
05/24/96	OS; habitat preserve; Puente Hills Landfill [2]	La Habra Heights	90631	517.9	$2,402,716	$4,640	$0.11	$5,415	$0.12
02/13/97	OS W; habitat area; State of California	Whittier	90601	201.7	$2,250,000	$11,157	$0.26	$12,739	$0.29
10/21/97	A1 Zone; level; Puente Hills Landfill [2]	LA Co., nr. Whittier	90601	107.0	$1,600,000	$14,953	$0.34	$16,891	$0.39
04/01/98	HR Zone; rolling, steep; City of Whittier	Whittier	90601	102.8	$1,500,000	$14,596	$0.34	$16,227	$0.37
10/14/98	A21 Zone; Puente Hills Landfill [2]	La Habra Heights	91745	20.8	$750,000	$36,075	$0.83	$39,506	$0.91
06/18/98	AG Zone	San Juan Capistrano	92675	34.4	$1,770,000	$51,453	$1.18	$57,070	$1.31
11/10/99	Resid. Zone	Silverado	92676	48.9	$1,000,000	$20,458	$0.47	$21,643	$0.50
12/15/99	R2 Zone; Signal Landmark	Huntington Beach	92649	43.2	$725,000	$16,802	$0.39	$17,745	$0.41
04/11/00	PC Zone	Lake Forest	92630	67.9	$1,959,000	$28,870	$0.66	$29,957	$0.69
	Total / Weighted average			2,406.0		$20,984	$0.48	$23,599	$0.54

Source: Los Angeles County Office of the Assessor.

1. Prices inflated to April 2001 using the housing component of US BLS Consumer Price Index for Los Angeles-Riverside-Orange County, CA.
2. Puente Hills Landfill Native Habitat Preservation Authority.

Figure C-1
Distribution of Prices of Habitat and Open Space Land Sold in
Los Angeles and Orange Counties, 1995-2000



Management Budget Analysis

The NCCP Subarea Plan approved by the City of Rancho Palos Verdes in August 2004 included a discussion (Section 4.3) of funding and financing for the proposed Subarea Plan. The discussion included estimates on the cost to acquire the properties needed to complete the proposed Preserve Design (Alternative C) and the costs of ongoing restoration and management. In addition, the City of Rancho Palos estimated additional costs to the City (new Assessment District fees as a result of owning acquired open space and reduction of Tax Increment Revenue) and potential cost savings to the City as a result of not having to perform habitat restoration as mitigation for the various City projects covered by the NCCP. The supporting documentation of this previous financial analysis was contained in Appendix C of the 2004 Subarea Plan.

The Final NCCP Subarea Plan has been updated to reflect a different proposed Preserve Design (Alternative D) and actual management costs. As a result, the funding and financing discussion of the Plan has been clarified and updated (Chapter 8). Provided below is a summary of the differences between the 2004 and current funding and financing discussion along with the supporting materials.

Preserve Acquisition Costs

The 2004 Plan proposed the acquisition of 684.5 acres of privately held open space (the 422.3-acre Portuguese Bend property, the 43.8-acre Agua Amarga property and the 218.4-acre Upper Filiorum property) to complete the Preferred Preserve Design (Alternative C). The Plan estimated that the cost of acquiring this open space would be between $22.3 and $31.3 million.

The preferred alternative in the current plan (Alternative D) is the same as Alternative C in the 2004 Plan except that 27 acres of the 218.4-acre Upper Filiorum property and 40 acres of the former RDA Archery Range property have been excluded and 61 acres of open space in Malaga Canyon have been added. All the properties needed to complete Alternative D have been acquired and the costs of acquiring said properties are as follows:

Portuguese Bend	$16.845 million
Agua Amarga	$680,000
Upper Filiorum	$6.5 million
Malaga canyon	$1.115 million

The total cost of acquiring the open space to complete Alternative D was $25,140,000.

Preserve Management Costs

Based on a PAR Analysis that was prepared by the City and PVPLC, that is included in Exhibit C-1, the 2004 Plan estimated that the total annual cost of managing the proposed Preserve would amount to $311,949 per year with $220,049 being the responsibility of the PVPLC and $91,899 being the responsibility of the City.

Since active management of the Preserve by the City and PVPLC began in 2006, the actual costs of managing the preserve began to be tracked by both the PVPLC in the City. In November 2011, the City and the PVPLC entered into a comprehensive Preserve Management agreement and as a result the collective annual cost to manage the Preserve was re-calculated. As a result, an updated Preserve Management Budget was prepared that is attached as Exhibit C-2. Based on the updated budget, the total cost of managing the Preserve is now estimated at $654,072 per year, with $250,579 being the responsibility of the PVPLC and $403,493 being the responsibility of the City.

City Costs

As described in attached Exhibit C-1, in 2004, the City estimated its annual cost of having to pay annual Landslide Abatement District assessments since a majority of the property to be acquired for the proposed Preserve would be located in two separate Abatement Districts. The City estimated its annual assessment cost as $25,126 per year. In addition, since some of the property to be acquired was located in the City's Redevelopment Agency (RDA) area, the City estimated that there would be a loss of $25,000 of tax increment revenue to the City.

In November 2011, when total actual management costs were reported to the City, it was reported that the City's Landslide Abatement Assessments were approximately $84,000 per year. These assessment costs tend to increase on an annual basis. In 2010, the City's RDA was abolished as a result of state law. Therefore, there is no longer any loss of tax increment revenue to report. However, since one of the former RDA-owned parcels (Abalone Cove Park) that reverted to City ownership is in the Preserve and located within a Landslide Abatement District, the City will be responsible for the annual assessment costs of this parcel.

City Mitigation Savings

As described in the attached Exhibit C-1, as a result of the mitigation that the Plan is providing the City for covered City projects, it will not be necessary for the City to conduct the typical re-vegetation mitigation on a project by project basis. This was identified as a major long-term cost savings to the City in 2004. Specifically, it was estimated that over the life of the Plan (50 years) the City would save $3,566,250 in habitat restoration costs and $1,575,000 in restoration plan preparation/monitoring costs

for a total savings of $5,141,250. The habitat restoration savings was calculated by applying the restoration cost of $25,000/acre identified in the Plan to the acres of restoration needed (142.65 acres) to mitigate for the loss of CSS and Grassland (mitigated at 0.5:1) for all the City covered projects identified in the Plan ($25,000 x 142.65 acres (95.50 acres of CSS plus 47.15 acres of grassland). The restoration plan/monitoring savings was calculated by applying the estimated habitat restoration plan preparation/monitoring cost per City covered project ($75,000) to the number of covered City projects (21).

The current Plan includes updated habitat restoration costs, an updated list of Covered City Projects and updated mitigation acreages for Covered City Projects. In addition, the current Plan does not identify a mitigation ratio for Grassland or CSS losses. Based on this updated information, it is now estimated that over the life of the Plan (50 years) the City would save $6,375,000 in habitat restoration costs and $1,350,000 in restoration plan preparation/monitoring costs for a total savings of $7,725,000. The updated habitat restoration savings was calculated by applying the updated restoration cost of $50,000/acre to the number of mitigation acres that the City would have to provide to mitigate the total CSS loss (127.5 acres) that would result by implementing all of the Covered City Projects identified in the Plan ($50,000 x 127.5 acres = $6,375,000). The restoration plan/monitoring savings was calculated by applying the same estimated habitat restoration plan preparation/monitoring cost per City covered project of $75,000 to the updated number of covered City projects (18).

SUMMARY	Initial	Ongoing
Site Construction	$ 7,700	$ 3,407
Biotic Surveys	$ 45,400	$ 38,500
Habitat Restoration	$ 29,600	$ 154,607
Habitat Maint.	$ 44,850	$ 147,160
Public Services	$ 79,766	$ 126,994
General Maintenance	$ 16,327	$ 5,000
Reporting	$ 16,450	$ 32,600
Office Maint.	$ 4,500	$ 9,255
Field Equipment	$ 10,090	$ 12,534
Operations	$ 4,450	$ 10,500
Cont. & Admin	$ 62,192	$ 113,517
TOTAL	**$ 321,325**	**$ 654,072**

APPENDIX C

Management Budget Analysis

ANNUAL COSTS	Specifications	unit	number	cost/unit	interval	total	PVPLC	City
SITE CONSTRUCTION/MAINT								
Salvage Plant Materials		hours	40	$ 28	1	$ 1,120	$ 1,120	
Salvage /stockpile Topsoil		hours	40	$ 28	1	$ 1,120	$ 1,120	
Fence, Protective Plastic	high visibility	feet	2000	$ 1	3	$ 833	$ 833	
Fence - Installed	chain link for plant yard	feet	200	$ 50	30	$ 333	$ 333	
Subtotal						**$ 3,407**	**$ 3,407**	**$ -**
BIOTIC SURVEYS	Monitoring for Reports							
PVPLC Staff	biologists, project mgrs.	hours	200	$ 90	1	$ 18,000	$ 18,000	
Plant Ecologist	Restoration Ecologist	hours	330	$ 90	3	$ 9,900	$ 9,900	
Wildlife Biologist	outside expert	hours	220	$ 90	3	$ 6,600	$ 6,600	
Entomologist	outside expert	hours	80	$ 75	3	$ 2,000	$ 2,000	
Conservation Director	PVPLC staff	hours	40	$ 50	1	$ 2,000	$ 2,000	
Subtotal						**$ 38,500**	**$ 38,500**	**$ -**
HABITAT RESTORATION	5 & 5 Restoration							
Site Analysis	field survey & report	hours	16	$ 90	1	$ 1,440	$ 1,440	
Restoration Plan	plan/report	hours	200	$ 90	3	$ 6,000	$ 6,000	
Organic Debris Removal	5 acres clearing	acre	5	$ 1,200	1	$ 6,000	$ 6,000	
Non-organic Debris Removal	dumpsters	fee	35	$ 400	1	$ 14,000		$ 14,000
Soil Amendments	misc	yard	5	$ 75	1	$ 375	$ 375	
Straw	for erosion control	bale	50	$ 10	1	$ 500	$ 500	
Seed Collection	native seed	hours	200	$ 75	1	$ 15,000	$ 15,000	
Seed Purchase	native seed	lb	45	$ 50	1	$ 2,250	$ 2,250	
Plant Procurement	native plants	4" pot	1500	$ 5	1	$ 7,500	$ 7,500	
Revegetation	flag plant locations	hours	24	$ 40	1	$ 960	$ 960	
Revegetation	plant installation	hours	324	$ 28	1	$ 9,072	$ 9,072	
Seed Installation	hydroseeding	acre	5	$ 6,000	1	$ 30,000	$ 30,000	
Irrigation System	DriWater/Irrigation	item	8000	$ 2	1	$ 38,000	$ 38,000	
Irrigation water and meter	Cal Water	cubic foot	2500	$ 4	1	$ 9,750	$ 9,750	

Exotic Plant Control	hand removal, or backpack spray	hours	420	$ 28	1	$ 11,760	$ 11,760	
Exotic Plant Control	herbicide	gallon	10	$ 100	1	$ 1,000	$ 1,000	
Other	misc. supplies	item	1	$ 1,000	1	$ 1,000	$ 1,000	
Subtotal						**$ 154,607**	**$ 140,607**	**$ 14,000**
HABITAT MAINTENANCE	Targeted Exotic Removal & Predator Control							
Erosion Control	slope stabilization	hours	20	$ 28	1	$ 560	$ 560	
Straw	erosion control	bale	50	$ 10	1	$ 500	$ 500	
Exotic Plant Control	hand removal , weed whip or herbicide app	hours	1200	$ 28	1	$ 33,600	$ 33,600	
Exotic Plant Control	herbicide	gallon	20	$ 100	1	$ 2,000	$ 2,000	
Brush Management	fuel modification zones	hours	500	$ 216	1	$ 108,000	$ -	$ 108,000
HABITAT MAINTENANCE	Targeted Exotic Removal & Predator Control							
Other	misc. supplies	item	1	$ 2,500	1	$ 2,500	$ 2,500	
Subtotal						**$ 147,160**	**$ 39,160**	**$ 108,000**
PUBLIC SERVICES								
Public Safety	Ranger Patrol	acre	1367	$ 55	1	$ 74,994		$ 74,994
Road Maintenance	Burma Road	item	1	$25,000		$ 25,000		$ 25,000
Trail	maintenance	hours	200	$ 28	1	$ 5,600	$ 5,600	
Sign	access and regs	item	40	$ 50	1	$ 2,000		$ 2,000
Sign, Metal	metal	item	40	$ 50	10	$ 200	$ 200	
Sign, Metal	trail markers	item	25	$ 20	1	$ 500	$ 500	
Sign	interpretive	item	4	$ 2,000	10	$ 800	$ 800	
Volunteer Coordinator	coordination, outdoor workdays	hours	300	$ 35	1	$ 10,500	$ 10,500	
Docent Training	meetings	hours	40	$ 25	1	$ 1,000	$ 1,000	
Interpretive Literature	labor	hours	40	$ 45	1	$ 1,800	$ 1,800	
Interpretive Literature	copy	page	2000	$ 0.20	1	$ 400	$ 400	
Community Outreach	meetings	hours	80	$ 40	1	$ 3,200	$ 3,200	$ -
Other	misc. supplies	item	1	$ 1,000	1	$ 1,000	$ 1,000	

Subtotal						**$ 126,994**	**$ 25,000**	**$ 101,994**
GENERAL MAINTENANCE								
Sanitation Control	collection & disposal	item	1	$ -	1	$ 5,000	$ -	$ 5,000
Subtotal						**$ 5,000**	**$ -**	**$ 5,000**
REPORTING	Report production							
Database Management	data imput	hours	80	$ 80	1	$ 6,400	$ 6,400	
GIS/CAD Management	data management	hours	40	$ 90	1	$ 3,600	$ 3,600	$ -
Photodocumentation	field survey	hours	80	$ 65	1	$ 5,200	$ 5,200	
Agency Report	annual report	hours	60	$ 90	1	$ 5,400	$ 5,400	
Monitoring Reports	monitoring documentation	hours	120	$ 90	1	$ 10,800	$ 10,800	$ -
Report Production	labor	hours	20	$ 60	1	$ 1,200	$ 1,200	
Subtotal						**$ 32,600**	**$ 32,600**	**$ -**
OFFICE MAINTENANCE								
Administrative	operations	hours	80	$ 90	1	$ 7,200	$ 7,200	$ -
Telephone Charges, Annual	phone charges	item	0.5	$ 1,200	1	$ 600	$ 600	
Office Supplies, Year	stationery	item	1.0	$ 100	1	$ 100	$ 100	
Office Supplies, Year	supplies	item	1.0	$ 200	1	$ 200	$ 200	
Copier	copier	item	0.5	$ 500	8	$ 31	$ 31	
Fax Machine	fax	item	0.5	$ 400	5	$ 40	$ 40	
Deskjet Printer	printer	item	1.0	$ 500	6	$ 83	$ 83	
Other	misc. supplies	item	1.0	$ 1,000	1	$ 1,000	$ 1,000	$ -
Subtotal						**$ 9,255**	**$ 9,255**	**$ -**
FIELD EQUIPMENT								
GPS, Rover & Base Unit	gps w. mapping capability	item	2	$ 1,000	5	$ 400	$ 400	$ -
Vehicle	pickup truck	item	0.5	$16,000	5	$ 1,600	$ 1,600	
Vehicle	mileage	mile	12000	$ 0.55	1	$ 6,600	$ 6,600	
Vehicle Insurance	insurance	year	0.5	$ 3,500	1	$ 1,750	$ 1,750	

Camera 35mm lens	digital	item	1	$ 350	5	$ 70	$ 70	
Chemical Sprayer	backpack sprayer	item	1	$ 200	3	$ 67	$ 67	
Other	misc. supplies	item	1	$ 2,047	1	$ 2,047	$ 2,047	
Subtotal						**$ 12,534**	**$ 12,534**	**$ -**
OPERATIONS								
Audit	CPA audit	item	0.5	$11,000	1	$ 5,500	$ 5,500	
Contracts	produce contracts	hours	50	$ 80	1	$ 4,000	$ 4,000	$ -
Other	misc. items	item	1	$ 1,000	1	$ 1,000	$ 1,000	$ -
Subtotal						**$ 10,500**	**$ 10,500**	**$ -**
SUBTOTAL						**$ 540,556**	**$ 311,562**	**$ 228,994**
CONTINGENCY & ADMINISTRATION								
Contingency	6% of total					$ 32,433	$ 18,694	$ 13,740
Administration	15% of total					$ 81,083	$ 46,734	$ 34,349
Subtotal						**$ 113,517**	**$ 65,428**	**$ 48,089**
TOTAL						**$ 654,072**	**$ 376,990**	**$ 277,082**

POST PERMIT COSTS	Specifications	unit	number	cost/unit	interval	total	PVPLC	City
PUBLIC SERVICES								
Public Safety and enforcement	Ranger Patrol	acre	1367	$ 55	1	$ 74,994		$ 74,994
Road/ Trail Maintenance	Burma Road	item	1	$25,000		$ 25,000		$ 25,000
Sign	access and regs	item	40	$ 50	1	$ 4,000		$ 4,000
Subtotal						**$ 103,994**	**$ -**	**$ 103,994**
CONSERVATION EASEMENTS LAND MONITORING								
Annual stewardship costs	including the cost to respond to minor violations					$ 19,001	$ 19,001	$ -
Annual costs needed to defend against major violations	includes policy premium for Terrafirm insurance					$ 533	$ 533	$ -
Subtotal						**$ 19,534**	**$ 19,534**	
GENERAL MAINTENANCE								
Sanitation Control	collection & disposal	item	1	$ -	1	$ 5,000	$ -	$ 5,000
Fencing and Access Control						$ 3,000		$ 3,000
Subtotal						**$ 8,000**	**$ -**	**$ 8,000**
SUBTOTAL						**$ 131,528**	**$ 19,534**	**$ 111,994**
CONTINGENCY & ADMINISTRATION								
Contingency	6% of total					$ 7,892	$ 1,172	$ 6,720
Administration	15% of total					$ 19,729	$ 2,930	$ 16,799
Subtotal						**$ 27,621**	**$ 4,102**	**$ 23,519**
TOTAL						**$ 159,148**	**$ 23,636**	**$ 135,512**

Estimate Stewardship Costs and Endowment Needs for Property Subject to a Conservation Easement					
The worksheet accounts for up to three classes of employees engaged in stewardship activities. Staff #1 is assumed to be the key person engaged in easement stewardship work. Staff #2 is assumed to be secondarily involved, perhaps an assistant or the executive director. Support staff is assumed to be a person who provides administrative assistance and would not travel to the eased property.					
Property:					
A. Estimations					Annual stewardship costs (including the cost to respond to minor violations)
Travel Expenses					Endowment needed to fully cover annual stewardship costs
Miles from office to property (one-way)	8.0				
Average travel time in hours to property (one-way)	0.3				
Reimbursement per mile	$0.565			The IRS issues standard mileage rates based on the study of the costs of operating an automobile. Find current rates at http://irs.gov.	Annual costs needed to defend against major violations
Other reimbursable travel expenses (e.g., tolls, parking, meals, lodging)	$0.00				Endowment needed to fund easements against major violations
Annual Monitoring Expenses					
Staff #1: Hours of preparation time per inspection	30.0				
Staff #1: Hours of monitoring time per inspection-excluding travel time	80.0				

Staff #1: Hours of reporting and follow up	25.0			
Staff #2: Hours of preparation time per inspection	1.0			
Staff #2: Hours of monitoring time per inspection-excluding travel time	1.0			
Staff #2: Hours of reporting and follow up per inspection	40.0			
Support staff: Hours per inspection	1.5			
Equipment and supplies per inspection	$14.00			Easement holders may depreciate the costs of equipment (e.g., gps device, camera, computer) as appropriate for the equipment and its use for each property.
Number of regular monitoring visits per year	1			
Number of cars used per monitoring trip	1			Staff may travel separately to the property
Consultant costs per year	$0.00			Depending on the features of the property and the easement, the holder occasionally may need outside expertise.
Drive By and Flyover Monitoring Expenses (used occasionally)				
Number of drive-by monitoring trips per year	0			Occasional monitoring from the public road is sometimes desirable to supplement on-site inspections.
Staff #1: Average time (in hours) needed per drive-by monitoring trip (excluding travel time to and from the property)	0.00			
Staff #2: Average time (in hours) needed per drive-by monitoring trip (excluding travel time to and from the property)	0.00			
Cost of aerial flyover	$0.00			Some organizations use aerial monitoring to supplement onsite visits.
There will be an aerial flyover approximately every ____ years	0			For example, entering the number 20 would mean the land trust expects 1 aerial flyover per 20 years.
Landowner Communication Expenses				

Staff #1: Hours per year	25.00			
Staff #2: Hours per year	120.00			
Support staff: Hours per year	0.75			
Materials and supplies per year	$7.00			For example, printing of educational materials and postage
Landowner Communication Expenses: Change in Landowner				These costs should reflect the time and costs associated with one change in ownership.
Staff #1: Hours for establishing a relationship with new landowners, excluding travel time	1.75			
Staff #2: Hours for establishing a relationship with new landowners, excluding travel time	20.00			
Support staff: Hours for establishing a relationship with new landowners	0.50			
Staff #1: Number of site visits needed to establish a relationship with new landowner	1.00			This number may reflect an average for all properties and therefore is not necessarily a whole number.
Staff #2: Number of site visits needed to establish a relationship with new landowner	3.0			
Supplies	$3.00			For example, a copy of the easement and materials about the land trust's stewardship program
It is estimated that there will be one change in land ownership every ____ years	1.0			This should not be zero.
Review of Reserved and Permitted Rights and Approvals				The conservation easement document may specify that the landowner will pay for the land trust's costs at the time of review. If this is the case, enter zeros in this section.
It is estimated that there will be one review every ___years	0.5			If the easement does not contain reserved or permited rights, place a zero here.
Staff #1: Hours needed per action subject to review	4.00			
Staff #2: Hours needed per action subject to review	4.00			

Support staff: Hours needed per action subject to review	1.50			
Staff #1: Number of site visits required to complete one review	1.50			
Staff #2: Number of site visits required to complete one review	0.00			
Consultant costs per review	$100.00			
Land Trust Initiated Amendment Expenses				If the landowner seeks an easement amendment, the landowner would normally be expected to pay the costs associated with the amendment at the time of amendment.
Staff #1: Hours needed to complete an amendment, excluding travel time	80.00			Occasionally a holder will want to initiate an amendment.
Staff #2: Hours needed to complete an amendment, excluding travel time	20.00			
Support staff: Hours needed to complete an amendment	2.00			
Staff #1: Number of visits required per amendment	4.00			
Staff #2: Number of visits required per amendment	4.00			
It is estimated that there will be one land trust initiated amendment every ____ years.	25			
Legal Expenses				
Legal fees per year	$200.00			Minor and miscellaneous legal expenses may be incurred as the easement holder seeks to reconcile monitoring findings with easement terms, the landowner seeks clarification on easement terms, etc. These costs are expected to occur with no particular frequency.
Minor Violation Incidents (resolved without resort to the courts)				
It is estimated that there will be one minor violation every ____ years.	1.0			This should not be zero

Staff #1: Hours needed to address the violation, excluding travel time	25.00			
Staff #2: Hours needed to address the violation, excluding travel time	35.00			
Support staff: Hours needed to address the violation	2.00			
Staff #1: Number of site visits required per violation	2.30			
Staff #2: Number of site visits required per violation	0.00			
Legal costs per incident	$1,000.00			
Consultant costs per incident	$0.00			Depending on the complexity and provisions of the easement, easement holders should plan for the costs of hiring a consultant.
Major Violation Incidents (requiring litigation)				
It is estimated that there will be one major violation every ____ years	15			This should not be zero
Average cost to address major violation (staff, attorney, court fees & other)	$8,000			
Conservation defense insurance annual premium	$720.00			The PVPLC participates in the Terrafirma Risk Retention Group Insurance program. This line is included for future reference.
Annual Rate of Return				
Average annual return on Stewardship Fund investments less inflation rate	4.00%			
Staff and Overhead Rates				
Staff #1: Hourly rate, including benefits	$26.00			

Staff #2: Hourly rate, including benefits	$40.00			
Support staff: Hourly rate, including benefits	$22.00			
Office overhead costs (rent, insurance, equipment) as a percentage of staff costs	20%			
Stewardship Needs-Final Calculations (This will automatically calculate based on your entries in the estimations section)				
Annual stewardship costs (including the cost to respond to minor violations)		$19,001		
Endowment needed to fully cover annual stewardship costs		**$475,015**		
Annual costs needed to defend against major violations		$533		
Endowment needed to fund easements against major violations		**$13,333**		
Formulas used in this calculator to calculate total stewardship needs (the formalas are here to show users how total stewardship needs were calculated and may be adjusted if needed to suit individual land trust needs)				
These are all calculated automatically, you don't need to do anything!				**Formulae Used**
Staff Costs				
Staff #1: Hourly rate, including overhead and benefits	$31.20			B94+(B94*B97)
Staff #2: Hourly rate, including overhead and benefits	$48.00			B95+(B95*B97)

Support staff: Hourly rate, including overhead and benefits	$26.40			B96+(B96*B97)
Travel Costs				
Roundtrip mileage cost	$9.04			B15*B17*2
Other reimbursable travel expenses	$0.00			B18
Staff #1: Cost of staff time to travel to and from eased property	$18.72			(B112*B16*2)
Staff #2: Cost of staff time to travel to and from eased property	$28.80			(B113*B16*2)
		Total Annual Stewardship Costs		**Formulae**
Annual Monitoring Costs				
Staff time per regular inspection	$6,315.12			((B21+B22+B23)*B112)+((B24+B25+B26)*B113)+(B27*B114)+IF(B22=0,0,B119)+IF(B25=0,0,B120)
Travel costs per regular inspection	$9.04			(B117+B118)*B30
Consultant costs per regular inspection	$0.00			B31
Supplies per regular inspection	$14.00			B28
Annualized cost of drive-by monitoring	$0			IF(B34=0,0,(B35*B119)+(B36*B120)+B117+B118)
Annualized cost of aerial flyover	$0			IF(B38=0,0,(1/B38)*B37)
Total annual monitoring costs		**$6,338.16**		(B124+B125+B127)*B29+B128+B129

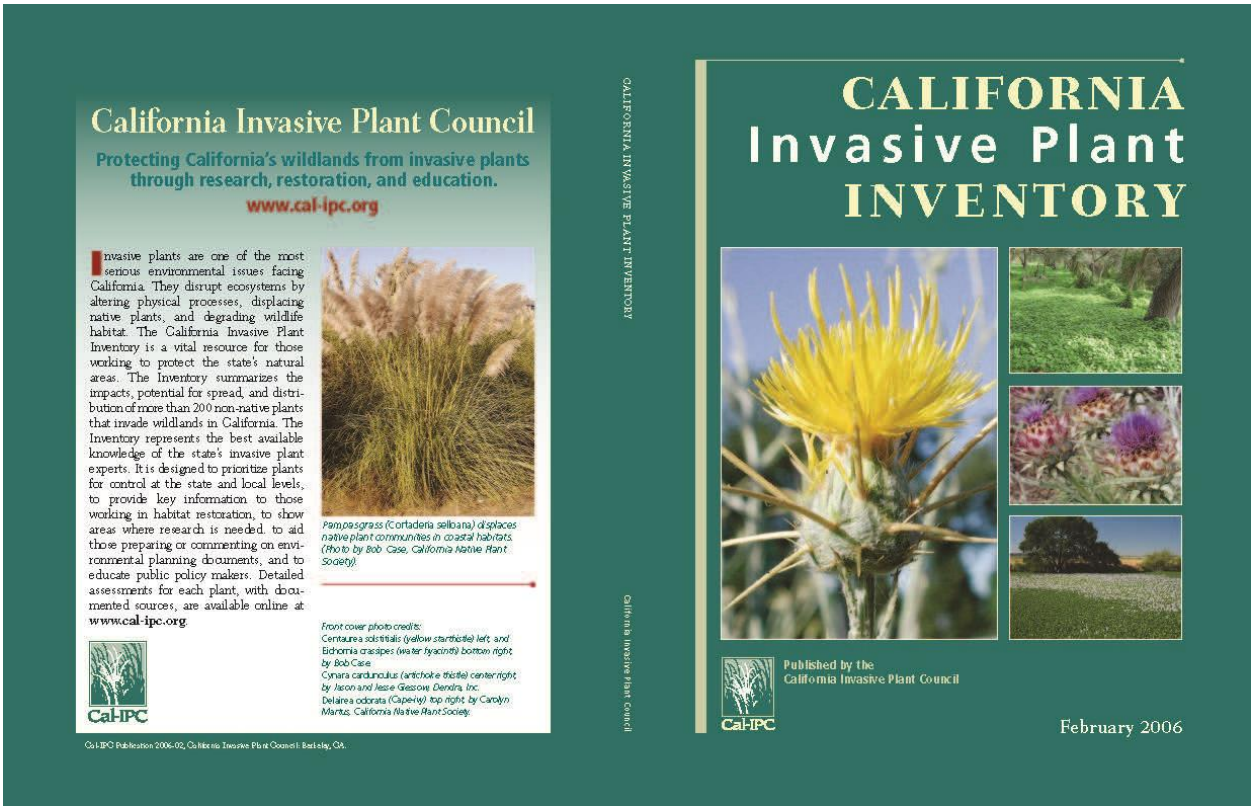
Annual Costs of General Landowner Communications				
Staff time	$6,559.80			(B41*B112)+(B42*B113)+(B43*B114)
Supplies	$7.00			B44
Total costs of general landowner communications		**$6,566.80**		B133+B134
Annualized Costs of Landowner Communications-Change in Landownership				
Staff time	$1,132.92			(B47*B112)+(B48*B113)+(B49*B114)+(B50*B119)+(B51*B120)
Travel costs	$36.16			B50*(B117+B118)+B51*(B117+B118)
Supplies	$3.00			B52
Likelihood of a new landowner in any given year	100%			1/B53
Annualized cost associated with new landowner		**$1,172.08**		(B138+B139+B140)*B141
Annualized Costs for Review of Reserved and Permitted Rights and Approvals				
Staff costs	$384.48			(B112*B57)+(B113*B58)+(B114*B59)+(B60*B119)+(B61*B120)
Travel costs	$13.56			(B60*(B117+B118))+(B61*(B117+B118))
Consultant Costs	$100.00			B62
Likelihood of an exercise of a reserved right in any given year	200%			IF(B56=0,0,1/B56)
Annualized cost for review and approval of reserved rights		**$996.08**		(B145+B146+B147)*B148

Annual Costs of Holder Initiated Amendments				
Staff time per amendment	$3,698.88			(B65*B112)+(B66*B113)+(B67*B114)+(B68*B119)+(B69*B120)
Travel costs per amendment	$72.32			(B68*(B117+B118))+(B69*(B117+B118))
Likelihood of a holder initiated amendment in any given year	4%			1/B70
Total annualized holder initiated amendment costs		**$150.85**		(B153+B154)*B155
Annual Legal Costs				
Legal fees per year	$200.00			B73
Total annual legal costs		**$200.00**		B159
Total Annual Regular Stewardship Expenses		**$15,423.97**		C130+C135+C142+C149+C156+C160
C. Calculation of Costs Associated with Violations				
Minor Violations				
Staff costs to address violation	$2,555.86			(B112*B77)+(B113*B78)+(B114*B79)+(B80*B119)+(B81*B120
Travel costs	$20.79			(B80*(B117+B118))+(B81*(B117+B118))
Legal costs	$1,000.00			B82

Likelihood of violation in any given year	100%			1/B76
Total annualized cost to deal with minor violations		**$3,576.65**		(B167+B168+B169)*B170
Major Violations				
Cost to address violation	**$8,000**			B87
Likelihood of major violation in any given year	**7%**			1/B86
Annualized cost to deal with major violations		**$533.33**		B174*B175
D. Endowment Calculations				
Annual stewardship and minor violation costs		$19,001		C162+C171
Average annual return on stewardship fund investments less inflation rates		4.00%		B91
Endowment needed to cover annual stewardship costs		**$475,015.40**		C182/C183
Annual costs needed to defend against major violations		$533.33		C176
Average annual return on stewardship fund investments less inflation rates		4.00%		B91
Endowment needed to fund easements against major violations		**$13,333.33**		C187/C188

APPENDIX D

Exotic Pest Plant Species List (CalIPC 2006)


California Invasive Plant Council
Protecting California's wildlands from invasive plants through research, restoration, and education.
www.cal-ipc.org
Invasive plants are one of the most serious environmental issues facing California. They disrupt ecosystems by altering physical processes, displacing native plants, and degrading wildlife habitat. The California Invasive Plant Inventory is a vital resource for those working to protect the state's natural areas. The Inventory summarizes the impacts, potential for spread, and distribution of more than 200 non-native plants that invade wildlands in California. The Inventory represents the best available knowledge of the state's invasive plant experts. It is designed to prioritize plants for control at the state and local levels, to provide key information to those working in habitat restoration, to show areas where research is needed, to aid those preparing or commenting on environmental planning documents, and to educate public policy makers. Detailed assessments for each plant, with documented sources, are available online at www.cal-ipc.org.
Pampasgrass (Cortaderia selloana) displaces native plant communities in coastal habitats. (Photo by Bob Case, California Native Plant Society).
Front cover photo credits:
Centaurea solstitialis (yellow starthistle) left, and Eichornia crassipes (water hyacinth) bottom right, by Bob Case.
Cynara cardunculus (artichoke thistle) center right, by Jason and Jesse Giessow Dendra, Inc.
Delairea odorata (Cape ivy) top right, by Carolyn Mantus, California Native Plant Society.
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CALIFORNIA
Invasive Plant
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Published by the California Invasive Plant Council
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February 2006

CALIFORNIA Invasive Plant INVENTORY









Published by the
California Invasive Plant Council

Cal-IPC

February 2006

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The California Invasive Plant Council (Cal-IPC) formed as a non-profit organization in 1992 to address the growing ecological and economic impacts caused by invasive plants in California's wildlands. We promote research, restoration, and education in pursuit of this goal. Formerly known as the California Exotic Pest Plant Council, Cal-IPC is a member-driven organization with land managers, researchers, policy makers, and concerned citizens working together to protect the state's natural areas from invasive plants. For more information, visit our website at www.cal-ipc.org.

PROVIDING INPUT FOR FUTURE REVISIONS

If you have additional information to add to a plant assessment, please submit it to info@cal-ipc.org. The Inventory Review Committee will meet periodically to consider additions and modifications to the Inventory.

ACKNOWLEDGMENTS

We gratefully acknowledge the effort of all those who volunteered their time to write plant assessment forms, provide comments on assessments, or add observations to fill gaps in information. Too many people contributed information for us to list them individually, but each assessment contains the name of its author and those who provided information on that species. In particular, we thank those who helped develop the criteria, including John Hall of The Nature Conservancy in Arizona, Ann Howald of Garcia and Associates, and Maria Ryan of University of Nevada Cooperative Extension. We also wish to thank Kristin Dzurella of UC Davis and John Knapp of the Catalina Island Conservancy for their contributions of time and data.

RECOMMENDED CITATION

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UC IPM

CENTER FOR INVASIVE PLANT MANAGEMENT

Designed by Melanie Haage

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Introduction

Invasive plants damage ecosystems around the world. They displace native species, change plant community structure, and reduce the value of habitat for wildlife.[1] Invasive plants may disrupt physical ecosystem processes, such as fire regimes, sedimentation and erosion, light availability, and nutrient cycling. In aquatic ecosystems, invasive plants clog lakes, streams, and waterways, reducing oxygen levels for fish and degrading habitat for waterbirds. The impact is especially severe in California, with its rich diversity of natural resources.

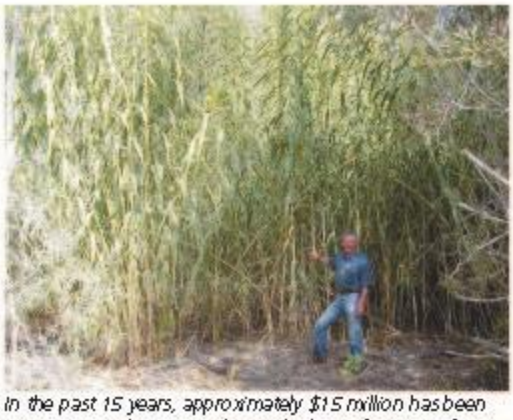
The California Invasive Plant Inventory categorizes non-native invasive plants that threaten the state's wildlands. Categorization is based on an assessment of the ecological impacts of each plant. The Inventory represents the best available knowledge of invasive plant experts in the state. However, it has no regulatory authority, and should be used with full understanding of the limitations described later in this Introduction.

California is home to 4,200 native plant species, and is recognized internationally as a 'biodiversity hotspot.' Approximately 1,800 non-native plants also grow in the wild in the state. A small number of these, approximately 200, are the ones that this Inventory considers invasive. Improved understanding of their impacts will help those working to protect California's treasured biodiversity.

The Inventory

The Inventory categorizes plants as High, Moderate, or Limited, reflecting the level of each species' negative ecological impact in California. Other factors, such as economic impact or difficulty of management, are not included in this assessment.

It is important to note that every species listed in Table 1 is invasive, regardless of its overall rating, and should be of concern to land managers. Although the impact of each plant varies regionally, its rating represents cumulative impacts statewide. Therefore, a plant whose statewide impacts are categorized as Limited may have more severe impacts in a particular region. Conversely, a plant categorized as having a High cumulative impact across California may have very little impact in some regions.



In the past 15 years, approximately $15 million has been spent statewide to control Arundo donax *(giant reed) in California. (Photo by David Chang, Santa Barbara County Agricultural Commissioner's office)*

Members of the Inventory Review Committee, Cal-IPC staff, and volunteers drafted assessments for each plant based on the formal criteria system described below. The committee solicited information from land managers across the state to complement the available literature. Assessments were released for public review before the committee finalized them. All plant assessments that form the basis for this summary document are available at www.cal-ipc.org. The final list includes 39 High species, 65 Moderate species, and 89 Limited species. Additional information, including updated observations, will be added to the Cal-IPC website periodically, with revisions tracked and dated.

Definitions

The Inventory categorizes 'invasive non-native plants that threaten wildlands' according to the definitions below. Plants were evaluated only if they invade

Figure 1. The Criteria System

Section 1. Ecological Impact

1.1 Impact on abiotic ecosystem processes (e.g. hydrology, fire, nutrient cycling)
1.2 Impact on native plant community composition, structure, and interactions
1.3 Impact on higher trophic levels, including vertebrates and invertebrates
1.4 Impact on genetic integrity of native species (i.e. potential for hybridization)

Section 2. Invasive Potential

2.1 Ability to establish without anthropogenic or natural disturbance
2.2 Local rate of spread with no management
2.3 Recent trend in total area infested within state
2.4 Innate reproductive potential (based on multiple characteristics)
2.5 Potential for human-caused dispersal
2.6 Potential for natural long-distance (>1 km) dispersal
2.7 Other regions invaded worldwide that are similar to California

Section 3. Distribution

3.1 Ecological amplitude (ecological types invaded in California)
3.2 Ecological intensity (highest extent of infestation in any one ecological type)

Documentation Levels

Assessed as highest level of documentation for each criterion

4 = Reviewed scientific publications
3 = Other published material (reports or other non-peer-reviewed documents)
2 = Observational (unpublished information confirmed by a professional in the field)
1 = Anecdotal (unconfirmed information)
0 = No information

Complete description of criteria system and detailed plant assessments available at www.cal-ipc.org



Dense mats formed by aquatic plants such as water hyacinth (Eichhornia crassipes) reduce habitat for waterfowl and fish. (Photo by Bob Case, California Native Plant Society)

California wildlands with native habitat values. The Inventory does not include plants found solely in areas of human-caused disturbance such as roadsides and cultivated agricultural fields.

- **Wildlands** are public and private lands that support native ecosystems, including some working landscapes such as grazed rangeland and active timberland.
- **Non-native** plants are species introduced to California after European contact and as a direct or indirect result of human activity.
- **Invasive non-native plants that threaten wildlands** are plants that 1) are not native to, yet can spread into, wildland ecosystems, and that also 2) displace native species, hybridize with native species, alter biological communities, or alter ecosystem processes.

Criteria for Listing

The California Invasive Plant Inventory updates the 1999 "Exotic Pest Plants of Greatest Ecological Concern in California."[2] Cal-IPC's Inventory Review Committee met regularly between 2002 and 2005 to review 238 non-native species with known or suspected impacts in California wildlands. These assessments are based on the "Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands"[3] which were developed in collaboration with the Southwestern Vegetation Management Association in Arizona (www.swvma.org) and the University of Nevada Cooperative Extension (www.unce.unr.

edu) so that ratings could be applied across political boundaries and adjusted for regional variation. The goals of the criteria system and the Inventory are to:

- Provide a uniform methodology for categorizing non-native invasive plants that threaten wildlands;
- Provide a clear explanation of the process used to evaluate and categorize plants;
- Provide flexibility so the criteria can be adapted to the particular needs of different regions and states;
- Encourage contributions of data and documentation on evaluated species;
- Educate policy makers, land managers, and the public about the biology, ecological impacts, and distribution of invasive non-native plants.

The criteria system generates a plant's overall rating based on an evaluation of 13 criteria, which are divided into three sections assessing Ecological Impacts, Invasive Potential, and Ecological Distribution (Fig. 1). Evaluators assign a score of A (severe) to D (no impact) for each criterion, with U indicating unknown. The scoring scheme is arranged in a tiered format, with individual criteria contributing to section scores that in turn generate an overall rating for the plant.

Detailed plant assessment forms list the rationale and applicable references used to arrive at each criterion's score. The level of documentation for each question is also rated, and translated into a numerical score for averaging (Fig. 1). The documentation score presented in the tables is a numeric average of the documentation levels for all 13 criteria.

Inventory Categories

Each plant in Table 1 has received an overall rating of High, Moderate or Limited based on evaluation using the criteria system. The meaning of these overall ratings is described below. In addition to the overall ratings, specific combinations of section scores that indicate significant potential for invading new ecosystems triggers an Alert designation so that land managers may watch for range expansions. Table 3 lists plants categorized as Evaluated But Not Listed because either we lack sufficient information to assign a rating or the available information indicates that the species does not have significant impacts at the present time.

- **High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- **Moderate** – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- **Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

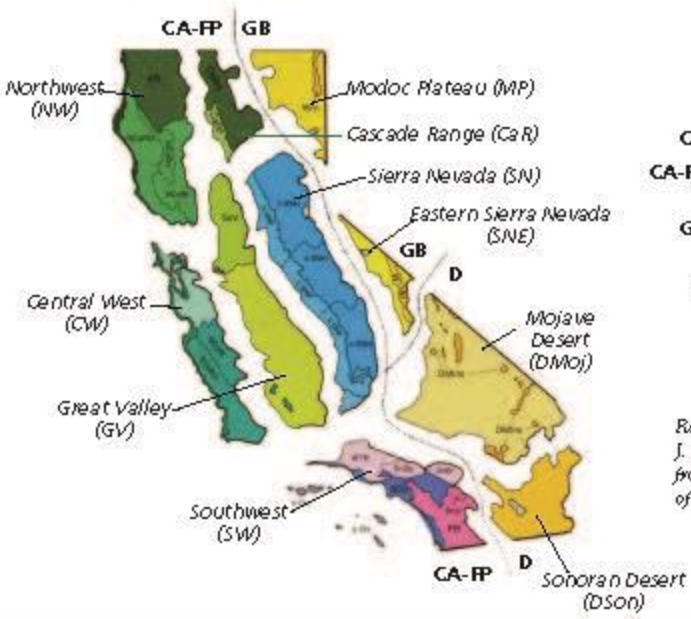
Reading the Tables

The core of the Inventory is Table 1, which lists those plants we have categorized as invasive plants that threaten California wildlands.. The types of information contained in Table 1 is described below.



When Bromus tectorum *(downy brome or cheatgrass) replaces native perennial grasses, the frequency of wildfires shortens from 60-100 years to 3-5 years. (Photo by Joe DiTomaso, UC Davis)*

Figure 2. Jepson Geographic Regions



Reprinted from The Jepson Manual, *J. Hickman, Ed., 1993, with permission from the Jepson Herbarium. © Regents of the University of California.*

Table 2 contains four plants that are native to specific regions of California but have become invasive in other regions of the state to which humans have moved them. Table 3 lists those plant species that were evaluated but did not meet the threshold for listing. Finally, Table 4 contains plants that were nominated for review but dismissed without a formal assessment because either they do not invade wildlands (except for isolated instances) or the Inventory Review Committee lacked adequate information to answer the criteria questions.

Table 1 summarizes rating information for all plant species categorized as invasive by this Inventory. The columns contain the following information:

- A diamond (◆) in the first column designates an Alert status for that species.
- Scientific nomenclature for most species follows *The Jepson Manual*.[4]
- For each species, the first common name is based on the Weed Science Society of America,[5] followed by other names commonly used in California. (Appendix 4 provides an index of common names.)
- The overall rating for the plant (High, Moderate, or Limited) is listed next. (Because Table 1 is organized alphabetically, we have included a listing organized by rating level in Appendix 1.)
- Section scores are shown for Ecological Impact, Invasive Potential, and Distribution. These can typically be interpreted as A=high, B=moderate, C=limited, D=none, U=unknown.
- Documentation Level presents the average level of the references used to evaluate that species, from 0 (no information) to 4 (all information based on peer-reviewed scientific publications).
- Ecological Types Invaded and Other Comments provides additional information of interest. The classification of ecological types is adapted from a system developed by the California Department of Fish and Game.[6] (Appendix 3 provides detailed examples of ecological types.)
- Regions Invaded are based on floristic regions described in *The Jepson Manual*[4] (Fig. 2) and indicate heavily impacted areas. This information is incomplete for many species, so regions listed in this column should be considered the minimum area invaded.



Cirsium vulgare (bull thistle) is spreading at high elevations, such as in Yosemite National Park. (Photo by Bob Case, California Native Plant Society)

Uses and Limitations

The California Invasive Plant Inventory serves as a scientific and educational report. It is designed to prioritize plants for control, to provide information to those working on habitat restoration, to show areas where research is needed, to aid those who prepare or comment on environmental planning documents, and to educate public policy makers. Plants that lack published information may be good starting points for student research projects.

The Inventory cannot address, and is not intended to address, the range of geographic variation in California, nor the inherently regional nature of invasive species impacts. While we have noted where each plant is invasive, only the cumulative statewide impacts of the species have been considered in the evaluation. The impact of these plants in specific geographic regions or habitats within California may be greater or lesser than their statewide rating indicates. Management actions for a species should be considered on a local and site-specific basis, as the inventory does not attempt to suggest management needs for specific sites or regions. The criteria system was designed to be adapted at multiple scales, and local groups are encouraged to use the criteria for rating plants in their particular area.

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Lepidium latifolium (perennial pepperweed or tall whitetop) concentrates salt in marsh soils, threatening several rare plant species. (Photo by Bob Case)

TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California

Alert ◆	Scientific Name	Common Name	Rating	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Regions Invaded
	Acacia melanoxylon	black acacia, blackwood acacia	Limited	C	C	B	2.7	Coniferous forest, chaparral, woodland, riparian. Impacts low in most areas.	NW, CW, SW
	Acroptilon repens	Russian knapweed	Moderate	B	B	B	3.2	Scrub, grasslands, riparian, pinyon-juniper woodland, forest. Severe impacts in other western states. Spreading in many areas of CA.	CA-FP, GB
	Aegilops triuncialis	barb goatgrass	High	A	A	B	3.6	Grassland, oak woodland. Spreading in NW and Central Valley.	CaR, CW, SN, GV
	Ageratina adenophora	croftonweed, eupatorium	Moderate	B	B	B	2.8	Coastal canyons, scrub, slopes. Very invasive in Australia, limited information and distribution in CA.	CW, SW
	Agrostis avenacea	Pacific bentgrass	Limited	C	C	C	2.4	Vernal pools, coastal prairie, meadows, grasslands. Impacts are low in most areas.	NW, SN, GV, CW, SW
	Agrostis stolonifera	creeping bentgrass	Limited	C	B	C	1.9	Wetlands, riparian; grown for domestic forage. Limited distribution and impacts unknown.	NW, SN, GV, CW, SW
	Ailanthus altissima	tree-of-heaven	Moderate	B	B	B	3.0	Riparian areas, grasslands, oak woodland. Impacts highest in riparian areas.	CA-FP
	Alhagi maurorum (=*A. pseudalhagi*)	camelthorn	Moderate	B	B	B	3.2	Grassland, meadows, riparian and desert scrub, Sonoran thorn woodland. Very invasive in southwestern states. Limited distribution in CA.	GV, D, SNE
◆	*Alternanthera philoxeroides*	alligatorweed	High	A	B	C	2.9	Freshwater aquatic systems, including marshes	GV, SW
	Ammophila arenaria	European beachgrass	High	A	B	B	3.2	Coastal dunes	NW, CW, SW
	Anthoxanthum odoratum	sweet vernalgrass	Moderate	B	B	B	2.7	Coastal prairie, coniferous forest. Little information available on impacts and limited ecological range.	NW, SN, CW
◆	*Arctotheca calendula* (fertile strains)	fertile capeweed	Moderate	B	B	C	3.6	Coastal prairie. Can produce seed. Important agricultural weed in Australia, but limited distribution in CA.	NW, CW
	Arctotheca calendula (sterile strains)	sterile capeweed	Moderate	B	B	B	2.8	Coastal prairie. Only propagates vegetatively. More competitive than fertile form, but limited distribution.	NW, CW
	Arundo donax	giant reed	High	A	B	A	2.8	Riparian areas. Commercially grown for musical instrument reeds, structural material, etc.	CW, SN, GV, SW

Scientific names based on *The Jepson Manual*. For each species, the first common name is based on the Weed Science Society of America's "Composite List of Weeds" (www.wssa.net), followed by other names used in California. Scores: A = Severe, B = Moderate, C = Limited, D = None, U = Unknown. Documentation level averaged. Regions invaded based on Jepson geographic regions. Plant assessment forms, literature citations, and full rating criteria available at www.cal-ipc.org.

TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California (continued)

Alert ◆	Scientific Name	Common Name	Rating	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Regions Invaded
◆	*Asparagus asparagoides*	bridal creeper	Moderate	B	B	D	2.6	Riparian woodland	CW, SW
◆	*Asphodelus fistulosus*	onionweed	Moderate	B	A	C	2.9	Coastal dunes, prairie, grasslands. Invasive in Australia. High invasiveness but limited distribution in CA.	GV, SW
	Atriplex semibaccata	Australian saltbush	Moderate	B	B	B	2.9	Coastal grasslands, scrub, upper salt marsh. Limited distribution, but can be very invasive regionally.	CA except CaR and SN
	Avena barbata	slender wild oat	Moderate	B	B	A	3.5	Coastal scrub, grasslands, oak woodland, forest. Very widespread, but impacts more severe in desert regions.	CA-FP, MP, DMoj
	Avena fatua	wild oat	Moderate	B	B	A	3.2	Coastal scrub, chaparral, grasslands, woodland, forest. Very widespread, but impacts more severe in desert regions.	CA-FP, MP, DMoj
	Bassia hyssopifolia	fivehook bassia	Limited	C	C	B	2.7	Alkaline habitats. Weed of agriculture or disturbed sites. Impacts minor in wildlands.	CA except NW
	Bellardia trixago	bellardia	Limited	C	C	C	1.9	Grasslands, including serpentine. Impacts and invasiveness appear to be minor.	NW, CW
◆	*Brachypodium sylvaticum*	perennial false-brome	Moderate	B	A	D	2.5	Redwoods and mixed evergreen forest in Santa Cruz Mtns. Expanding range rapidly in OR, potentially very invasive.	CW
	Brassica nigra	black mustard	Moderate	B	B	A	2.0	Widespread. Primarily a weed of disturbed sites, but can be locally a more significant problem in wildlands.	CA-FP
	Brassica rapa	birdsrape mustard, field mustard	Limited	C	B	B	1.8	Coastal scrub, grasslands meadows, riparian. Primarily in disturbed areas. Impacts appear to be minor or unknown in wildlands.	CA-FP
	Brassica tournefortii	Saharan mustard, African mustard	High	A	A	B	2.3	Desert dunes, desert and coastal scrub	SW, D
	Briza maxima	big quakinggrass, rattlesnakegrass	Limited	B	C	B	2.3	Grasslands. Widespread in coast range. Impacts generally minor, but locally can be higher.	NW, SN, CW, SW
	Bromus diandrus	ripgut brome	Moderate	B	B	A	3.3	Dunes, scrub, grassland, woodland, forest. Very widespread, but monotypic stands uncommon.	CA

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TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California (continued)

Alert ◆	Scientific Name	Common Name	Rating	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Regions Invaded
	Bromus hordeaceus	soft brome	Limited	B	C	A	2.8	Grasslands, sagebrush, serpentine soils, many other habitats. Very widespread, but primarily in converted annual grasslands.	CA
	Bromus madritensis ssp. *rubens* (=*B. rubens*)	red brome	High	A	B	A	3.0	Scrub, grassland, desert washes, woodlands. Impacts most significant in desert areas.	CA
	Bromus tectorum	downy brome, cheatgrass	High	A	B	A	3.1	Interior scrub, woodlands, grasslands. Most widely distributed invasive plant in the US.	SN, GB, D
	Cakile maritima	European sea-rocket	Limited	C	B	B	3.6	Coastal dunes. Widespread, but impacts appear to be minor.	NW, CW, SW
◆	*Cardaria chalepensis* (=*C. draba* ssp. *chalepensis*)	lens-podded whitetop	Moderate	B	B	C	3.2	Central Valley wetlands. Limited distribution in CA. May not be as invasive as *C. draba*.	CA-FP, GB
	Cardaria draba	hoary cress	Moderate	B	B	B	2.6	Riparian areas, marshes of central coast. More severe invasive in northern CA.	CW, SW
	Cardaria pubescens	hairy whitetop	Limited	C	B	C	2.5	Grasslands and meadows. Impacts unknown but may be significant in meadows of Cascade Range.	GV, SW
	Carduus acanthoides	plumeless thistle	Limited	B	C	C	3.0	Valley and foothill grasslands. Limited distribution in CA, impacts higher locally.	NW, SN, CW
	Carduus nutans	musk thistle	Moderate	B	B	B	3.1	Grasslands. More invasive in other western states. Limited distribution in CA.	NW, CaR, SN
	Carduus pycnocephalus	Italian thistle	Moderate	B	B	A	2.9	Forest, scrub, grasslands, woodland. Very widespread. Impacts may be variable regionally.	NW, SN, CW, SW
	Carduus tenuiflorus	slenderflower thistle	Limited	C	C	B	2.8	Valley and foothill grasslands. Limited distribution. Impacts appear to be minor.	NW, SN, CW, SW
	Carpobrotus chilensis (and *C. edulis* x *chilensis* hybrids)	sea-fig, iceplant	Moderate	B	B	A	1.8	Coastal dunes, scrub, prairie. Little information on species, most inferred from *C. edulis*.	NW, CW, SW
	Carpobrotus edulis	Hottentot-fig, iceplant	High	A	B	A	3.3	Coastal habitats, especially dunes	NW, CW, SW
◆	*Carthamus lanatus*	woolly distaff thistle	Moderate	A	B	C	2.8	Grasslands. Expanding in coast ranges, may become more severe. Current distribution limited.	NW, SN, CW

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	Centaurea calcitrapa	purple starthistle	Moderate	B	B	B	2.7	Grasslands. Impacts regionally variable. Relatively limited distribution.	NW, SN, GV, CW, SW
◆	*Centaurea debeauxii* (=*C. jacea* x *C. nigra*, *C.* x *pratensis*)	meadow knapweed	Moderate	B	B	C	2.7	Grasslands. Spreading rapidly in NW CA, but limited distribution elsewhere. Little known of impacts.	NW, CW
	Centaurea diffusa	diffuse knapweed	Moderate	B	B	B	3.3	Great Basin scrub, coastal prairie. Severe impacts in other western states. Limited distribution in CA with impacts higher in some locations.	Ca-R, CW, NW, SN
	Centaurea maculosa (=*C. biebersteinii*)	spotted knapweed	High	A	B	B	3.4	Riparian, grasslands, wet meadows, forests. More widely distributed in other western states.	CA-FP, GB
	Centaurea melitensis	Malta starthistle, tocalote	Moderate	B	B	B	2.6	Grasslands, oak woodland. Sometimes misidentified as *C. solstitialis*. Impacts vary regionally.	CW, SW, D
	Centaurea solstitialis	yellow starthistle	High	A	B	A	3.0	Grasslands, woodlands, occasionally riparian	CA-FP
	Centaurea virgata var. *squarrosa* (=*C. squarrosa*)	squarrose knapweed	Moderate	B	B	B	2.8	Scrub, grassland, pinyon-juniper woodland. Highly invasive in Utah and other western states. Limited distribution in CA.	NW, CaR, MP
	Chondrilla juncea	rush skeletonweed	Moderate	B	B	B	3.1	Grasslands. Very invasive in other western states, but currently limited distribution in CA.	NW, CaR, SN, GV, CW,
	Chrysanthemum coronarium	crown daisy	Moderate	B	B	B	2.0	Coastal prairie, dunes, and scrub. Impacts generally low to moderate, but can vary regionally.	CW, SW
	Cirsium arvense	Canada thistle	Moderate	B	B	B	2.8	Grasslands, riparian areas, forests. Severe impacts in other western states. Limited distribution in CA.	CA-FP, DMoj
	Cirsium vulgare	bull thistle	Moderate	B	B	B	3.3	Riparian areas, marshes, meadows. Widespread, can be very problematic regionally.	CA-FP, GB
	Conicosia pugioniformis	narrowleaf iceplant	Limited	C	B	C	2.1	Coastal dunes, scrub, grassland. Limited distribution. Impacts generally minor but can be higher locally.	CW
	Conium maculatum	poison-hemlock	Moderate	B	B	B	2.8	Riparian woodland, grassland. Widespread in disturbed areas. Abiotic impacts unknown. Impacts can vary locally.	CA-FP

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	Cordyline australis	giant dracaena, New Zealand-cabbage tree	Limited	C	C	C	2.0	Coniferous forest. Two reports of horticultural escape into wildlands. Appears best suited to moist, cool climates.	NW, CW
	Cortaderia jubata	jubatagrass	High	A	A	A	3.1	Many coastal and interior habitats	NW, CW, SW
	Cortaderia selloana	pampasgrass	High	A	A	B	3.2	Coastal dunes, coastal scrub, Monterey pine, riparian, grasslands, wetlands, serpentine soils. Still spreading both coastal and inland.	CW, SW
	Cotoneaster franchetii	orange cotoneaster	Moderate	B	A	B	2.6	Coniferous forest. Limited distribution. Abiotic impacts largely unknown.	NW, CW
	Cotoneaster lacteus	Parney's cotoneaster	Moderate	B	B	B	2.1	Many coastal habitats, mainly a problem from SF Bay Area north along coast. Limited distribution. Abiotic impacts largely unknown.	NW, CW
	Cotoneaster pannosus	silverleaf cotoneaster	Moderate	B	A	B	2.5	Many coastal habitats, mainly a problem from SF Bay Area north along coast. Limited distribution. Abiotic impacts largely unknown.	NW, CW
	Cotula coronopifolia	brassbuttons	Limited	C	C	B	2.2	Salt and freshwater marshes. Impacts largely unknown, but appear to be minor.	NW, CW, SW
	Crataegus monogyna	English hawthorn	Limited	C	B	C	3.4	Riparian habitats, woodland. Limited distribution. Impacts appear to be minor.	NW, CW, SW
	Crocosmia x crocosmiiflora	montbretia	Limited	C	B	B	2.6	Coastal scrub and prairie, north coast forests. Abiotic impacts unknown. Higher invasiveness in some areas.	NW, CW
	Crupina vulgaris	common crupina, bearded creeper	Limited	B	C	B	3.2	Forest, woodland, grassland. Limited distribution. More invasive in other western states.	NW, MP
	Cynara cardunculus	artichoke thistle	Moderate	B	B	B	4.0	Coastal grasslands. Impacts more severe in southern CA where monotypic stands are more common.	CW, SW
	Cynodon dactylon	bermudagrass	Moderate	B	B	B	3.3	Riparian scrub in southern CA. Common landscape weed, but can be very invasive in desert washes.	SW, DSon
	Cynoglossum officinale	houndstongue	Moderate	B	B	B	2.5	Woodland, forest, interior dunes. Abiotic impacts unknown. Limited distribution. Can have impacts in other western states.	CaR, SN

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TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California (continued)

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	Cynosurus echinatus	hedgehog dogtailgrass	Moderate	B	B	A	2.5	Oak woodland, grassland. Widespread, impacts vary regionally, but typically not in monotypic stands.	NW, SN, GV, CW, SW
	Cytisus scoparius	Scotch broom	High	A	B	A	3.2	Coastal scrub, oak woodland, horticultural varieties may also be invasive.	CA-FP
	Cytisus striatus	Portuguese broom	Moderate	B	B	B	2.7	Coastal scrub, grasslands. Often confused with *C. scoparius*. Limited distribution.	NW, CW, SW
	Dactylis glomerata	orchardgrass	Limited	C	B	B	2.9	Grasslands, broadleaved forest, woodlands. Common forage species. Impacts appear to be minor.	CA-FP
	Delairea odorata (=*Senecio mikanioides*)	Cape-ivy, German-ivy	High	A	A	B	3.1	Coastal, occasionally other riparian areas.	CW, SW
	Descurainia sophia	flixweed, tansy mustard	Limited	C	B	B	1.9	Scrub, grassland, woodland. Impacts appear to be minor, but locally more invasive in NE CA.	CA
	Digitalis purpurea	foxglove	Limited	C	B	B	2.4	Forest, woodland. Widely escaped ornamental. Impacts largely unknown or appear to be minor.	NW, SN, CW
	Dipsacus fullonum	common teasel	Moderate	B	B	B	3.8	Grasslands, seep, riparian scrub. Impacts regionally variable, forms dense stands on occasion.	NW, CW, SN
	Dipsacus sativus	fuller's teasel	Moderate	B	B	B	3.8	Grasslands, seep, bogs. Impacts regionally variable, forms dense stands on occasion.	NW, CW, SW
◆	*Dittrichia graveolens*	stinkwort	Moderate	B	A	C	3.0	Grasslands, riparian scrub. Spreading rapidly, impacts may become more important in future.	NW, SN, CW, GV, SW
	Echium candicans	pride-of-Madeira	Limited	C	B	B	1.5	Two escaped populations near Big Sur and San Elijo Lagoon. Little information on impacts.	CW, NW, SW
	Egeria densa	Brazilian egeria	High	A	A	B	3.1	Streams, ponds, sloughs, lakes, Sacramento-San Joaquin Delta	SN, GV, SW
	Elytrigia calycina	purple veldtgrass	High	A	A	B	3.4	Sandy soils, especially dunes. Rapidly spreading on central coast.	CW, SW
	Elytrigia erecta	erect veldtgrass	Moderate	B	B	B	2.2	Scrub, grasslands, woodland, forest. Spreading rapidly. Impacts may become more important in future.	CW, SW

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◆	*Ehrharta longiflora*	long-flowered veldtgrass	Moderate	B	B	C	2.8	Coastal scrub. Limited distribution, but spreading rapidly in southern CA. Impacts largely unknown.	SW
◆	*Eichhornia crassipes*	water hyacinth	High	A	A	C	3.2	Aquatic systems in Sacramento-San Joaquin Delta	GV, CW, SW
	Elaeagnus angustifolia	Russian-olive	Moderate	B	A	B	3.3	Interior riparian. Impacts more severe in other western states. Current distribution limited in CA.	GV, CW, DMoj
◆	*Emex spinosa*	spiny emex, devil's-thorn	Moderate	B	B	D	1.6	Edges of beaches, other coastal habitats. Invasive in other states and countries. Spreading rapidly in southern CA. Impacts not well known.	SW
	Erechtites glomerata, E. minima	Australian fireweed, Australian burnweed	Moderate	C	B	A	3.2	Coastal woodland, scrub, forests. Widespread on coast, but impacts low overall. May vary locally.	NW, CW
	Erodium cicutarium	redstem filaree	Limited	C	C	A	3.1	Many habitats. Widespread. Impacts minor in wildlands. High-density populations are transient.	CA
	Eucalyptus camaldulensis	red gum	Limited	C	C	C	2.2	Mainly southern CA urban areas. Impacts, invasiveness and distribution all minor.	NW, GV, CW, SW
	Eucalyptus globulus	Tasmanian blue gum	Moderate	B	B	B	2.8	Riparian areas, coastal grasslands, scrub. Impacts can be much higher in coastal areas.	NW, GV, CW, SW
◆	*Euphorbia esula*	leafy spurge	High	A	A	C	3.5	Forests, woodlands, juniper forest. More widespread invasive in northern states.	NW, CaR, MP
	Euphorbia oblongata	oblong spurge	Limited	C	C	B	2.0	Meadows, woodlands. Limited distribution. Impacts unknown. Locally in dense stands.	GV, CW
◆	*Euphorbia terracina*	carnation spurge	Moderate	B	B	C	1.7	Coastal scrub. Limited distribution. Spreading in southern CA. Impacts unknown.	SW
	Festuca arundinacea	tall fescue	Moderate	B	B	A	2.9	Coastal scrub, grasslands; common forage grass. Widespread, abiotic impacts unknown.	CA-FP
	Ficus carica	edible fig	Moderate	B	A	B	2.6	Riparian woodland. Can spread rapidly. Abiotic impacts unknown. Can be locally very problematic.	CW, SW, GV
	Foeniculum vulgare	fennel	High	A	B	A	3.0	Grasslands, scrub.	CA-FP

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	Genista monspessulana	French broom	High	A	A	B	3.2	Coastal scrub, oak woodland, grasslands. Horticultural selections may also be invasive.	NW, CW, SW
	Geranium dissectum	cutleaf geranium	Limited	C	B	A	1.7	Numerous habitats but impacts appear minor.	CA-FP
	Glyceria declinata	waxy mannagrass	Moderate	B	B	B	1.9	Vernal pools, moist grasslands. Often confused with native *Glyceria*. Impacts largely unknown, but may be significant in vernal pools.	GV
	Halogeton glomeratus	halogeton	Moderate	B	A	B	3.0	Scrub, grasslands, pinyon-juniper woodland. Larger problem in NV. Monotypic stands are rare.	CaR, DMoj, GB
	Hedera helix, H. canariensis	English ivy, Algerian ivy	High	A	A	A	2.7	Coastal forests, riparian areas. Species combined due to genetics questions.	CA-FP
	Helichrysum petiolare	licoriceplant	Limited	C	B	C	2.0	North coastal scrub. Limited distribution. Impacts unknown, but can form dense stands.	NW, CW
	Hirschfeldia incana	shortpod mustard, summer mustard	Moderate	B	B	A	1.9	Scrub, grasslands, riparian areas. Impacts not well understood, but appear to be greater in southern CA.	CW, GV, NW, SN, SW
	Holcus lanatus	common velvet-grass	Moderate	B	B	A	2.9	Coastal grasslands, wetlands. Impacts can be more severe locally, especially in wetland areas.	CA-FP, DMoj, GB
	Hordeum marinum, H. murinum	Mediterranean barley, hare barley, wall barley	Moderate	B	B	A	2.8	Grasslands. *H. marinum* invades drier habitats, while *H. murinum* invades wetlands. Widespread, but generally do not form dominant stands.	CA
◆	*Hydrilla verticillata*	hydrilla	High	A	B	C	3.2	Freshwater aquatic systems. The most important submerged aquatic invasive in southern states.	NW, SN, GV, SW, D
◆	*Hypericum canariense*	Canary Island hypericum	Moderate	B	B	C	1.2	Coastal scrub, prairie. Impacts unknown. Limited distribution. Spreading rapidly on central coast.	SW, CW
	Hypericum perforatum	common St. Johnswort, klamathweed	Moderate	B	B	B	3.7	Many northern CA habitats. Abiotic impacts low. Biological control agents have reduced overall impact.	SN, CW, GV, NW, SW
	Hypochaeris glabra	smooth catsear	Limited	C	B	B	3.1	Scrub and woodlands. Widespread. Impacts appear to be minor. Some local variability.	CA-FP
	Hypochaeris radicata	rough catsear, hairy dandelion	Moderate	C	B	A	2.2	Coastal dunes, scrub, and prairie, woodland, forest. Widespread. Impacts unknown or appear to be minor.	CA-FP

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◆	*Ilex aquifolium*	English holly	Moderate	B	B	C	2.7	North coast forests. Expanding range south from Oregon.	CW, NW
	Iris pseudacorus	yellowflag iris	Limited	C	B	C	2.3	Riparian, wetland areas, especially southern CA. Limited distribution. Abiotic impacts unknown.	SN, GV, CW, SW
	Isatis tinctoria	dyer's woad	Moderate	B	B	A	3.0	Great Basin scrub and grasslands, coniferous forest. More severe impacts in other western states, but can be locally very invasive in northern CA.	CaR, NW, SN, MP
	Kochia scoparia	kochia	Limited	B	C	B	3.2	Scrub, chaparral, grasslands. Primarily a weed of disturbed sites.	CW, GV, D, GB
	Lepidium latifolium	perennial pepperweed, tall whitetop	High	A	A	A	3.1	Coastal and inland marshes, riparian areas, wetlands, grasslands. Has potential to invade montane wetlands.	CA-FP, GB
	Leucanthemum vulgare	oxeye daisy	Moderate	B	B	B	2.5	Montane meadows, coastal grasslands, coastal scrub. Expanding range, invasiveness varies locally.	CW, NW, SN, SW
	Linaria genistifolia ssp. *dalmatica* (=*L. dalmatica*)	Dalmation toadflax	Moderate	B	B	B	2.8	Grasslands, forest clearings. Limited distribution. More severe impacts in other western states.	CA-FP
	Lobularia maritima	sweet alyssum	Limited	C	B	B	2.4	Coastal dune, coastal scrub, coastal prairie, riparian.	NW, CW, SW
	Lolium multiflorum	Italian ryegrass	Moderate	B	B	A	2.6	Grasslands, oak woodland, pinyon-juniper woodland; widely used for post-fire erosion control. Widespread. Impacts can vary with region.	CA-FP
	Ludwigia peploides ssp. *montevidensis*	creeping water-primrose	High	A	B	B	2.5	Freshwater aquatic systems. Clarification needed on taxonomic identification.	NW, SN, GV, CW, SW, DMoj
◆	*Ludwigia hexapetala* (= *L. uruguayensis*)	Uruguay water-primrose	High	A	B	C	2.6	Freshwater aquatic systems. Clarification needed on taxonomic identification.	NW, CW, SW
	Lythrum hyssopifolium	hyssop loosestrife	Limited	C	B	B	3.0	Grasslands, wetlands, vernal pools. Widespread. Impacts unknown, but appear to be minor.	CA-FP
	Lythrum salicaria	purple loosestrife	High	A	A	B	3.8	Wetlands, marshes, riparian areas	NW, GV, MP
	Marrubium vulgare	white horehound	Limited	C	C	B	2.8	Grasslands scrub, riparian areas. Widespread. Rarely in dense stands. Impacts relatively minor.	CA-FP, DMoj

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	Medicago polymorpha	California burclover	Limited	C	C	A	2.8	Grasslands. Widespread weed of agriculture and disturbed areas. Impacts in wildlands minor.	CA-FP
	Mentha pulegium	pennyroyal	Moderate	C	A	A	2.7	Vernal pools, wetlands. Poisonous to livestock. Spreading rapidly. Impacts largely unknown.	CW, GV, NW, SW
◆	*Mesembryanthemum crystallinum*	crystalline iceplant	Moderate	B	B	C	3.7	Coastal bluffs, dunes, scrubs, grasslands. Limited distribution. Locally problematic, especially in southern CA.	CW, NW, SW
	Myoporum laetum	myoporum	Moderate	B	B	B	2.6	Coastal habitats, riparian areas. Mostly along the southern coast. Abiotic impacts unknown.	CW, SW
	Myosotis latifolia	common forget-me-not	Limited	C	B	B	2.2	Coniferous forest, riparian. Little information on impacts.	CA-FP
◆	*Myriophyllum aquaticum*	parrotfeather	High	A	B	C	2.8	Freshwater aquatic systems	NW, CaR, CW, SW
	Myriophyllum spicatum	Eurasian watermilfoil	High	A	A	B	2.8	Freshwater aquatic systems	SN, GV, CW
	Nicotiana glauca	tree tobacco	Moderate	B	B	B	2.5	Coastal scrub, grasslands, riparian woodland. Abiotic impacts unknown. Impacts vary locally. Rarely in dense stands.	NW, SN, GV, SW, D
	Olea europaea	olive	Limited	C	B	B	2.5	A problem in Australia. Rarely escapes in CA but is a concern due to the possibility of spread from planted groves.	CW, GV, NW, SW
	Ononis alopecuroides	foxtail restharrow	Limited	C	B	C	2.2	Grasslands, oak woodland. Highly invasive but impacts unknown. Nearly eradicated.	CW
	Onopordum acanthium	Scotch thistle	High	A	B	B	2.9	Wet meadows, sage brush, riparian areas	CA-FP, MP
	Oxalis pes-caprae	buttercup oxalis, Bermuda buttercup, yellow oxalis	Moderate	B	B	B	2.9	Coastal dunes, scrub, oak woodland. Impacts in coastal areas may prove more severe in time.	CW, NW, SW
	Parentucellia viscosa	yellow glandweed, sticky parentucellia	Limited	C	B	B	2.5	Coastal prairie, grassland, and dunes. Impacts unknown, but can be locally significant.	NW, CaR, SN, CW, SW
	Pennisetum clandestinum	kikuyugrass	Limited	C	C	B	2.3	Present at low levels in numerous wildland habitats. Impacts unknown. Common turf weed.	NW, CW, SW

Scientific names based on *The Jepson Manual*. For each species, the first common name is based on the Weed Science Society of America's "Composite List of Weeds" (www.wssa.net), followed by other names used in California. Scores: A = Severe, B = Moderate, C = Limited, D = None, U = Unknown. Documentation level averaged. Regions invaded based on Jepson geographic regions. Plant assessment forms, literature citations, and full rating criteria available at www.cal-ipc.org.

TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California (continued)

Alert ◆	Scientific Name	Common Name	Rating	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Regions Invaded
	Pennisetum setaceum	crimson fountaingrass	Moderate	B	B	B	2.9	Coastal dunes and scrub, chaparral, grasslands. Some horticultural cultivars sterile. Very invasive in Hawaii.	CW, NW, SN, SW
	Phalaris aquatica	hardinggrass	Moderate	B	B	B	2.6	Coastal sites, especially moist soils. Limited distribution. Can be highly invasive locally.	CW, NW, SN, SW
	Phoenix canariensis	Canary Island date palm	Limited	C	B	D	2.3	Desert washes; agricultural crop plant. Limited distribution in southern CA. Impacts can be higher locally.	CW, SW
	Picris echioides	bristly oxtongue	Limited	C	B	B	2.4	Coastal prairie, scrub, riparian woodland. Widespread locally. Abiotic impacts unknown.	CA-FP
	Piptatherum miliaceum	smilograss	Limited	C	B	B	2.4	Coastal dunes, scrub, riparian, grassland. Expanding range. Impacts largely unknown.	GV, CW, SW
	Plantago lanceolata	buckhorn plantain, English plantain	Limited	C	C	B	2.1	Many habitats. Turf weed primarily. Low density and impact in wildlands.	CA-FP
	Poa pratensis	Kentucky bluegrass	Limited	C	B	B	2.7	Grasslands scrub, riparian areas. Widespread turf plant. Abiotic impacts unknown.	CA
◆	*Polygonum cuspidatum* (=*Fallopia japonica*)	Japanese knotweed	Moderate	B	B	D	2.7	Riparian areas, wetlands, forest edges. More severe impacts in NW wetlands. Distribution limited in CA.	NW, CaR, SN, GV, CW
◆	*Polygonum sachalinense*	Sakhalin knotweed	Moderate	B	A	D	2.5	Riparian areas. More severe impacts in NW wetlands. Distribution limited in CA.	NW, CaR, SN, GV, CW
	Polypogon monspeliensis and subspp.	rabbitfoot polypogon, rabbitgoot grass	Limited	C	C	B	2.3	Margins of ponds and streams, seasonally wet places, edge of coastal dunes. Widespread. Impacts appear to be minor.	CA
	Potamogeton crispus	curlyleaf pondweed	Moderate	B	B	B	3.2	Freshwater aquatic systems. Can be very invasive locally.	NW, GV, CW, SW, DMoj
	Prunus cerasifera	cherry plum, wild plum	Limited	C	B	B	1.8	Riparian habitats, chaparral, woodland. Limited distribution. Abiotic impacts unknown.	NW, CW
	Pyracantha angustifolia, P. crenulata, P. coccinea	pyracantha, firethorn	Limited	C	B	B	2.8	Coastal scrub and prairie, riparian areas. Horticultural escape. Impacts unknown or minor.	NW, CW, SW
	Ranunculus repens	creeping buttercup	Limited	C	C	B	2.9	Riparian areas, coniferous forest. Impacts appear to be minor to negligible in most areas.	NW, CaR, SN, CW, SW
	Raphanus sativus	radish	Limited	C	C	B	2.5	Present at low levels in numerous habitats. Widespread in disturbed sites.	CA-FP

Scientific names based on *The Jepson Manual*. For each species, the first common name is based on the Weed Science Society of America's "Composite List of Weeds" (www.wssa.net), followed by other names used in California. Scores: A = Severe, B = Moderate, C = Limited, D = None, U = Unknown. Documentation level averaged. Regions invaded based on Jepson geographic regions. Plant assessment forms, literature citations, and full rating criteria available at www.cal-ipc.org.

TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California (continued)

Alert ◆	Scientific Name	Common Name	Rating	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Regions Invaded
◆	*Retama monosperma*	bridal broom	Moderate	B	B	C	1.8	Coastal scrub. Can spread rapidly but largely if uncontrolled. Limited distribution in CA.	SW
	Ricinus communis	castorbean	Limited	C	B	B	2.5	Coastal scrub and prairie, riparian areas. Widespread in southern CA. Impacts locally variable.	GV, CW, SW
	Robinia pseudoacacia	black locust	Limited	C	B	B	2.8	Riparian areas, canyons. Severe impacts in southern states. Impacts minor in CA.	CA-FP, GB
	Rubus armeniacus (= *R. discolor*)	Himalaya blackberry	High	A	A	A	3.0	Riparian areas, marshes, oak woodlands	CA-FP
	Rumex acetosella	red sorrel, sheep sorrel	Moderate	B	B	A	2.3	Many habitats, riparian areas, forest, wetlands. Widespread. Abiotic impacts unknown. Impacts can vary locally.	CA-FP
	Rumex crispus	curly dock	Limited	C	C	A	2.7	Grasslands, vernal pool, meadows, riparian. Widespread. Impacts appear to be minor.	CA
	Salsola paulsenii	barbwire Russian-thistle	Limited	C	C	C	2.9	Desert and Great Basin scrub. Limited distribution. Impacts in desert appear to be minor.	SW, SNE, DMoj
	Salsola tragus (=*S. kali*)	Russian-thistle	Limited	C	B	B	2.8	Desert dunes and scrub, alkali playa. Widespread. Impacts minor in wildlands.	CA
	Salvia aethiopis	Mediterranean sage	Limited	C	B	B	2.5	Sagebrush, juniper, bunchgrass. Limited distribution. Impacts minor but can be locally higher.	MP
◆	*Salvinia molesta*	giant salvinia	High	A	A	C	2.9	Freshwater aquatic systems	CW, DSon
◆	*Sapium sebiferum* (=*Triadica sebifera*)	Chinese tallowtree	Moderate	B	B	C	3.2	Riparian areas. Impacts severe in southeast US. Limited distribution, but spreading rapidly regionally.	GV
	Saponaria officinalis	bouncingbet	Limited	C	B	C	2.5	Riparian scrub and woodland. Impacts unknown or minor, but appear to be locally variable.	NW, GV, CW, SW, GB
	Schinus molle	Peruvian peppertree	Limited	C	B	B	2.5	Riparian. Limited distribution. Impacts largely unknown in CA.	GV, SN, CW, SW
	Schinus terebinthifolius	Brazilian peppertree	Limited	C	B	C	2.6	Riparian. Very invasive in tropics. Abiotic impacts unknown, but appear significant locally.	SW

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TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California (continued)

Alert ◆	Scientific Name	Common Name	Rating	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Regions Invaded
	Schismus arabicus, S. barbatus	mediterranean-grass	Limited	B	C	A	2.3	Scrub, thorn woodland. Widespread in deserts. Impacts can be more important locally.	GV, CW, SW, D
	Senecio jacobaea	tansy ragwort	Limited	C	B	B	2.8	Grasslands, riparian. Impacts generally minor. Can be locally important in NW CA.	CA-FP
◆	*Sesbania punicea*	red sesbania, scarlet wisteria	High	A	B	C	3.2	Riparian areas	GV
	Silybum marianum	blessed milkthistle	Limited	C	C	A	3.5	Grasslands, riparian. Widespread, primarily in disturbed areas. Impacts can be higher locally	NW, GV, CW, SW
	Sinapis arvensis	wild mustard, charlock	Limited	C	C	C	2.9	Grasslands. Primarily in disturbed sites. Impacts minor or unknown in wildlands.	CA-FP
	Sisymbrium irio	London rocket	Moderate	B	B	A	1.9	Scrub, grasslands. Widespread. Primarily in disturbed sites. Impacts vary locally.	GV, SW
◆	*Spartina alterniflora* (and *S. alterniflora* X *foliosa* hybrids)	smooth cordgrass & hybrids, Atlantic cordgrass	High	A	A	C	3.5	San Francisco Bay salt marshes and mudflats. Hybridizes with native *S. foliosa.*	CW
◆	*Spartina anglica*	common cordgrass	Moderate	B	B	D	3.4	San Francisco Bay salt marshes. Very severe impact in other countries. Limited distribution in CA.	CW
◆	*Spartina densiflora*	dense-flowered cordgrass	High	A	B	C	3.3	San Francisco and Humboldt Bay salt marshes	NW, CW
	Spartina patens	saltmeadow cordgrass	Limited	C	C	D	2.9	San Francisco Bay salt marshes. Very limited distribution. Impacts currently minor in CA, but high in other countries.	CW
	Spartium junceum	Spanish broom	High	A	B	B	3.2	Coastal scrub, grasslands, wetlands, oak woodland, forests	NW, CW, SW
◆	*Stipa capensis*	Mediterranean steppegrass, twisted-awned speargrass	Moderate	B	B	D	1.9	Desert scrub. First recorded in CA 1995. Limited distribution, but spreading rapidly in CA deserts.	DSon
	Taeniatherum caput-medusae	medusahead	High	A	A	A	3.4	Grasslands, scrub, woodland	CaR, NW, SN, GV, SW

Scientific names based on *The Jepson Manual.* For each species, the first common name is based on the Weed Science Society of America's "Composite List of Weeds" (www.wssa.net), followed by other names used in California. Scores: A = Severe, B = Moderate, C = Limited, D = None, U = Unknown. Documentation level averaged. Regions invaded based on Jepson geographic regions. Plant assessment forms, literature citations, and full rating criteria available at www.cal-ipc.org.

TABLE 1: Invasive Non-Native Plants that Threaten Wildlands in California (continued)

Alert ◆	Scientific Name	Common Name	Rating	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Regions Invaded
	Tamarix aphylla	athel tamarisk	Limited	C	B	B	3.5	Desert washes, riparian areas. Limited distribution. Impacts minor, but can be locally higher.	GV, SW, D
	Tamarix parviflora	smallflower tamarisk	High	A	A	B	3.1	Riparian areas, desert washes, coastal scrub	NW, GV, CW, Dmoj
	Tamarix ramosissima	saltcedar, tamarisk	High	A	A	A	3.3	Desert washes, riparian areas, seeps and springs	SN, GV, CW, SW, D, SNE
	Tanacetum vulgare	common tansy	Moderate	B	B	B	2.3	Riparian areas, forest. Limited distribution. Severe problem in other western states.	NW, CaR,
	Torilis arvensis	hedgeparsley	Moderate	C	B	A	2.3	Expanding range. Appears to have only moderate ecological impacts.	CA-FP, especially CW, NW
	Trifolium hirtum	rose clover	Moderate	C	B	B	2.8	Grasslands, oak woodland. Widely planted in CA. Impacts relatively minor in most areas.	CA-FP
	Ulex europaeus	gorse	High	A	B	B	2.9	Scrub, woodland, forest, coastal grassland	NW, CaR, SN, CW
	Undaria pinnatifida	wakame	Limited	C	B	C	3.3	Algae of estuaries. First recorded in CA in 2000. Impacts unknown, but do not appear to be significant	CW, SW
	Verbascum thapsus	common mullein, woolly mullein	Limited	C	B	B	3.8	Meadows, riparian, sagebrush, pinyon-juniper woodlands. Widespread. Impacts minor.	NW, CaR, SN
	Vinca major	big periwinkle	Moderate	B	B	B	2.8	Riparian, oak woodlands, coastal scrub. Distribution currently limited but spreading in riparian areas. Impacts can be higher locally.	CaR, SW, SN, GV
	Vulpia myuros	rattail fescue	Moderate	B	B	A	3.0	Coastal sage scrub, chaparral. Widespread. Rarely forms monotypic stands, but locally problematic.	CA-FP, D
◆	*Washingtonia robusta*	Mexican fan palm	Moderate	B	B	C	2.7	Desert washes. Limited distribution but spreading in southern CA. Impacts can be higher locally.	SW
	Watsonia meriana	bulbil watsonia	Limited	C	B	C	2.3	Coastal prairie, coniferous forest. Abiotic impacts unknown, but may be locally dense.	NW
	Zantedeschia aethiopica	calla lily	Limited	C	B	C	2.1	Coastal prairie, wetlands. Impacts high in other countries and local impacts may be high in CA.	NW, CW, SW

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TABLE 2: Species Native to Part of California, but Invasive in Other Parts of the State

A few native species have become invasive in regions outside their natural range. This table lists those species that cause negative impacts in their introduced range. No overall rating is provided, since impacts are not statewide, but the section scores for each of the three plants assessed would result in Moderate ratings for the areas in which they are invasive.

Scientific Name	Common Name	Impacts	Invasiveness	Distribution	Doc. Level	Ecological Types Invaded and Other Comments	Native Range	Invasive Range
Cupressus macrocarpa	Monterey cypress	B	B	B	2.3	Native to Monterey area. Invades coastal prairie, desert scrub, riparian areas.	CW	NW
Lupinus arboreus	yellow bush lupine	B	B	B	3.5	Native south of Point Reyes. Invasive in north coast dunes.	SW, CW Bay Area	NW
Phragmites australis	common reed	Unable to score.				Genetic issues make it unclear which strains are native to CA.	Uncertain	
Pinus radiata cultivars	Monterey pine	B	B	B	2.6	Five populations native to CA. Invades coastal scrub, prairie, and chaparral.	CW	NW

Scientific names based on *The Jepson Manual*. For each species, the first common name is based on the Weed Science Society of America's "Composite List of Weeds" (www.wssa.net), followed by other names used in California. Scores: A = Severe, B = Moderate, C = Limited, D = None, U = Unknown. Documentation level averaged. Regions invaded based on Jepson geographic regions. Plant assessment forms, literature citations, and full rating criteria available at www.cal-ipc.org.

TABLE 3: Species Evaluated But Not Listed

In general, this designation is for species for which information is currently inadequate to respond with certainty to the minimum number of criteria questions (i.e., too many "U" responses), or for which the sum effects of Ecological Impacts, Invasive Potential, and Ecological Amplitude and Distribution fall below the threshold for ranking (i.e. the overall score falls below Limited). Many such species are widespread but are not known to have substantial ecological impacts (though such evidence may appear in the future). All species receiving a D score for Ecological Impacts, regardless of other section scores, are by default placed into this category.

Scientific Name	Common Name	Impacts	Invasiveness	Distribution	Doc. Level	Comments
Acacia paradoxa	kangaroothorn	D	C	C	2.5	Does not spread in wildlands.
Aeschynomene rudis	rough jointvetch	D	C	D	3.2	Serious agricultural weed, but not known to have impacts in wildlands.
Aira caryophyllea	silver hairgrass	D	C	A	2.6	Widespread in grasslands, but impacts appear negligible.
Aira praecox	European hairgrass	D	C	C	2.8	Appears to be spreading locally, but impacts unknown.
Albizia lophantha	plume acacia	U	B	C	1.5	Present in Golden Gate National Recreation Area. Need more information
Allium triquetrum	three-cornered leak	U	C	C	1.6	Impacts unknown.
Anthemis cotula	mayweed chamomile, dog fennel	D	B	B	2.4	Abiotic and wildife impacts unknown
Bellis perennis	English daisy	D	C	C	2.8	Present along trails, not known to spread into undisturbed areas.
Berberis darwinii	Darwin barberry	U	B	D	2.1	Impacts unknown.
Buddleja davidii	butterflybush	D	B	D	2.5	Not known to be invasive in CA, although it is a problem in Oregon.
Cestrum parqui	willow jessamine	U	B	C	2.0	Impacts unknown.
Chorispora tenella	blue mustard	U	C	C	1.5	Impacts unknown.
Cistus ladanifer	gum rockrose	D	C	C	3.3	Negligible known impacts in wildlands.
Convolvulus arvensis	field bindweed	D	B	B	3.5	Only known as agricultural weed.
Daucus carota	wild carrot, Queen Anne's lace	D	C	B	2.7	Very widespread, but primarily in disturbed sites, particularly roadsides.
Dimorphotheca sinuata	African daisy	D	C	B	1.8	Impacts to abiotic processes and plant communities unknown.
Erigeron karvinskianus	Mexican daisy	U	B	C	1.9	Impacts unknown, but appears to be expanding. May become more problematic in future.
Erodium botrys	broadleaf filaree	D	C	A	2.8	Present in wildlands but known impacts are negligible. Often transient.
Erodium brachycarpum	short-fruited filaree	D	C	A	2.6	Present in wildlands but known impacts are negligible. Often transient.
Erodium moschatum	whitestem filaree	D	C	A	2.7	Primarily an agricultural weed, little impact in wildlands.
Euphorbia lathyris	caper spurge	D	C	B	2.2	Abiotic impacts unknown.
Fumaria officinalis	fumitory	D	C	D	2.3	Abiotic impacts unknown.
Geranium molle	dovefoot geranium	D	B	A	1.7	Present in wildlands, but known impacts are negligible.

TABLE 3: Species Evaluated But Not Listed (continued)

Scientific Name	Common Name	Impacts	Invasiveness	Distribution	Doc. Level	Comments
Geranium retrorsum	New Zealand geranium	D	B	B	1.9	Present in wildlands, but known impacts are negligible.
Geranium robertianum	herb-robert, Robert geranium	D	B	C	2.8	Present in wildlands, but known impacts are negligible.
Gleditsia triacanthos	honey locust	D	B	C	3.3	Very limited distribution.
Lactuca serriola	prickly lettuce	D	C	B	3.1	Primarily an agricultural and roadside weed.
Leptospermum laevigatum	Australian tea tree	D	C	D	2.2	Very limited distribution.
Ligustrum lucidum	glossy privet	D	B	C	3.1	May prove problematic in riparian areas.
Lotus corniculatus	birdsfoot trefoil	D	B	B	2.8	Primarily a turf or agricultural weed in CA.
Malephora crocea	coppery mesembryan-themum	D	C	C	2.0	A problem on southern CA islands, but statewide impacts are limited.
Maytenus boaria	mayten	D	C	D	2.4	Infestation on Angel Island, San Francisco Bay.
Melilotus officinalis	yellow sweetclover	D	C	C	3.3	Present in human-disturbed habitats only.
Nerium oleander	oleander	D	B	D	2.6	Not known to be invasive, although reported from riparian areas in Central Valley and San Bernardino Mtns.
Nothoscordum gracile	false garlic	D	B	D	2.1	Mainly an urban garden weed.
Nymphaea odorata	fragrant waterlily	D	B	C	2.3	Present only at one site.
Oxalis corniculata	creeping woodsorrel	D	C	C	2.2	Primarily a turf weed in CA.
Parkinsonia aculeata	Mexican palo-verde	D	B	D	2.2	Has not escaped into wildlands enough to cause impacts.
Pistachia chinensis	Chinese pistache	U	C	D	0.9	Impacts unknown.
Pittosporum undulatum	Victorian box	D	C	D	2.7	Infestations in CA are small. More problematic on north coast.
Plantago coronopus	cutleaf plaintain	U	C	B	1.7	Impacts unknown. Common on north coast.
Solanum elaeagnifolium	silverleaf nightshade	D	B	B	2.8	Primarily an agricultural weed, but escaping to wildlands in other countries. May prove to be more important in future.
Sonchus asper	spiny sowthistle	D	B	B	3.1	Primarily an agricultural weed.
Taraxacum officinale	common dandelion	D	B	B	2.8	Primarily a turf weed in CA.
Tragopogon dubius	yellow salsify	D	C	B	3.2	Generally a minor component of disturbed areas.
Tropaeolum majus	garden nasturtium	D	C	C	1.4	Impacts on abiotic processes and native plants unknown.
Ulmus pumila	Siberian elm	D	B	B	2.5	Impacts unknown.
Verbena bonariensis, V. litoralis	tall vervain, seashore vervain	D	B	C	2.1	Often in disturbed areas of irrigation canals.
Vicia villosa	hairy vetch	D	C	B	2.8	Primarily an agricultural weed. Widespread but impacts minor in wildlands.
Vulpia bromoides	squirreltail fescue	D	C	B	2.9	Less common than *V. myuros*.

TABLE 4: Species Nominated but Not Reviewed

The following species were nominated for review, but not evaluated because either they are not known to escape into wildlands or we lacked sufficient information to complete an assessment.

Scientific Name	Common Name	Comments
Aptenia cordifolia	baby sun rose, heartleaf iceplant	Occasional ornamental escape.
Araujia sericifera	bladderflower	Need more information.
Brassica oleracea	cabbage	Disturbed areas along north and central coast.
Catalpa bignonioides	southern catalpa	Reported from Sacramento/San Joaquin Valley riparian corridors. Need more information.
Chrysanthemum segetum	corn daisy	Disturbed areas only.
Coprosma repens	creeping mirrorplant	1999 Cal-EPPC list indicated no evidence of wildland threat.
Crepis capillaris	smooth hawksbeard	Primarily in pastures and roadsides in coastal areas of northwest CA.
Erica lusitanica	Spanish heath	Reported from Humboldt and Del Norte Cos. Need more information.
Eriogonum fasciculatum	California buckwheat	Invades along roadsides and other areas of human disturbance. Not known to threaten wildlands.
Gazania linearis	gazania	Reported to invade in San Francisco Bay Area. Need more information.
Grindelia squarrosa	curlycup gumweed, gumplant	Mainly along roadsides. More a problem in Nevada.
Kniphofia uvaria	redhot poker	Primarily along roadsides.
Lathyrus latifolius	perennial sweetpea	Reported from the north coast. Need more information.
Lathyrus tingitanus	Tangier pea	Along roadsides. Need more information.
Limonium ramosissimum ssp. *provinciale*	sea-lavender	Present in salt marshes. Need more information.
Melilotus indicus	Indian sweetclover	Reported from disturbed sites. Need more information.
Mesembryanthemum nodiflorum	slenderleaf iceplant	Common in San Diego area along coast. Need more information on impacts.
Osteospermum fruticosum	shrubby daisybush	Occasional ornamental escape in southern CA. Does not appear to be invasive.
Passiflora caerulea	blue passionflower	Not known to invade wildlands.
Phalaris arundinacea	reed canarygrass	*Jepson Manual* lists it as native in CA. Acts like a native in most areas of the state. A problem in NW states.
Phoenix dactylifera	date palm	Reported from southern CA deserts. Need more information.
Phytolacca americana	pokeweed	Reported invading riparian areas in northern Sacramento Valley. Need more information.
Salsola soda	glasswort	Reported from San Francisco Bay shorelines and creek mouths. Need more information.
Ulmus parvifolia	Chinese elm	Present in disturbed areas or old homesites only.
Watsonia borbonica	watsonia	May be confused with *W. meriana*, which is invasive in Mendocino Co.
Zoysia spp.	zoysiagrass	Does not appear to have escaped from turf.

APPENDIX 1. Species Listed by Category

◆ = Alert

High

Aegilops triuncialis (barb goatgrass)
◆ *Alternanthera philoxeroides* (alligatorweed)
Ammophila arenaria (European beachgrass)
Arundo donax (giant reed)
Brassica tournefortii (Saharan mustard, African mustard)
Bromus madritensis ssp. *rubens* (=*B. rubens*) (red brome)
Bromus tectorum (downy brome, cheatgrass)
Carpobrotus edulis (Hottentot-fig, iceplant)
Centaurea maculosa (=*C. biebersteinii*) (spotted knapweed)
Centaurea solstitialis (yellow starthistle)
Cortaderia jubata (jubatagrass)
Cortaderia selloana (pampasgrass)
Cytisus scoparius (Scotch broom)
Delairea odorata (=*Senecio mikanioides*) (Cape-ivy, German-ivy)
Egeria densa (Brazilian egeria)
Ehrharta calycina (purple veldtgrass)
◆ *Eichhornia crassipes* (water hyacinth)
◆ *Euphorbia esula* (leafy spurge)
Foeniculum vulgare (fennel)
Genista monspessulana (French broom)
Hedera helix, H. canariensis (English ivy, Algerian ivy)
◆ *Hydrilla verticillata* (hydrilla)
Lepidium latifolium (perennial pepperweed, tall whitetop)
◆ *Ludwigia hexapetala* (=*L. uruguayensis*) (Uruguay water-primrose)
Ludwigia peploides ssp. *montevidensis* (creeping water-primrose)
Lythrum salicaria (purple loosestrife)
◆ *Myriophyllum aquaticum* (parrotfeather)
Myriophyllum spicatum (Eurasian watermilfoil)
Onopordum acanthium (Scotch thistle)
Rubus armeniacus (=*R. discolor*) (Himalaya blackberry, Armenian blackberry)
◆ *Salvinia molesta* (giant salvinia)
◆ *Sesbania punicea* (red sesbania, scarlet wisteria)
◆ *Spartina alterniflora* hybrids (smooth cordgrass, Atlantic cordgrass)
◆ *Spartina densiflora* (dense-flowered cordgrass)
Spartium junceum (Spanish broom)
Taeniatherum caput-medusae (medusahead)
Tamarix parviflora (smallflower tamarisk)
Tamarix ramosissima (saltcedar, tamarisk)
Ulex europaeus (gorse)

Moderate

Ageratina adenophora (croftonweed, eupatorium)
Ailanthus altissima (tree-of-heaven)
Alhagi maurorum (=*A. pseudalhagi*) (camelthorn)
Anthoxanthum odoratum (sweet vernalgrass)
◆ *Arctotheca calendula* (fertile) (fertile capeweed)
Arctotheca calendula (sterile) (sterile capeweed)
◆ *Asparagus asparagoides* (bridal creeper, smilax asparagus)
◆ *Asphodelus fistulosus* (onionweed)
Atriplex semibaccata (Australian saltbush)
Avena barbata (slender wild oat)
Avena fatua (wild oat)
◆ *Brachypodium sylvaticum* (perennial false-brome)
Brassica nigra (black mustard)
Bromus diandrus (ripgut brome)
◆ *Cardaria chalepensis* (=*C. draba* ssp. *chalepensis*) (lens-podded whitetop)
Cardaria draba (hoary cress)
Carduus nutans (musk thistle)
Carduus pycnocephalus (Italian thistle)
Carpobrotus chilensis (sea-fig, iceplant)
◆ *Carthamus lanatus* (woolly distaff thistle)

APPENDIX 1: Species Listed by Category (continued)

Moderate (continued)

- *Centaurea calcitrapa* (purple starthistle)
- ◆ *Centaurea debeauxii* (=*C.* x *pratensis*) (meadow knapweed)
- *Centaurea melitensis* (Malta starthistle, tocalote)
- *Centaurea virgata* ssp. *squarrosa* (=*C. squarrosa*) (squarrose knapweed)
- *Chondrilla juncea* (rush skeletonweed)
- *Chrysanthemum coronarium* (crown daisy)
- *Cirsium arvense* (Canada thistle)
- *Cirsium vulgare* (bull thistle)
- *Conium maculatum* (poison-hemlock)
- *Cotoneaster franchetii* (orange cotoneaster)
- *Cotoneaster lacteus* (Parney's cotoneaster)
- *Cotoneaster pannosus* (silverleaf cotoneaster)
- *Cynara cardunculus* (artichoke thistle)
- *Cynodon dactylon* (bermudagrass)
- *Cynoglossum officinale* (houndstongue)
- *Cynosurus echinatus* (hedgehog dogtailgrass)
- *Cytisus striatus* (Portuguese broom, striated broom)
- *Dipsacus fullonum* (wild teasel)
- *Dipsacus sativus* (fuller's teasel)
- ◆ *Dittrichia graveolens* (stinkwort)
- *Ehrharta erecta* (erect veldtgrass)
- ◆ *Ehrharta longiflora* (long-flowered veldtgrass)
- *Elaeagnus angustifolia* (Russian-olive)
- ◆ *Emex spinosa* (spiny emex, devil's thorn)
- *Erechtites glomerata, E. minima* (Australian fireweed, Australian burnweed)
- *Eucalyptus globulus* (Tasmanian blue gum)
- ◆ *Euphorbia terracina* (carnation spurge)
- *Festuca arundinacea* (tall fescue)
- *Ficus carica* (edible fig)
- *Geranium dissectum* (cutleaf geranium)
- *Glyceria declinata* (waxy mannagrass)
- *Halogeton glomeratus* (halogeton)
- *Hirschfeldia incana* (shortpod mustard, summer mustard)
- *Holcus lanatus* (common velvetgrass)
- *Hordeum marinum, H. murinum* (Mediterranean barley, hare barley, wall barley)
- ◆ *Hypericum canariense* (Canary Island hypericum)
- *Hypericum perforatum* (common St. Johnswort, klamathweed)
- *Hypochaeris radicata* (rough catsear, hairy dandelion)
- ◆ *Ilex aquifolium* (English holly)
- *Isatis tinctoria* (dyer's woad)
- *Kochia scoparia* (kochia)
- *Leucanthemum vulgare* (oxeye daisy)
- *Linaria genistifolia* ssp. *dalmatica* (=*L. dalmatica*) (Dalmation toadflax)
- *Lolium multiflorum* (Italian ryegrass)
- *Lythrum hyssopifolium* (hyssop loosestrife)
- *Mentha pulegium* (pennyroyal)
- ◆ *Mesembryanthemum crystallinum* (crystalline iceplant)
- *Myoporum laetum* (myoporum)
- *Nicotiana glauca* (tree tobacco)
- *Oxalis pes-caprae* (buttercup oxalis, yellow oxalis, Bermuda buttercup)
- *Pennisetum setaceum* (crimson fountaingrass)
- *Phalaris aquatica* (hardinggrass)
- ◆ *Polygonum cuspidatum* (=*Fallopia japonica*) (Japanese knotweed)
- ◆ *Polygonum sachalinense* (Sakhalin knotweed, giant knotweed)
- *Potamogeton crispus* (curlyleaf pondweed)
- ◆ *Retama monosperma* (bridal broom)
- *Rumex acetosella* (red sorrel, sheep sorrel)
- ◆ *Sapium sebiferum* (Chinese tallowtree)
- *Sisymbrium irio* (London rocket)
- ◆ *Spartina anglica* (common cordgrass)
- ◆ *Stipa capensis* (Mediterranean steppegrass, twisted-awned speargrass)
- *Tanacetum vulgare* (common tansy)
- *Torilis arvensis* (hedgeparsley)
- *Trifolium hirtum* (rose clover)
- *Vinca major* (big periwinkle)
- *Vulpia myuros* (rattail fescue)
- ◆ *Washingtonia robusta* (Mexican fan palm, Washington palm)

APPENDIX 1: Species Listed by Category (continued)

Limited

Acacia melanoxylon (black acacia, blackwood acacia)
Agrostis avenacea (Pacific bentgrass)
Agrostis stolonifera (creeping bentgrass)
Bassia hyssopifolia (fivehook bassia)
Bellardia trixago (bellardia)
Brassica rapa (birdsrape mustard, field mustard)
Briza maxima (big quakinggrass, rattlesnakegrass)
Bromus hordeaceus (soft brome)
Cakile maritima (European sea-rocket)
Cardaria pubescens (hairy whitetop)
Carduus acanthoides (plumeless thistle)
Carduus tenuifolius (slenderflower thistle)
Conicosia pugioniformis (narrowleaf iceplant)
Cordyline australis (giant dracaena, New Zealand-cabbage tree)
Cotula coronopifolia (brassbuttons)
Crataegus monogyna (English hawthorn)
Crocosmia x *crocosmiiflora* (montbretia)
Crupina vulgaris (common crupina, bearded creeper)
Dactylis glomerata (orchardgrass)
Descurainia sophia (flixweed, tansy mustard)
Digitalis purpurea (foxglove)
Echium candicans (pride-of-Madeira)
Erodium cicutarium (redstem filaree)
Eucalyptus camaldulensis (red gum)
Euphorbia oblongata (oblong spurge)
Helichrysum petiolare (licoriceplant)
Hypochaeris glabra (smooth catsear)
Iris pseudacorus (yellowflag iris)
Lobularia maritima (sweet alyssum)
Marrubium vulgare (white horehound)
Medicago polymorpha (California burclover)
Myosotis latifolia (common forget-me-not)
Olea europaea (olive)
Ononis alopecuroides (foxtail restharrow)
Parentucellia viscosa (yellow glandweed, sticky parentucellia)
Pennisetum clandestinum (kikuyugrass)
Phoenix canariensis (Canary Island date palm)
Picris echioides (bristly oxtongue)
Piptatherum miliaceum (smilograss)
Plantago lanceolata (buckhorn plantain, English plantain)
Poa pratensis (Kentucky bluegrass)
Polypogon monspeliensis and subspp. (rabbitfoot polypogon, annual beardgrass, rabbitfoot grass)
Prunus cerasifera (cherry plum, wild plum)
Pyracantha angustifolia, P. crenulata, P. coccinea, etc. (pyracantha, firethorn)
Ranunculus repens (creeping buttercup)
Raphanus sativus (radish)
Ricinus communis (castorbean)
Robinia pseudoacacia (black locust)
Rumex crispus (curly dock)
Salsola paulsenii (barbwire Russian-thistle)
Salsola tragus (Russian-thistle)
Salvia aethiopis (Mediterranean sage)
Saponaria officinalis (bouncingbet)
Schinus molle (Peruvian peppertree)
Schinus terebinthifolius (Brazilian peppertree)
Schismus arabicus, S. barbatus (mediterraneangrass)
Senecio jacobaea (tansy ragwort)
Silybum marianum (blessed milkthistle)
Sinapis arvensis (wild mustard, charlock)
Spartina patens (saltmeadow cordgrass)
Tamarix aphylla (athel tamarisk)
Undaria pinnatifida (wakame)
Verbascum thapsus (common mullein, woolly mullein)
Watsonia meriana (bulbil watsonia)
Zantesdeschia aethiopica (calla lily)

APPENDIX 2. Cal-IPC Species Listed by Other Ratings Systems

This table is provided so that those familiar with other commonly-used ratings systems may compare those lists to the 2006 Cal-IPC ratings. See the cited websites for explanations of rating systems. Species not included in this appendix do not appear on any of these lists.

CAL-EPPC 1999 – Cal-EPPC. 1999. The Cal-EPPC List: Exotic Pest Plants of Greatest Ecological Concern in California. California Exotic Pest Plant Council: San Juan Capistrano, CA. Available: www.cal-ipc.org.

CDFA – CDFA. 2005. EncycloWeedia: Notes on Identification, Biology, and Management of Plants Defined as Noxious Weeds by California Law. California Department of Food and Agriculture: Sacramento, CA. Available: www.cdfa.ca.gov/weedhome.

USDA – Plant Protection and Quarantine. 2002. Federal Noxious Weed List. USDA Animal and Plant Health Inspection Service. US Department of Agriculture: Washington, D.C. Available: plants.usda.gov.

AZ – Arizona Invasive Plant Working Group. 2005. Invasive Non-native Plants that Threaten Wildlands in Arizona. Southwest Vegetation Management Association. Available: www.swvma.org.

NATURESERVE – NatureServe. 2005. Invasive Species Impact Ranks for the United States: Summary of Results as of January 10, 2005. NatureServe: Arlington, VA. Available: www.natureserve.org.

Scientific Name	Cal-EPPC 1999	CDFA	USDA	Arizona	NatureServe
Acacia melanoxylon	Need More Info				Medium/Insignificant
Acacia paradoxa		B			
Acroptilon repens		B		High	High/Medium
Aegilops triuncialis	Annual Grasses	B			
Aeschynomene rudis	Need More Info	A			
Ageratina adenophora	B		✔		
Agrostis avenacea	Need More Info				
Ailanthus altissima	A-2	*			Medium/Low
Aira caryophyllea					Medium/Insignificant
Albizia lophantha	Considered, not listed				
Alhagi maurorum (=A. pseudalhagi)	Red Alert	A		Medium	Medium/Low
Alternanthera philoxeroides		A			Medium
Ammophila arenaria	A-1				High/Medium
Anthemis cotula					Medium/Insignificant
Anthoxanthum odoratum	Considered, not listed				
Aptenia cordifolia	Need More Info				
Araujia sericifera		B			
Arctotheca calendula (fertile strains)	Red Alert	A			

APPENDIX 2: Cal-IPC Species Listed by Other Rating Systems (continued)

Scientific Name	Cal-EPPC 1999	CDFA	USDA	Arizona	NatureServe
Arundo donax	A-1	*		High	High
Asparagus asparagoides					Low/Insignificant
Asphodelus fistulosus	Need More Info		✔	Low	
Atriplex semibaccata	A-2				High/Low
Avena barbata	Annual Grasses				
Avena fatua	Annual Grasses			Medium	High/Low
Bassia hyssopifolia	B				Low/Insignificant
Bellardia trixago	B				Medium/Insignificant
Brachypodium sylvaticum					High/Low
Brassica nigra	B				
Brassica tournefortii	A-2			Medium	High/Low
Bromus diandrus	Annual Grasses			Medium-Alert	
Bromus madritensis ssp. *rubens* (=*B. rubens*)	A-2			High	
Bromus tectorum	A-1			High	High
Buddleja davidii					High/Low
Cardaria chalepensis (=*C. draba* ssp. *chalepensis*)	B	B		Medium-Alert	
Cardaria draba	A-2	B		Medium-Alert	
Cardaria pubescens		B		Medium-Alert	
Carduus acanthoides	Need More Info	A			Medium/Low
Carduus nutans		A		Medium	High/Low
Carduus pycnocephalus	B	C			Medium
Carduus tenuifolius		C			Unknown
Carpobrotus chilensis	Considered, not listed				Medium
Carpobrotus edulis	A-1				High
Carthamus lanatus		B			
Centaurea debeauxii (=*C.* x *pratensis*)		A			
Centaurea diffusa		A		Medium	
Centaurea maculosa (=*C. biebersteinii*)	Red Alert	A		Medium	
Centaurea melitensis	B	C		Medium	Medium/Low
Centaurea solstitialis	A-1	C		High	High/Medium
Centaurea virgata ssp. *squarrosa* (=*C. squarrosa*)		A			
Chondrilla juncea		A		Medium-Alert	Medium/Insignificant
Chorispora tenella		B			Insignificant
Cirsium arvense	B	B		Medium	
Cirsium vulgare	B	*		Low	
Cistus ladanifer	Need More Info				
Conicosia pugioniformis	A-2				

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APPENDIX 2: Cal-IPC Species Listed by Other Rating Systems (continued)

Scientific Name	Cal-EPPC 1999	CDFA	USDA	Arizona	NatureServe
Conium maculatum	B			Medium-Alert	Medium/Low
Convolvulus arvensis	Considered, not listed	C		Medium	Medium/Low
Coprosma repens	Considered, not listed				
Cordyline australis	Need More Info				
Cortaderia jubata	A-1	*			Medium
Cortaderia selloana	A-1			Medium	Medium/Low
Cotoneaster franchetii	Need More Info				
Cotoneaster lacteus	A-2				
Cotoneaster pannosus	A-2				Medium
Crataegus monogyna	B				
Crocosmia x crocosmiiflora	Considered, not listed				
Crupina vulgaris	Red Alert	A	✔		Medium/Low
Cupressus macrocarpa	Need More Info				
Cynara cardunculus	A-1	B			Medium
Cynodon dactylon		C		Medium	Medium/Low
Cynoglossum officinale				Low	Medium/Low
Cytisus scoparius	A-1	C			High/Medium
Cytisus striatus	A-2				
Dactylis glomerata					Medium/Insig
Daucus carota					Low
Delairea odorata	A-1	*			Medium
Descurainia sophia	Need More Info				Medium/Low
Digitalis purpurea	Considered, not listed				Medium/Insignificant
Dimorphotheca sinuata	Need More Info				
Dipsacus fullonum	Considered, not listed				High/Low
Dipsacus sativus	Considered, not listed				
Echium candicans	Need More Info				
Egeria densa	A-2	C			High/Medium
Ehrharta calycina	A-2				Medium/Low
Ehrharta erecta	B				Medium/Insignificant
Ehrharta longiflora	Need More Info				
Eichhornia crassipes	A-2			High-Alert	High
Elaeagnus angustifolia	A-2			High	High
Emex spinosa			✔		Insignificant
Erechtites glomerata, E. minima	B				Medium/Insignificant
Erica lusitanica	Need More Info				
Erodium brachycarpum					Insignificant

APPENDIX 2: Cal-IPC Species Listed by Other Rating Systems (continued)

Scientific Name	Cal-EPPC 1999	CDFA	USDA	Arizona	NatureServe
Erodium cicutarium				Medium	Medium/Low
Eucalyptus globulus	A-1				Medium
Euphorbia esula	A-2	A		High-Alert	High/Medium
Euphorbia lathyris	Need More Info				
Euphorbia oblongata		B			
Festuca arundinacea	B				
Ficus carica	A-2				Medium
Foeniculum vulgare	A-1				Medium/Low
Fumaria officinalis	Considered, not listed				
Gazania linearis	Need More Info				
Genista monspessulana	A-1	C			Medium
Glyceria declinata	Need More Info				
Halogeton glomeratus	Red Alert	A			High/Medium
Hedera helix	B				High/Medium
Hedera canariensis	Need More Info				
Helichrysum petiolare	Red Alert				
Hirschfeldia incana	Need More Info				High/Low
Holcus lanatus	B				
Hordeum marinum, H. murinum				Medium	High/Low
Hydrilla verticillata	Red Alert	A	✔	Not listed	High/Medium
Hypericum canariense	Need More Info				Low
Hypericum perforatum	B	C			High/Medium
Hypochaeris radicata	Need More Info				High/Low
Ilex aquifolium	B				High/Low
Iris pseudacorus	B				
Isatis tinctoria	Need More Info	B			High/Low
Lactuca serriola					Low/Insignificant
Lepidium latifolium	A-1	B		High-Alert	High
Leucanthemum vulgare	B			Low	Medium/Low
Ligustrum lucidum	Need More Info				
Limonium ramosissimum ssp. *provincale*	Need More Info				
Linaria genistifolia ssp. *dalmatica* (=*L. dalmatica*)		A		Medium-Alert	
Lolium multiflorum	Annual Grasses				
Lotus corniculatus					Medium/Low
Ludwigia hexapetala (=*L. uruguayensis*)	Need More Info				
Lupinus arboreus	A-2				
Lythrum salicaria	Red Alert	B			

APPENDIX 2: Cal-IPC Species Listed by Other Rating Systems (continued)

Scientific Name	Cal-EPPC 1999	CDFA	USDA	Arizona	NatureServe
Malephora crocea	Need More Info				
Marrubium vulgare					Medium/Low
Maytenus boaria	Need More Info				
Medicago polymorpha	Considered, not listed				
Melilotus officinalis	Considered, not listed			Medium	Medium/Low
Mentha pulegium	A-2				
Mesembryanthemum crystallinum	B			Low	
Mesembryanthemum nodiflorum	Need More Info			Medium-Alert	
Myoporum laetum	A-2				
Myriophyllum aquaticum	B			High-Alert	High/Medium
Myriophyllum spicatum	A-1			High-Alert	High
Nerium oleander	Considered, not listed				Low/Insignificant
Nicotiana glauca	Need More Info				High/Low
Olea europaea	B				
Ononis alopecuroides	Red Alert	Q			
Onopordum acanthium		A		Low	
Oxalis pes-caprae	Need More Info				
Parentucellia viscosa	Need More Info				
Passiflora caerulea	Need More Info				
Pennisetum clandestinum	Need More Info	C	✔		
Pennisetum setaceum	A-1			High	High/Medium
Phalaris aquatica	B				
Picris echioides	Considered, not listed				
Pinus radiata cultivars	Need More Info				
Piptatherum miliaceum	Need More Info				
Pistachia chinensis	Need More Info				
Pittosporum undulatum					High/Low
Plantago lanceolata					High/Low
Polygonum cuspidatum (=Fallopia japonica)		B			
Polygonum sachalinense					High/Medium
Polypogon monspeliensis and subspp.					High/Low
Potamogeton crispus	B				Medium
Prunus cerasifera	Need More Info				Medium/Insignificant
Pyracantha angustifolia, crenulata, coccinea, etc.	Need More Info				Hi/Low, Low/Insig
Ranunculus repens					High/Medium
Retama monosperma	Red Alert				
Ricinus communis	B				

APPENDIX 2: Cal-IPC Species Listed by Other Rating Systems (continued)

Scientific Name	Cal-EPPC 1999	CDFA	USDA	Arizona	NatureServe
Robinia pseudoacacia	B				
Rubus armeniacus (=*R. discolor*)	A-1			Medium-Alert	Medium/Insignificant
Salsola paulsenii		C		Medium	Low
Salsola soda	Need More Info				
Salsola tragus (=*S. kali*)	Need More Info	C		Medium	
Salvia aethiopis	Need More Info	B			Low
Salvinia molesta	Red Alert		✔	High-Alert	Medium
Sapium sebiferum	Red Alert				
Saponaria officinalis	A-2				Low/Insignificant
Schinus molle	B				Medium/Low
Schinus terebinthifolius	B				
Schismus arabicus, S. barbatus	Annual Grasses			Medium	Medium, Hi/Medium
Senecio jacobaea	B	B			Low
Sesbania punicea	Red Alert				
Silybum marianum	Considered, not listed				Medium/Low
Sisymbrium irio					Medium/Insignificant
Solanum elaeagnifolium		B			
Sonchus asper				Medium	
Spartina alterniflora hybrids	A-2				
Spartina anglica	Red Alert				
Spartina densiflora	Red Alert				High/Medium
Spartina patens	Red Alert				
Spartium junceum	B	*			
Stipa capensis	Need More Info				
Taeniatherum caput-medusae	A-1	C			High
Tamarix aphylla	Need More Info			Low	
Tamarix parviflora	A-1	*			
Tamarix ramosissima	A-1	*		High	High
Tanacetum vulgare	Need More Info				Low
Ulex europaeus	A-1	B			
Ulmus pumila				Medium	Medium/Low
Verbascum thapsus	B			Not listed	Medium
Verbena bonariensis, V. litoralis	Need More Info				
Vinca major	B			Medium-Alert	
Zantesdeschia aethiopica	Considered, not listed				Medium/Low
Zoysia spp.	Considered, not listed				

*Under consideration. Not yet rated.

APPENDIX 3. Examples of Ecological Types

These ecological types were used to score the Distribution section of plant assessment forms. Adapted from "Preliminary Descriptions of the Terrestrial Natural Communities of California" drafted by R. F. Holland for the California Department of Fish and Game (1986). Communities within minor ecotypes include all those listed in Holland (1986). Additional information from Sawyer, J. O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society: Sacramento, CA.

Major Ecological Types	Minor Ecological Types	Communities within Minor Ecotypes
Marine Systems	marine systems	kelp and other macroalgae
Freshwater and Estuarine Aquatic Systems	lakes, ponds, reservoirs	submergent and emergent vegetation in standing water
	rivers, streams, canals	submergent and emergent vegetation in moving ephemeral, intermittent or perennial water
	estuaries	submergent vegetation in estuaries (seagrass beds)
Dunes	coastal	foredunes, dune scrub
	desert	desert dunes and sand fields
	interior	interior and relictual dunes, primarily in the Great Valley
Scrub and Chaparral	coastal bluff scrub	northern and southern coastal bluff scrub
	coastal scrub	coyote bush, salal, silk-tassel, coastal sage, maritime succulent, Diegan coastal, Diablan, and Riversidian sage scrubs
	Sonoran desert scrub	Sonoran creosote bush, Sonoran mixed woody and succulent scrubs
	Mojavean desert scrub	Mojave creosote bush, blackbush, Mojave mixed woody, Mojave mixed steppe, and Mojave wash scrubs; Joshua tree woodland
	Great Basin scrub	big sagebrush and rabbitbrush scrubs; sagebrush steppe
	chenopod scrub	desert saltbush, desert sink, desert greasewood, shadscale, valley sink, and valley saltbush scrubs
	montane dwarf scrub	low sagebrush series
	Upper Sonoran subshrub scrub	bladderpod-California ephedra-narrowleaf goldenbush series
	chaparral	mixed, redshank, semi-desert, and montane (mixed, ceanothus, manzanita) chaparrals; chamise
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	coastal terrace and bald hills prairies
	valley and foothill grassland	valley needlegrass, valley sacaton, serpentine bunchgrass, valley wildrye and, pine bluegrass grasslands
	Great Basin grassland	open, steppe-like vegetation of perennial bunchgrasses
	vernal pool	hardpan, claypan, basalt flow, and San Diego mesa vernal pools
	meadow and seep	wet or dry montane meadows; wet or dry subalpine or alpine meadows; alkali meadows and seeps; freshwater seep
	alkali playa	low, grayish, microphyllous, and succulent shrubs primarily in transmontane deserts
	pebble plain	dense clay soils with quartzite pebbles

APPENDIX 3: Examples of Ecological Types (continued)

Major Ecological Types	Minor Ecological Types	Communities within Minor Ecotypes
Bog and Marsh	bog and fen	sphagnum bog, Darlingtonia bog, fen
	marsh and swamp	salt, brackish, freshwater, transmontane alkali, and vernal marshes; freshwater swamp
Riparian and Bottomland	riparian forest	cottonwood, cottonwood-sycamore, red alder, white alder, aspen, willow, live oak, valley oak, Mojave, and mixed riparian forests; mesquite bosque
	riparian woodland	sycamore, sycamore-alder, desert dry wash, and fan palm oasis woodlands
	riparian scrub	riparian, mulefat, willow, mesquite, and buttonbush, desert wash, tamarisk and arrowweed scrubs; elderberry savanna; desert washes
Woodland	cismontane	blue oak, coast live oak, interior live oak, valley oak, island oak, California walnut, and foothill pine woodlands
	piñon and juniper	juniper woodland and scrub, pinon woodland
	Sonoran thorn	crucifixion thorn and Arizona woodlands
Forest	broadleaved upland	mixed evergreen, California bay, coast live oak, black oak, tan oak, red alder, and aspen forests
	North Coast coniferous	redwood , Sitka spruce-grand fir, western hemlock, Douglas-fir, and Port Orford Cedar forests
	closed cone coniferous	beach pine, bishop pine, Monterey pine, Torrey pine, Monterey cypress, pygmy cypress, interior cypress, knobcone pine forests
	lower montane coniferous	Coast Range coniferous, Klamath coniferous, ponderosa pine, Coulter pine, white pine, white fir, and big tree forests
	upper montane coniferous	Jeffrey pine, upper montane mixed coniferous, upper montane fir, and Klamath enriched coniferous forests
	subalpine coniferous	lodgepole pine, whitebark pine, foxtail pine, bristlecone pine, and limber pine forests
Alpine Habitats	alpine boulder and rock field	fell-field, talus and scree slope, snow margin
	alpine dwarf scrub	shrub dominated communities above the treeline

APPENDIX 4. Species by Common Name

Includes Species from Tables 1, 2, 3 and 4.

acacia, blackwood	*Acacia melanoxylon*
acacia, plume	*Albizia lophantha*
alligatorweed	*Alternanthera philoxeroides*
alyssum, sweet	*Lobularia maritima*
asparagus, smilax	*Asparagus asparagoides*
barberry, Darwin	*Berberis darwinii*
barbwire Russian-thistle	*Salsola paulsenii*
barley, Mediterranean	*Hordeum marinum,*
barley, wall	*Hordeum murinum*
beachgrass, European	*Ammophila arenaria*
beardgrass, annual	*Polypogon monspeliensis* and subspp.
bellardia	*Bellardia trixago*
bentgrass, creeping	*Agrostis stolonifera*
bentgrass, Pacific	*Agrostis avenacea*
bermudagrass	*Cynodon dactylon*
bindweed, field	*Convolvulus arvensis*
birdsfoot trefoil	*Lotus corniculatus*
blackberry, Armenian	*Rubus armeniacus* (=*R. discolor*)
blackberry, Himalaya	*Rubus armeniacus* (=*R. discolor*)
bladderflower	*Araujia sericifera*
bluegrass, Kentucky	*Poa pratensis*
blue gum, Tasmanian	*Eucalyptus globulus*
bouncingbet	*Saponaria officinalis*
brassbuttons	*Cotula coronopifolia*
brome, downy	*Bromus tectorum*
brome, red	*Bromus madritensis* ssp. *rubens* (=*B. rubens*)
brome, ripgut	*Bromus diandrus*
brome, soft	*Bromus hordeaceus*
broom, bridal	*Retama monosperma*
broom, French	*Genista monspessulana*
broom, Portuguese	*Cytisus striatus*
broom, Scotch	*Cytisus scoparius*
broom, Spanish	*Spartium junceum*
broom, striated	*Cytisus striatus*
buckwheat, California	*Eriogonum fasciculatum*
burclover, California	*Medicago polymorpha*
burnweed, Australian	*Erechtites glomerata, E. minima*
buttercup, Bermuda	*Oxalis pes-caprae*
buttercup, creeping	*Ranunculus repens*
butterflybush	*Buddleja davidii*
cabbage	*Brassica oleracea*
cabbage tree, New Zealand	*Cordyline australis*
calla lily	*Zantesdeschia aethiopica*
camelthorn	*Alhagi maurorum* (=*A. pseudalhagi*)
canarygrass, reed	*Phalaris arundinacea*
Cape-ivy	*Delairea odorata* (=*Senecio mikanioides*)
capeweed, fertile	*Arctotheca calendula* (fertile)
capeweed, sterile	*Arctotheca calendula* (sterile)
carrot, wild	*Daucus carota*
castorbean	*Ricinus communis*
catalpa, southern	*Catalpa bignonioides*
catsear, rough	*Hypochaeris radicata*
catsear, smooth	*Hypochaeris glabra*
chamomile, mayweed	*Anthemis cotula*
charlock	*Sinapis arvensis*
cheatgrass	*Bromus tectorum*
cherry plum	*Prunus cerasifera*
Chinese tallowtree	*Sapium sebiferum*
clover, California bur	*Medicago polymorpha*
clover, rose	*Trifolium hirtum*
cordgrass, Atlantic	*Spartina alterniflora*
cordgrass, common	*Spartina anglica*
cordgrass, dense-flowered	*Spartina densiflora*
cordgrass, saltmeadow	*Spartina patens*
cordgrass, smooth	*Spartina alterniflora* hybrids
cotoneaster, orange	*Cotoneaster franchetii*
cotoneaster, Parney's	*Cotoneaster lacteus*
cotoneaster, silverleaf	*Cotoneaster pannosus*
creeper, Australian bluebell	*Sollya heterophylla*
creeper, bearded	*Crupina vulgaris*
creeper, bridal	*Asparagus asparagoides*
cress, hoary	*Cardaria draba*
croftonweed	*Ageratina adenophora*
crupina, common	*Crupina vulgaris*
cypress, Monterey	*Cupressus macrocarpa*
daisy, African	*Dimorphotheca sinuata*
daisy, corn	*Chrysanthemum segetum*
daisy, crown	*Chrysanthemum coronarium*
daisy, English	*Bellis perennis*
daisy, Mexican	*Erigeron karvinskianus*
daisy, oxeye	*Leucanthemum vulgare*
daisybush, shrubby	*Osteospermum fruticosum*
dandelion, common	*Taraxacum officinale*
dandelion, hairy	*Hypochaeris radicata*
devil's thorn	*Emex spinosa*
dock, curly	*Rumex crispus*
dogtailgrass, hedgehog	*Cynosurus echinatus*
dracaena, giant	*Cordyline australis*
dyer's woad	*Isatis tinctoria*
egeria, Brazilian	*Egeria densa*

APPENDIX 4: Species by Common Name (continued)

elm, Chinese	*Ulmus parvifolia*
elm, Siberian	*Ulmus pumila*
emex, spiny	*Emex spinosa*
eupatorium	*Ageratina adenophora*
false-brome, perennial	*Brachypodium sylvaticum*
fennel	*Foeniculum vulgare*
fennel, dog	*Anthemis cotula*
fescue, rattail	*Vulpia myuros*
fescue, squirreltail	*Vulpia bromoides*
fescue, tall	*Festuca arundinacea*
fig, edible	*Ficus carica*
filaree, broadleaf	*Erodium botrys*
filaree, redstem	*Erodium cicutarium*
filaree, shortfruited	*Erodium brachycarpum*
filaree, whitestem	*Erodium moschatum*
firethorn	*Pyracantha* spp.
fireweed, Australian	*Erechtites glomerata, E. minima*
fivehook bassia	*Bassia hyssopifolia*
flixweed	*Descurainia sophia*
forget-me-not, common	*Myosotis latifolia*
fountaingrass, crimson	*Pennisetum setaceum*
foxglove	*Digitalis purpurea*
foxtail restharrow	*Ononis alopecuroides*
fumitory	*Fumaria officinalis*
garlic, false	*Nothoscordum gracile*
gazania	*Gazania linearis*
geranium, cutleaf	*Geranium dissectum*
geranium, dovefoot	*Geranium molle*
geranium, New Zealand	*Geranium retrorsum*
geranium, Robert	*Geranium robertianum*
German-ivy	*Delairea odorata*
glandweed, yellow	*Parentucellia viscosa*
glasswort	*Salsola soda*
goatgrass, barb	*Aegilops triuncialis*
gorse	*Ulex europaeus*
grass, rabbitfoot	*Polypogon monspeliensis*
gumweed, curlycup	*Grindelia squarrosa*
hairgrass, European	*Aira praecox*
hairgrass, silver	*Aira caryophyllea*
halogeton	*Halogeton glomeratus*
hardinggrass	*Phalaris aquatica*
hawksbeard, smooth	*Crepis capillaris*
hawthorn, English	*Crataegus monogyna*
heath, Spanish	*Erica lusitanica*
hedgeparsley	*Torilis arvensis*
herb-robert	*Geranium robertianum*
holly, English	*Ilex aquifolium*
horehound, white	*Marrubium vulgare*
Hottentot-fig	*Carpobrotus edulis*
houndstongue	*Cynoglossum officinale*
hydrilla	*Hydrilla verticillata*
hypericum, Canary Island	*Hypericum canariense*
iceplant	*Carpobrotus chilensis*
iceplant	*Carpobrotus edulis*
iceplant, crystalline	*Mesembryanthemum crystallinum*
iceplant, heartleaf	*Aptenia cordifolia*
iceplant, narrowleaf	*Conicosia pugioniformis*
iceplant, slenderleaf	*Mesembryanthemum nodiflorum*
iris, yellowflag	*Iris pseudacorus*
ivy, Algerian	*Hedera canariensis*
ivy, English	*Hedera helix*
jessamine, willow	*Cestrum parqui*
jointvetch, rough	*Aeschynomene rudis*
jubatagrass	*Cortaderia jubata*
kangaroothorn	*Acacia paradoxa*
kikuyugrass	*Pennisetum clandestinum*
klamathweed	*Hypericum perforatum*
knapweed, diffuse	*Centaurea diffusa*
knapweed, meadow	*Centaurea debeauxii* (=*C.* x *pratensis*)
knapweed, Russian	*Acroptilon repens*
knapweed, spotted	*Centaurea maculosa* (=*C. biebersteinii*)
knapweed, squarrose	*Centaurea virgata* ssp. *squarrosa* (=*C. squarrosa*)
knotweed, Japanese	*Polygonum cuspidatum* (=*Fallopia japonica*)
knotweed, Sakhalin	*Polygonum sachalinense*
kochia	*Kochia scoparia*
leek, three-cornered	*Allium triquetrum*
lettuce, prickly	*Lactuca serriola*
licoriceplant	*Helichrysum petiolare*
locust, black	*Robinia pseudoacacia*
locust, honey	*Gleditsia triacanthos*
London rocket	*Sisymbrium irio*
loosestrife, hyssop	*Lythrum hyssopifolium*
loosestrife, purple	*Lythrum salicaria*
lupine, yellow bush	*Lupinus arboreus*
mannagrass, waxy	*Glyceria declinata*
mayten	*Maytenus boaria*
Mediterraneangrass	*Schismus arabicus, S. barbatus*
Mediterranean sage	*Salvia aethiopis*
medusahead	*Taeniatherum caput- medusae*
mesembryanthemum, coppery	*Malephora crocea*
milkthistle, blessed	*Silybum marianum*
mirrorplant, creeping	*Coprosma repens*

APPENDIX 4: Species by Common Name (continued)

montbretia	*Crocosmia* x *crocosmiiflora*
mullein, common	*Verbascum thapsus*
mullein, woolly	*Verbascum thapsus*
mustard, birdsrape	*Brassica rapa*
mustard, black	*Brassica nigra*
mustard, blue	*Chorispora tenella*
mustard, field	*Brassica rapa*
mustard, Saharan	*Brassica tournefortii*
mustard, shortpod	*Hirschfeldia incana*
mustard, summer	*Hirschfeldia incana*
mustard, tansy	*Descurainia sophia*
mustard, wild	*Sinapis arvensis*
myoporum	*Myoporum laetum*
nasturtium, garden	*Tropaeolum majus*
nightshade, silverleaf	*Solanum elaeagnifolium*
oat, slender wild	*Avena barbata*
oat, wild	*Avena fatua*
oleander	*Nerium oleander*
olive, Russian-	*Elaeagnus angustifolia*
olive	*Olea europaea*
onionweed	*Asphodelus fistulosus*
orchardgrass	*Dactylis glomerata*
oxalis, buttercup	*Oxalis pes-caprae*
oxalis, yellow	*Oxalis pes-caprae*
oxtongue, bristly	*Picris echioides*
palm, Canary Island date	*Phoenix canariensis*
palm, date	*Phoenix dactylifera*
palm, Mexican fan	*Washingtonia robusta*
palm, Washington	*Washingtonia robusta*
paloverde, Mexican	*Parkinsonia aculeata*
pampasgrass	*Cortaderia selloana*
parentucellia, sticky	*Parentucellia viscosa*
parrotfeather	*Myriophyllum aquaticum*
passionflower, blue	*Passiflora caerulea*
pea, perennial sweet	*Lathyrus latifolius*
pea, Tangier	*Lathyrus tingitanus*
pennyroyal	*Mentha pulegium*
peppertree, Brazilian	*Schinus terebinthifolius*
peppertree, Peruvian	*Schinus molle*
pepperweed, perennial	*Lepidium latifolium*
periwinkle, big	*Vinca major*
pine, Monterey	*Pinus radiata* cultivars
pistache, Chinese	*Pistachia chinensis*
plantain, buckhorn	*Plantago lanceolata*
plantain, cutleaf	*Plantago coronopus*
plantain, English	*Plantago lanceolata*
plum, wild	*Prunus cerasifera*
poison-hemlock	*Conium maculatum*
pokeweed	*Phytolacca americana*
polypogon, rabbitfoot	*Polypogon monspeliensis* and subspp.
pondweed, curlyleaf	*Potamogeton crispus*
pride-of-Madeira	*Echium candicans*
privet, glossy	*Ligustrum lucidum*
pyracantha	*Pyracantha* spp.
quackinggrass, big	*Briza maxima*
Queen Anne's lace	*Daucus carota*
radish	*Raphanus sativus*
ragwort, tansy	*Senecio jacobaea*
rattlesnakegrass	*Briza maxima*
red gum	*Eucalyptus camaldulensis*
redhot poker	*Kniphofia uvaria*
reed, common	*Phragmites australis*
reed, giant	*Arundo donax*
rockrose, gum	*Cistus ladanifer*
rose, baby sun	*Aptenia cordifolia*
Russian-thistle	*Salsola tragus*
ryegrass, Italian	*Lolium multiflorum*
salsify, yellow	*Tragopogon dubius*
saltbush, Australian	*Atriplex semibaccata*
saltcedar	*Tamarix ramosissima*
salvinia, giant	*Salvinia molesta*
sea-fig	*Carpobrotus chilensis*
sea-lavender	*Limonium ramoissimum* ssp. *provincale*
sea-rocket, European	*Cakile maritima*
sesbania, red	*Sesbania punicea*
skeletonweed, rush	*Chondrilla juncea*
smilograss	*Piptatherum miliaceum*
sorrel, red	*Rumex acetosella*
sorrel, sheep	*Rumex acetosella*
sowthistle, spiny	*Sonchus asper*
speargrass, twisted-awned	*Stipa capensis*
spiny emex	*Emex spinosa*
spurge, caper	*Euphorbia lathyris*
spurge, carnation	*Euphorbia terracina*
spurge, leafy	*Euphorbia esula*
spurge, oblong	*Euphorbia oblongata*
St. Johnswort, common	*Hypericum perforatum*
starthistle, Malta	*Centaurea melitensis*
starthistle, purple	*Centaurea calcitrapa*
starthistle, yellow	*Centaurea solstitialis*
steppegrass, Mediterranean	*Stipa capensis*
stinkwort	*Dittrichia graveolens*
sweetclover, Indian	*Melilotus indicus*
sweetclover, yellow	*Melilotus officinalis*
sweetpea, perennial	*Lathyrus latifolius*
tallowtree, Chinese	*Sapium sebiferum*

APPENDIX 4: Species by Common Name (continued)

tamarisk	*Tamarix ramosissima*
tamarisk, athel	*Tamarix aphylla*
tamarisk, smallflower	*Tamarix parviflora*
tansy, common	*Tanacetum vulgare*
tea tree, Australian	*Leptospermum laevigatum*
teasel, fuller's	*Dipsacus sativus*
teasel, wild	*Dipsacus fullonum*
thistle, artichoke	*Cynara cardunculus*
thistle, bull	*Cirsium vulgare*
thistle, Canada	*Cirsium arvense*
thistle, Italian	*Carduus pycnocephalus*
thistle, musk	*Carduus nutans*
thistle, plumeless	*Carduus acanthoides*
thistle, Scotch	*Onopordum acanthium*
thistle, slenderflower	*Carduus tenuiflorus*
thistle, woolly distaff	*Carthamus lanatus*
toadflax, Dalmatian	*Linaria genistifolia* ssp. *dalmatica* (=*L. dalmatica*)
tobacco, tree	*Nicotiana glauca*
tocalote	*Centaurea melitensis*
tree-of-heaven	*Ailanthus altissima*
veldtgrass, erect	*Ehrharta erecta*
veldtgrass, long-flowered	*Ehrharta longiflora*
veldtgrass, purple	*Ehrharta calycina*
velvetgrass, common	*Holcus lanatus*
vernalgrass, sweet	*Anthoxanthum odoratum*
vervain, seashore	*Verbena litoralis*
vervain, tall	*Verbena bonariensis*
vetch, hairy	*Vicia villosa*
Victorian box	*Pittosporum undulatum*
wakame	*Undaria pinnatifida*
water hyacinth	*Eichhornia crassipes*
waterlily, fragrant	*Nymphaea odorata*
watermilfoil, Eurasian	*Myriophyllum spicatum*
water-primrose, creeping	*Ludwigia peploides* ssp. *montevidensis*
water-primrose, Uruguay	*Ludwigia hexapetala* (=*L. uruguayensis*)
watsonia	*Watsonia borbonica*
watsonia, bulbil	*Watsonia meriana*
whitetop, hairy	*Cardaria pubescens*
whitetop, lens-podded	*Cardaria chalepensis* (=*C. draba* ssp. *chalepensis*)
whitetop, tall	*Lepidium latifolium*
wisteria, scarlet	*Sesbania punicea*
woodsorrel, creeping	*Oxalis corniculata*
zoysiagrass	*Zoysia* spp.



The Nation Park Service's Exotic Plant Management Team removes satellite infestations of Centaurea solstitialis *(yellow starthistle) to prevent the plant's spread. (Photo by Bobbi Simpson, Point Reyes National Seashore)*

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Circular clones of Spartina alterniflora *x* foliosa *(smooth cordgrass hybrid) spread in San Francisco Bay. (Photo by Stephen Joseph, Invasive Spartina Project)*

APPENDIX E

Guidance for the Review of Wetland Projects in CA Coastal Zone

California Coastal Commission

PROCEDURAL GUIDANCE FOR THE REVIEW OF WETLAND PROJECTS IN CALIFORNIA'S COASTAL ZONE

CHAPTER THREE

PROTECTION AND MANAGEMENT OF WETLANDS IN THE CALIFORNIA COASTAL ZONE: A REVIEW OF RELEVANT AGENCIES AND PROCESSES

I. Introduction:

Numerous processes, policies, and regulations issued from all levels of government have dramatically influenced the amount and quality of wetlands in California since the early 1800's. Early on, much of the interest in wetlands focused on their "reclamation" for agriculture. More recently, however, interest has focused on the preservation and restoration of wetlands in California, resulting in protection oriented policies and regulations. Currently, a complex network of government agencies is responsible for enforcing the many rules and regulations pertaining to wetland management and protection. Although a few statutes and directives are specific to wetlands, most of the regulatory influence over wetlands occurs indirectly through management or regulation of water quality and quantity, fish and wildlife, endangered species habitat, water navigation, floodplain control, public trust, coastal resources, and environmental land use regulations (Dennis and Marcus, 1984). However, even with the myriad of regulatory measures, wetland resources throughout the State do not receive equal protection. Moreover, implementation within and among government agencies is inconsistent. In short, California is currently lacking a fully implemented comprehensive policy for the management and protection of its wetlands.

More recent activities, however, should improve the current situation. Specifically, the Wilson administration (State) and the Clinton administration (federal) released wetland policy statements in August 1993, which are designed to provide a consistent policy framework for the management and protection of wetlands. These policy statements detail a series of action items and initiatives designed to achieve three principal goals: 1)

ensure no net loss of wetlands; 2) reduce procedural complexity; and 3) develop private and public partnerships to encourage wetland conservation and protection. Implemetation of these policy statements is underway.

This chapter presents a review of the relevant agencies, processes, and policies affecting California's wetlands. Topics covered include: 1) definition and classification of wetlands; 2) agencies and regulations relating to wetlands; and 3) existing management practices. The focus is on wetlands occurring in the coastal zone. This chapter is not intended to present an exhaustive review, but rather to give the reader a basic level of understanding and a sense of the current regulatory procedures. The subjects covered here are complex. The reader is encouraged to consult the referenced literature for additional information.

II. Definition and classification of wetlands:

The lack of a single definition for a wetland is one of the more problematic issues affecting wise stewardship of this resource. The use of different definitions by regulatory and resource agencies has lead to unequal protection of California's wetland resources and inconsistencies in evaluating the existence and management of wetlands. All of the regulatory processes related to wetland protection and development apply only after the existence of a wetland is established. Thus, the criteria and processes used to define a wetland are central to determining which regulations apply and to what extent they are applied.

The word wetland is a relatively new term used to describe a particular landscape known throughout the world by a variety of names (e.g., swamp, bog, fen, mud flat, mire, and marsh). In fact, many of the terms used to define a wetland were developed as a way to describe the more obvious characteristics that exist within this landscape. Fundamentally, a wetland is land that remains wet long enough to result in the alteration of key physical, chemical, and biological elements relative to the surrounding landscape. However, the complex nature of wetlands requires a more elaborate definition, one which accounts for their variable nature and their subtle, but important, features.

A. Definition and Classification by Federal Agencies:

Several definitions for a wetland are applied by numerous State and federal resource and regulatory agencies, and this combined with the complex nature of wetlands has resulted in public confusion and frustration. The United States Army Corps of Engineers (ACOE), the Environmental Protection Agency (EPA), and the United States Fish and Wildlife Service (FWS) have developed the two definitions most commonly used by federal, State, and local agencies. The ACOE and EPA definition for a wetland (hereafter referred to as the ACOE definition) is probably used most often throughout the United States because of the ACOE's direct permit authority over development in wetlands and deepwater areas, and because the definition has been upheld in several courts of law.

The ACOE definition is often referred to as a "three parameter definition" because three key parameters: hydrology, soil, and vegetation must all occur and meet the defined characteristics in order for a location to be classified a wetland. The ACOE definition (Environmental Laboratory, 1987) reads as follows:

> *The following definition, diagnostic environmental characteristics, and technical approach comprise a guideline for the identification and delineation of wetlands.*
>
> *a. Definition: The ACOE (Federal Register, Section 328.3(b), 1991) and the EPA (Federal Register, Section 230.4(t), 1991) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*
>
> *b. Diagnostic environmental characteristics: Wetlands have the following general diagnostic environmental characteristics:*
>
> 1. *Vegetation: The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in (a) above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions.*
> 2. *Soil: Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions.*
> 3. *Hydrology: The area is inundated either permanently, or periodically at mean water depths < 6.6 ft. (~ 2 m), or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation. The period of inundation or soil saturation varies according to the hydrologic/soil moisture regime and occurs in both tidal and non-tidal situations*
>
> *c. Technical approach for the identification and delineation of wetlands: Except in certain situations defined in this manual, evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.*

Figure 4 presents a cross-sectional diagram of the areas and habitats under ACOE jurisdiction, and under which this definition applies.

FIGURE 4. Scope of Corps Regulatory Jurisdiction

Like the ACOE definition, the FWS definition (Cowardin, et al., 1979) of a wetland incorporates the three key parameters of hydrophytic vegetation, hydric soils, and hydrology:

> *Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly[16] hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

In addition to the above definition, the FWS has developed an elaborate classification system for wetlands and deepwater habits, which was primarily created to facilitate a national inventory of wetlands (Cowardin, et al., 1979). Cowardin and his associates (1979) acknowledged the difficulty, if not impossibility, of arriving at a "single, correct, indisputable, ecologically sound definition" because of the diversity of wetland types, and because "the demarcation between wetland and dry land lay along a continuum". The FWS classification system is hierarchical, progressing from broad system descriptors to very specific modifiers for water regime, water chemistry, and soils (Cowardin, et al., 1979). Wetlands within each system share similar physical, chemical, and biological characteristics. The systems consist of the coastal wetlands which include marine and estuarine wetlands, and the interior wetlands which include riverine, lacustrine, and palustrine wetlands (Figure 5 illustrates these systems diagrammatically).

FIGURE 5. Diagram Illustrating Major Wetland Systems

Although the FWS classification system is complex, it does provide an objective method for identifying virtually any wetland landscape. Relative to the ACOE definition, the FWS definition is generally regarded as being more inclusive in the classification and subsequent delineation of a wetland. This is because the FWS classification system defines a wetland by the presence of the proper hydrology **and either** the presence of hydric soils **or** hydrophytic vegetation, except in nonsoil areas, such as rocky intertidal areas, where only the presence of proper hydrology is required[17].

Another federal wetland definition is found in the Food Security Act of 1985. This definition is important because it applies to agricultural lands:

> *The term "wetland", except when such term is part of the term "converted wetland", means land that has a predominance of hydric soils and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.*

The Soil Conservation Service currently assists farmers in making wetland determinations on agricultural lands. Under the "Swampbuster Provisions" of the Food Security Act (as amended in 1990), the presence of wetlands can affect the amount of federal benefits farmers receive through the federal farm benefits program. The Swampbuster Provisions allow for farm benefits to be withheld from any person who: 1) plants an agricultural commodity on a converted wetland that was converted by drainage, dredging, leveling, or any other means after December 23, 1985; or 2) converts a wetland for the purpose of or to make agricultural commodity production possible after November 28, 1990.

A recently released wetlands policy statement from the Clinton Administration charges the Soil Conservation Service with the responsibility of serving as lead agency for identifying wetlands on agricultural lands under both the Clean Water Act and the Food Security Act (Office on Environmental Policy, 1993).

All of the federal definitions use some combination of three principal attributes (i.e., hydrology, hydric soils, and hydrophytic vegetation) to determine the presence and define the boundaries of a wetland. Although a discussion of why these attributes were chosen is beyond the scope of this document, it is clear that their nation-wide use offers several advantages: 1) Each attribute is clearly defined, and the definitions are very similar if not identical among agencies; 2) the presence of each attribute, with few exceptions, is readily determined with a high degree of precision; and 3) each attribute represents a key wetland characteristic.

While it has been known for some time that several (and somewhat conflicting) wetland definitions exist at the federal level, only recently have steps been taken to address this problem. In 1993, the Clinton Administration commissioned the National Academy of Science to lead the development of a single wetland definition that will be used by all relevant federal agencies to identify wetland areas. This work will be completed in September, 1994, and should result in a more cohesive approach to wetlands regulation at the federal level.

B. Definition and Classification by California State Agencies:

In addition to the definition and classification procedures developed by federal agencies, some California resource and regulatory agencies have developed their own wetland definition and classification procedures. Although these State agency procedures are generally based on the FWS definition and classification procedure described above, they do differ in specific details.

In the California coastal zone , the California Coastal Commission (CCC), with the assistance of the Department of Fish and Game (DFG) is responsible for determining the presence of wetlands subject to regulation under the California Coastal Act. As the primary wetland consultant to the CCC, the DFG essentially relies on the FWS wetland definition and classification system, with some minor changes in classification terminology, as the methodology for wetland determinations (Radovich, 1993). However,

one important difference in the DFG delineation process compared to the FWS process, is that the DFG only requires the presence of **one** attribute (e.g., hydrology, hydric soils, or hydrophytic vegetation) for an area to qualify as a wetland (Environmental Services Division, 1987).

In contrast to the detailed definition and classification system adopted by the DFG, Section 30121 of the California Coastal Act (1976), the statute governing the CCC, has an exceptionally broad definition for a wetland:

> *Wetland means lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, or fens.*

However, the CCC Administrative Regulations (Section 13577 (b)) provides a more explicit definition:

> *Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitats.*

As discussed in chapter one, the CCC with assistance from the DFG, is responsible for determining the presence and size of a wetland subject to regulation under the Coastal Act. Although the exact procedure has varied somewhat in the past, the DFG wetland definition and classification system is the delineation methodology generally followed by the CCC.

This discussion demonstrates that defining, delineating, and classifying wetlands are not simple matters, requiring an understanding of both wetland science and current regulatory definitions. Recently, wetland policy statements were released by both the Clinton administration and the Wilson administration, which may offer some help in this regard. Both statements identify the development of a single wetland definition as a high priority. Such a definition would need to encompass all types of wetlands and meet the needs of all relevant agencies. However, a single, clear definition for a wetland could aid in the sound management and protection of this resource, since many decisions regarding this resource are based on the definition used.

III. Agencies and Regulations Relating to Wetlands:

Numerous federal, State, and local agencies administer and enforce a myriad of federal, State, and local regulations that pertain to the development and alteration of wetlands in the California coastal zone. Although intended to provide clear and complete oversight and protection of wetlands, the sheer number and complexity of these regulations often have the opposite result. In this section some of the more important laws and regulations affecting the development and alteration of coastal wetlands are described.[18]

A. Federal Regulatory Programs and Agencies:

Two statutes at the federal level provide the primary regulatory authority over wetlands in the United States: 1) The Clean Water Act (Section 404 (b)) regulates disposal of dredge and fill materials in waters of the United States, including all streams to their headwaters, lakes over 10 acres, and contiguous wetlands, including those above the ordinary high water mark in non-tidal waters and mean high tide in tidal waters; and 2) the River and Harbors Act of 1899 (Section 10) regulates the diking, filling, and placement of structures in navigable waterways. The ACOE is responsible for the enforcement of rules and regulations pertaining to both of these sections.

The original intent of the River and Harbors Act was protection of waterway navigability. In 1968, however, the ACOE established a more expansive review process, "public interest review", which included assessment of local and regional interests such as land use, economics, flood control, fish and wildlife, ecology, pollution, as well as traditional navigability (Dennis and Marcus, 1984). The availability of alternatives, permanence of impacts, and cumulative effects were adopted as additional review criteria in 1974 (Dennis and Marcus, 1984). Thus, the ACOE Section 10 review process incorporates numerous criteria applicable to the regulation of wetlands occurring in navigable waterways.

Under Section 404(b) regulations, all saline, brackish, and freshwater wetlands adjacent to (and in some circumstances, isolated from) navigable waters are subject to ACOE jurisdiction. The Section 404 regulatory program has a complex judicial and administrative history, in which wetlands have become the regulatory focus of "waters of the United States". Additionally, as part of the Section 404 permit program, the EPA and the ACOE have developed guidelines (specifically 404(b)(1) guidelines) that specify disposal sites for dredged or fill material. The purpose of these guidelines is to control discharges of dredged or fill material into U.S. waters in order to restore and maintain the chemical, physical, and biological integrity of the waters. These guidelines set the criteria against which permit applications are measured.

Unfortunately, the intent and administration of the Section 404 program in interpreted in fundamentally different ways by various federal agencies. For example, the ACOE views its primary regulatory function as protecting water quality, whereas the FWS, who comments on many Section 404 permit actions, regards protecting the integrity of wetlands and their habitats as the primary function of Section 404 (Dennis and Marcus, 1984).

It is important to note that not all activities in wetlands are regulated under Section 404. For example, excavation, clearing, leveling, draining, and vegetation removal are all unregulated activities. Additionally, the ACOE's general permit system exempts the deposition of fill material in a wide variety of riparian habitats and small ((1 acre) wetlands. This is particularly troublesome in California, where the seasonally dry nature of many streams and ponds precludes ACOE jurisdiction of many riparian corridors and small freshwater wetlands.

Although the River and Harbors Act and the Clean Water Act empower the ACOE with primary responsibility for the federal regulation of development and alterations in wetlands, other federal agencies are also involved. The EPA, FWS, Soil Conservation Service, and the National Marine Fisheries Service (NMFS) can review applications for ACOE Section 404 permits and provide comments and recommendations to the ACOE. In fact, under the Fish and Wildlife Coordination Act, the ACOE is required to consult with the FWS and the NMFS and give full consideration to their recommendations in evaluating permit decisions. Additionally, under certain circumstances the EPA, FWS, and NMFS can elevate an ACOE district engineer's permit decision to the Assistant Secretary for review and reconsideration[19]. However, only the EPA has the authority (albeit, rarely used) to veto an ACOE permit decision.

Notable exceptions to this division of agency responsibility occur when threatened or endangered species are present, or when an activity is subject to the requirements of the National Environmental Policy Act. In these situations a multitude of agencies with direct regulatory authority may become involved. The lead and participating agencies will vary depending on the specific circumstances.

B. Federal–State Interaction[20]:

Pursuant to regulations adopted by the Office of Ocean and Coastal Resource Management (OCRM) under the Federal Coastal Zone Management Act (CZMA), applicants for ACOE Section 404 and Section 10 permits must include in their application a certification of consistency with the California Coastal Management Program[21]. This certification, and accompanying data and analysis, must also be submitted to the California Coastal Commission (CCC) for review and concurrence. The ACOE may not issue their permit until the CCC reviews and concurs with the applicant's consistency certification. This requirement is in addition to any other requirements the CCC has for coastal development permit applications.

Pursuant to the Fish and Wildlife Coordination Act, the ACOE must also give full consideration to comments submitted by the DFG. As the principal State resources trust agency, the DFG is obligated to comment on ACOE permit decisions in order to ensure protection of the State's natural resources. In this capacity, the DFG has drawn on the policy direction of the California Coastal Act, the California Endangered Species Act, the California Environmental Quality Act, and other relevant State laws. The DFG also consistently relies on the policy direction of California's Wetlands Conservation Policy

(1993), which calls for no net loss of wetlands and a long-term net gain in the quantity, quality, and permanence of wetland acreage and values.

C. State Regulatory Programs and Agencies:

Numerous State agencies regulate, manage, or otherwise control natural resources within California through a wide variety of general and specific laws and directives, which are carried out by resource departments, commissions, and boards (Dennis and Marcus, 1984). Analyses completed in the early 1980's reviewed the effectiveness of 59 California State statutes in protecting wetlands and other water related lands, and concluded the State has limited direct authority over wetlands except in three geographic areas: the coastal zone, San Francisco Bay, and Suisun Marsh (Jones, 1981; Shute and Mihaly, 1982). Thus, although the coast is relatively well protected, inland California is not.

The California Environmental Quality Act (CEQA) sets the State's basic charter for environmental protection. Among other policies, CEQA aims to minimize or eliminate the environmental impacts from development projects. Specific wetland areas are listed as having regional or statewide significance (e.g., Suisun Marsh, Sacramento–San Joaquin Delta, and wild and scenic rivers), and the resource in general (wetlands and riparian lands) is defined as significant habitat.

The Keene–Nejedly California Wetlands Preservation Act (1976) is the only State legislation besides the Coastal Act to define wetlands (Dennis and Marcus, 1984). The act states there "is a need for an affirmative and sustained public policy and program directed at their [wetlands] preservation, restoration, and enhancement, in order that such wetlands shall continue in perpetuity". The act provided for acquisition of ten important wetlands, using funds from several sources, and was intended to support preparation of a statewide wetlands plan. However, acquisition funds were not allocated in 1976 (Dennis and Marcus, 1984).

The California Wild and Scenic rivers Act (1972) provides for the preservation of certain rivers, which possess extraordinary scenic, recreational, fishery, or wildlife values. Designated rivers are preserved in their free-flowing state, together with their immediate environments. All of the rivers currently included under this act occur in the northern half of California. Preservation under this act provides additional protection to the riparian areas adjacent to the rivers.

The Resources Agency functions as an umbrella agency for the State's resource departments, conservation boards, and commissions. The agency sets major resource policy for the State and oversees programs of member departments such as the DFG. With respect to wetlands, the Resources Agency is just beginning to implement Governor Wilson's Statewide wetlands policy. This policy defines the State's goals and objectives with regard to the preservation of remaining wetlands and set priorities and guidelines for restoration.

The State Regional Water Quality Control Boards are a regulatory body within the newly formed California Environmental Protection Agency. The regional boards' primary role is to enforce the federal Clean Water Act, and in doing so, assert regulatory authority over development activities affecting the water quality of navigable water and wetlands. Under Section 401(a)(1) of the Clean Water Act:

> *Any applicant for a Federal license or permit to conduct any activity...which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State...that any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of this Act.*

In turn, California Code of Regulations Section 3831(k) defines the State certification required under Section 401 as:

> *'Water Quality Certification' means a certification that there is a reasonable assurance that an activity which may result in a discharge to navigable waters of the United States will not violate water quality standards, where the activity requires a federal license or permit.*

Water quality standards are specified in federal regulation (40 CFR 131.6 et seq.) to include: 1) a State's numeric and narrative water quality criteria (objectives); 2) designated beneficial uses; and 3) anti-degradation policy. The anti-degradation policy requires, in part, the maintenance and protection of existing instream water uses including the level of water quality necessary to protect the existing uses. Through the Clean Water Act Section 404(b)(1) guidelines, the United States EPA interprets the anti-degradation policy to be satisfied with regards to fills in wetlands if the discharge did not result in "significant degradation" to the aquatic ecosystems.

In practice, the regional boards have applied their authority over water quality standards to all waters of the State, including wetlands. Discharge to wetlands and riparian wetlands may violate water quality objectives (e.g., turbidity, temperature, or salinity); impair beneficial uses (e.g., groundwater recharge, recreation, wildlife habitat, fish migration, and shellfish harvesting); and conflict with the anti-degradation policy.

The California Department of Fish and Game has Statewide resource responsibilities and authority that directly and indirectly influence projects and activities in coastal zone wetlands. In addition to being responsible for the maintenance and protection of California's fish and wildlife, the DFG has authorities under California's Public Resources Code, and the federal Fish and Wildlife Coordination Act to regulate or comment on activities in wetland and riparian areas. The DFG also assumes primary responsibility for implementation of the California State Endangered Species Act, and the Streambed Alteration Agreement (Fish and Game Code Sections 1601–1603). This agreement is one of the State's few direct legal instruments for the protection of streams, rivers, and lakes. Additionally, as mentioned previously, the DFG is a primary consultant to the CCC regarding the affects of coastal development on wetlands and other natural

resources. The DFG also comments directly to the ACOE concerning fish and wildlife aspects of Section 10 and Section 404 permits. DFG's official position regarding the protection of wetlands is that development projects should not result in a net loss of either wetland acreage or wetland habitat value (DFG, 1987).

The California State Coastal Conservancy (SCC) is another State agency actively involved in the protection and enhancement of coastal wetlands, although the agency has no regulatory function. The SCC was created by the legislature in 1976 to protect, restore, and enhance California's coastal resources. A primary purpose of the SCC is to resolve coastal land use conflicts not amenable to regulatory solutions, in order to protect coastal resources and expedite environmentally sound development. The SCC functions to address these conflicts with solutions unavailable to other State agencies because of their regulatory responsibilities, or because of limitations in funding, jurisdiction, or function.

The SCC accomplishes its purpose through various programs, including:

- Provision of technical assistance and guidance to nonprofit organizations
- Purchase and restoration of wetlands, sand dunes, and other important natural lands
- Revitalization of the State's urban waterfronts
- Preservation of prime agricultural lands
- Funding construction of beach access ways and trails, and retiring antiquated subdivisions within the coastal zone and San Francisco Bay

During the last 16 years, the SCC has given over $40 million to 77 nonprofit organizations to acquire and restore key wetland, open space and agricultural lands along the coast. In addition, about one-third of all SCC funds ($60 million) have gone to fund resource enhancement projects. With these fund, the SCC, in partnership with local governments and nonprofit organizations, has completed 91 resource enhancement plans, 60 wetland enhancement projects (at least one in every coastal county), and protected 24,000 acres of wildlife habitat, most of which are wetlands.

The California Coastal Commission is charged with the regulation of development in California's coastal zone as stipulated in the California Coastal Act. Sections 30230, 30231, 30233, 30236, and 30240 of the Coastal Act are directly applicable to the preservation and protection of wetlands and other environmentally sensitive areas[22].

Development[23] or alteration of California's coastal wetlands is primarily regulated by Section 30233(a) of the Coastal Act, which states:

> *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible[24] less environmentally damaging alternative, and where feasible mitigation*

measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake or outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

Among other things, Section 30233(a) lists the types of development for which diking, filling, or dredging may be permitted in open coastal waters, wetlands, estuaries, and lakes occurring in the coastal zone. This section also stipulates the criteria under which development is permitted (i.e., least environmentally damaging alternative and existence of feasible mitigation measures). Although permits under this section of the Coastal Act can have numerous outcomes, a review of the CCC permits relating to Section 30233 shows several clear trends (Table 2). Of the 106 permits processed Statewide between 1973 and 1986, 71 (67%) were for the deposition of fill material, 58 permits (55%) were for dredging activity, and 5 permits (5%) were for diking. (Some permits included both dredge and fill activities.) Eighty-three (78%) of the 106 permits were for new

development or maintenance of existing development, while 26 (25%) were for restoration projects. Forty-nine (46%) permits included mitigation requirements. Ninety-eight (92%) of the permits were approved.

Table 2. SUMMARY OF CALIFORNIA COASTAL COMMISSION PERMIT ACTIVITY RELATING TO SECTION 30233, 1973–1986[25]

Year	Total Number of Permits	Number of Permits for Dredging	Number of Permits for Diking	Number of Permits for Fill	Number of Permits Approved	Number of Permits Denied	Number of Devel. or Maint. Proj.	Number of Restoration Projects	Number Requiring Mitigation
1973	2	0	0	2 (100%)	1 (50%)[26]	1 (50%)	2 (100%)	0	0
1974	3	2 (66%)	0	1 (33%)	3 (100%)	0	3 (100%)	0	0
1975	2	0	0	2 (100%)	2 (100%)	0	2 (100%)	0	1 (50%)
1976	4	3 (75%)	1 (25%)	1 (25%)	3 (75%)	1 (25%)	4 (100%)	0	0
1977	5	2 (40%)	0	5 (100%)	5 (100%)	0	4 (80%)	1 (20%)	1 (20%)
1978	7	1 (14%)	0	6 (86%)	5 (71%)	2 (29%)	7 (100%)	0	5 (71%)
1979	8	6 (75%)	0	5 (63%)	8 (100%)	0	6 (75%)	3 (38%)	1 (13%)
1980	10	5 (50%)	0	7 (70%)	10 (100%)	0	8(80%)	4 (40%)	8 (80%)
1981	7	6 (86%)	0	2 (29%)	6 (86%)	1 (14%)	4 (57%)	3(29%)	1 (14%)
1982	18	7 (39%)	1 (6%)	12 (67%)	17 (94%)	1 (6%)	15 (83%)	3 (17%)	10 (56%)
1983	18	12 (67%)	2 (11%)	14 (78%)	16 (89%)	2 (11%)	12 (67%)	6 (33%)	6 (33%)
1984	11	8 (73%)	1 (9%)	7 (64%)	11 (100%)	0	8 (73%)	3 (27%)	7 (64%)
1985	5	2 (40%)	0	3 (60%)	5 (100%)	0	3 (60%)	2 (40%)	3 (60%)
1986	6	4 (66%)	0	4 (66%)	6 (100%)	0	5 (83%)	1 (17%)	6 (100%)
1973–1986	**106**	**58 (55%)**	**5 (5%)**	**71 (67%)**	**98 (92%)**	**8 (8%)**	**83 (78%)**	**26 (25%)**	**49 (46%)**

Mitigating for wetland losses is frequently required in conjunction with coastal development permits granted under Section 30233. Most commonly, these projects involve compensatory mitigation. Both in-kind mitigation and out-of-kind mitigation are used. Coastal Act Section 30607.1 contains some of the most explicit language regarding mitigation for wetland development projects, and states in part:

> *Where any dike and fill development is permitted in wetlands in conformity with Section 30233 or other applicable policies set forth in this division, mitigation measures shall include, at a minimum, either acquisition of equivalent areas of equal or greater biological productivity or opening up equivalent areas to tidal action; provided, however, that if no appropriate restoration site is available, an in-lieu fee sufficient to provide an area of equivalent productive value or surface areas shall be dedicated to an appropriate public agency or the replacement site shall be purchased before the dike or fill development may proceed...*

One interpretation suggests Section 30607.1 sanctions acquisition of an existing wetland as acceptable mitigation for an allowable wetland development project. However, such an approach would lead to a net loss of wetland area. In practice, the CCC has interpreted the phrase "at a minimum" to require inclusion of a restoration component in any acquisition plan in order to avoid the net loss of wetland area.

The CCC works with the applicant to develop specific mitigation requirements with the help of DFG, Coastal Conservancy, FWS, EPA, NMFS, and ACOE staff. Determining the amount and type of mitigation required is a contentious and complex matter often confounded by both a lack of applicable technical information and the regulatory process. Although numerous mitigation projects have been approved by the CCC, there is little information describing the success of these projects. This is a serious and chronic problem attributable to a lack of specific performance standards necessary to gauge the success of mitigation projects, and a lack of technical information and/or resources needed to evaluate these projects.

Probably one of the more contentious issues under Section 30233 is the stringent review of projects proposed in "degraded wetlands" (Section 30233(a.3)). With respect to historic wetland losses along the southern California coast, one intent of the Coastal Act is to halt the loss of wetlands and, where feasible, restore the resource (Dennis and Marcus, 1984). The main points of contention usually focus on the wetland delineation and the determination of what constitutes "degraded condition".

Section 30411 establishes the DFG as the lead agency charged with the study and identification of degraded wetlands, and provides general guidelines for classifying a wetland as degraded. However, the ecological complexity of wetlands and the lack of a single definition limits the degree of certainty with which these determinations can be made. The DFG has described its process for determining if a wetland is in fact degraded (for example see, DFG, 1981). In essence, the DFG makes this determination through an examination of the subject area to determine if the system has been adversely impacted

by previous alterations, resulting in a degraded condition when compared to remaining unaltered areas or historic information. In addition, Coastal Act Section 30411(b) states that any such study of a wetland shall include consideration of all of the following:

(1)Amount and elevation of filled areas.

(2)Number and location of dikes and other artificial impediments to tidal action and freshwater flow and the ease of removing them to allow tidal action to resume.

(3)Degree of topographic alterations to the wetland and associated areas.

(4)Water quality.

(5)Substrate quality.

(6)Degree of encroachment from adjacent urban land uses.

(7)Comparison of historical environmental conditions with current conditions, including changes in both the physical and biological environment.

(8)Consideration of current altered wetland conditions and their current contribution to coastal wetland wildlife resources with relation to potential restoration measures.

(9)Chemical cycling capabilities of the wetland including water quality enhancement, nutrient accumulation, nutrient recycling, etc.

As part of this identification process, the extent of any wetland on the site must be identified with precision (CCC, 1981).

Section 30233(c) of the Coastal Act further limits development and alteration of wetlands throughout the coastal zone, stating:

> *In addition to the other provisions of this Section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19[27] coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.*
>
> *For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where such improvement would create*

additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.

Numerous coastal wetlands (e.g., riparian areas) are considered environmentally sensitive habitat areas because they provide critical habitat to threatened or endangered species, or because of their uniqueness relative to the surrounding landscape. Thus, Section 30240 provides additional regulatory oversight of wetlands in certain situations. Section 30240 states:

a)Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

b)Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat recreation areas.

Ports and port-related develop also have the potential of affecting coastal wetlands[28]. Development within those portions of Ports Hueneme, Long Beach, Los Angeles, and San Diego Unified Port District lying within the coastal zone is generally governed by the provisions contained in Chapter 8 of the Coastal Act. However, wetlands and estuaries that have been identified on the CCC's Port Jurisdiction Maps (adopted by the Commission on April 6, 1977 pursuant to Section 30710) are not governed by the provisions of Chapter 8, but instead are subject to Chapter 3 policies of the Coastal Act (Coastal Act Section 30700).

Chapter 8 provisions apply to all "water areas" (a termed used only in this chapter) regardless of whether such area is considered wetland, estuary, or open coastal water. The diking, filling, or dredging of any water area within the defined areas of these ports is limited by Section 30705, 30706, and 30708 of the Coastal Act. The diking, filling or dredging of any wetland or estuary occurring in any port, harbor district or authority not named in Chapter 8 (e.g., Humbolt Bay Harbor, Recreation and Conservation Districts, or Moss Landing Harbor District) is subject to Chapter 3 provisions of the Coastal Act.

Section 30236 of the Coastal Act regulates development in aquatic regions such as rivers and streams. These sections address specific types of development such as channel alteration, dams, and flood control projects, which could impact riparian areas or tidal marshlands.

Finally, the CCC has adopted the *Statewide Interpretive Guidelines for Wetlands and Other Wet Environmentally Sensitive Habitat Areas* (CCC, 1981; Appendix A). These guidelines were developed to assist the CCC, local government, and the public in the application of the Coastal Act and certification of local coastal plans. These guidelines contain technical definitions for wetlands and riparian areas, discuss conditions for

permitting development in these areas, and provide information pertaining to the maintenance and restoration of wetlands.

D. Local Government Regulatory Programs and Agencies:

The California Coastal Act is designed to delegate local governments with much of the CCC's authority over control of coastal development. Section 30004(a) of the Coastal Act states:

> *To achieve maximum responsiveness to local conditions, accountability, and public accessibility, it is necessary to rely heavily on local government and local land use planning procedures and enforcement.*

To meet the objectives of Section 30004(a), the Coastal Act directs each of the 73 cities and counties lying wholly or partly within the coastal zone to prepare a Local Coastal Plan (LCP) for CCC review and certification[29]. With a certified LCP, each local government assumes authority for permitting certain types of development in specified areas of the coastal zone. It is important to note, however, that even after LCP certification, the CCC continues to have a major role in regulating wetland development. Specifically, Coastal Act Section 30519(b) states in part:

> *Subdivision (a)* [that is, delegation of development review authority to a local government] *shall not apply to any development proposed or undertaken on any tidelands, submerged lands, or on public trust lands, whether filled or unfilled, lying within the coastal zone,...*

Thus, the CCC retains regulatory authority over virtually all of the wetlands in the coastal zone either through its original jurisdiction, or through the appeal process[30].

LCP's provide for the regulation of wetland development in one of two principal ways: 1) through the adoption of Coastal Act Section 30233 (with or without some modification); or 2) by identifying wetlands as environmentally sensitive areas and then adopting Coastal Act Section 30240 (with or without some modification). Of the 67 LCP's with policies regulating development in wetlands, 37 (55 percent) use Section 30233 and 27 (40 percent) use Section 30240. The remaining three LCP's (5 percent) regulate wetland development through the creation of new policies.

The way in which LCP's regulate wetland development is somewhat influenced by the distribution of wetlands throughout the California coastal zone. Wetlands are relatively more numerous and diverse in the northern half of the State (North Coast and Central Coast regions, Figure 6); thus, the overall approach to wetland regulation is somewhat more dependent on development activity. LCP's from these regions contain policies that generally regulate development in wetlands and are applied as wetland development projects occur. In contrast, wetlands are relatively scarce in the southern half of the State (South Central Coast, South Coast, and San Diego Coast, Figure 6), and so each one is

considered vitally important. Thus, many of the LCP's specifically identify the wetlands within the respective jurisdiction and contain specific regulations for development.

FIGURE 6. Local Coastal Program LCP Certification Status.

Some general trends in the type of wetlands regulated also exist among the LCP's. All of the LCP's contain some discussion of wetlands ranging from a single statement that wetlands do not occur within the jurisdiction, to an elaborate discussion of the types and characteristics of the wetlands found within the jurisdiction. Overall, riparian areas were most often included as a specific type of wetland, with 41 (61%) of the 67 LCP's identifying this habitat as a type of wetland. Additionally, it was not uncommon for the LCP's to identify specific areas (mainly river and stream corridors) as riparian areas.

Of the 80 LCP's effectively certified Statewide, only 13 (16%) have no policies explicitly limiting development in wetlands. In all cases, this is because wetlands were known not to occur, or have not been identified within the jurisdictional boundaries. Of these 13 LCP's, two occur in the north coast region, one occurs in the central coast region, two occur in the south central coast region, seven occur in the south coast region, and one occurs in the San Diego coast region (Figure 6).

IV. Existing Management Practices:

A. Management of Federal Lands in California:

Approximately 45% of California's land (46.5 million acres) is managed by federal agencies (Dennis and Marcus, 1984). The majority of these lands are managed by the Forest Service (46%, 21. 4 million acres) and the Bureau of Land Management (37%, 17.2 million acres), but the defense departments also manage substantial acreage, many containing small but significant wetlands. In addition, the National Park Service manages park lands, and the FWS maintains National Wildlife Refuges. Both of these lands can contain substantial wetland areas.

The federal government's management and control of California's wetlands is substantial, given the significant amount of land under federal ownership. Federal lands are used for the extraction and production of minerals, oil, gas, and timber, and for grazing, industrial activities, living quarters, military training, water storage, parks, and wilderness areas. Various statutes, orders, and regulations such as President Bush's Wetlands Protection Executive Order (E.O. 11990), the National Environmental Policy Act, the Federal Land and Management Act, and the Forest Management Act give some assurance that sensitive resources, such as wetlands, occurring on federal lands will receive appropriate protection. However, the federal land management agencies can exercise considerable discretion in their management practices, since the statutes and other rules provide little specific guidance (Dennis and Marcus, 1984). Outside scrutiny by private interest groups, local government, and State resource agencies provide another check of federal activities.

B. Management of State Owned Lands in California:

Approximately two percent (1.95 million acres) of California's land is in State ownership (Fay, et al., 1990). Nearly 66 percent of the State owned lands are administered by the California Department of Parks (Fay, et al., 1990), but other State agencies such as the Department of Fish and Game, the Department of Forestry, the Coastal Conservancy, and State universities and colleges hold title to lands with substantial wetlands. Overall, the State's land holdings are significantly smaller than those of the federal government, but the vast majority of the State lands are owned by agencies focusing on conservation and preservation. The California Environmental Quality Act governs the State's development activities on its lands. Additionally, State owned lands in the coastal zone are subject to regulation under the Coastal Act.

The State of California also owns nearly 4 million acres of sovereign lands. These lands underlie the State's navigable and tidal waterways and include the beds of: 1) hundreds of tidal and non-tidal rivers, streams, and sloughs; 2) nearly 100 non-tidal navigable lakes; 3) the tidal navigable bays and lagoons; and 4) intertidal and subtidal lands adjacent to the entire coast and offshore islands of the State from the mean high tide line to three miles offshore. Thus, many of these State-owned sovereign lands are adjacent to or include wetland areas. Depending on their location, sovereign lands are managed by the California State Lands Commission and other State and local agencies as public trust resources.

C. Management of Individual Wetlands:

Numerous individual wetlands within California are managed by various public agencies as a way to ensure their preservation. Such "managed wetlands" often include both modified and unmodified areas, and range in size from tens to thousands of acres. Two examples of such wetlands in the California coastal zone are the National Estuarine Research Reserves of Elkhorn Slough and the Tijuana River Estuary.

The overall goal of these management activities is to preserve, restore, and enhance one or more of the functions and values attributable to wetlands. Such functions and values include retention of flood waters, detoxification of receiving waters, recreation, research, and provision of critical habitat. Typically, a management plan[31] serves to guide the direction and implementation of the activities essential for obtaining the overall goal.

D. Wetland Management Goals and Concerns:

The primary goal of resource and regulatory agencies is to preserve the remaining wetland acreage (i.e., maintain a 'no net loss policy'). A secondary, but equally important goal is to restore lost and disturbed wetland landscapes. Thus, in addition to the preservation and protection of existing coastal wetlands, resource and regulatory agencies must strive to increase total wetland acreage through restoration, and improve the chemical, physical, and biological quality of degraded wetlands.

Although these goals are easily stated, they are not easily achieved. The high population densities in the California coastal zone, particularly along the south coast and San

Francisco Bay, continue to exert pressure for further urban and industrial development in wetland areas. Meanwhile agricultural activities (historically the leading cause of wetland loss in California) continue with limited regulation. Changes in permitting procedures have also yielded results counter to the no net loss policy. For example, ACOE Nationwide Permit Number 26 (NWP 26) authorizes the discharge of dredge or fill material into headwaters and isolated waters of the United States in certain situations. Projects seeking authorization under NWP 26 receive considerably less scrutiny and evaluation through the associated ACOE process. An analysis of ACOE permits granted in California between 1987 and 1992 found that 775 projects were authorized under NWP 26, resulting in a loss of at least 725 acres of wetlands in the northern two-thirds of the State (Long, et al., 1992). Clearly, NWP 26 permitting is having a negative impact on wetlands in California.

Thus, the inevitable conflicts between preservation goals for environmental resources and development activities present a major challenge to resource and regulatory agencies. Other important considerations include the multitude of agencies involved in wetlands regulation and the conflicting and confusing definitions and classification procedures. These process concerns combined with the paucity of substantive technical information are critical management concerns.

V. Summary:

The regulations, policies, and processes guiding the management and protection of California's coastal wetlands are numerous, and complex. Although specific regulations controlling development in wetlands exist at all levels of government, there is evidence to suggest the goal of no-net-loss of wetlands has not been achieved. The ability to protect existing wetlands is also hampered by inconsistencies among regulatory agencies and gaps in existing regulations. The lack of a single, clear, and broadly instituted definition for a wetland is a major inconsistency among regulatory agencies, which can act to compound regulatory problems. Meanwhile, certain types of wetlands, such as riparian areas and seasonal wetlands, do not receive equal protection at all levels of government because of differences in adopted definitions, agency imposed limitations of adopted definitions, and jurisdictional limitations. Additionally, several activities resulting in the loss of wetlands such as draining, vegetation removal, and agriculture are not regulated to the same degree as dredging, filling, and diking.

Of the wetland development projects that are permitted, many involve some form of mitigation. Although mitigation can be a viable alternative, establishment of the specific requirements is generally on a case-by-case basis and often involves a complex and time intensive process. This approach is incompatible with attempts by regulatory agencies to implement consistent mitigation policies and requirements.

In many cases the level of protection a wetland receives is a function of both ownership and land use. Although much of California is held in public (i.e., federal, State, or local government) ownership, many wetlands of significant size are under private ownership. The level of wetland protection can be lower on private lands, although public ownership

does not necessarily guarantee appropriate protection. Meanwhile, land use patterns can have direct and indirect affects on wetlands: urban and agricultural development in a wetland are obvious direct affects, while development outside the wetland but within the same watershed can indirectly affect wetlands through alteration of physical and chemical processes. On a larger scale, regional, Statewide, and (in the case of Canada) international land use patterns can affect coastal wetlands through, for example, changes in air quality, hydrology, and the abundance of birds and fish.

It is clear that the management and protection of wetland resources involves numerous complex issues. Although we have come a long way in our knowledge and protection of California's coastal wetland resources, much work still remains.

Endnotes

[16]Normally, a particular vegetation type (e.g., hydrophytic vegetation) is considered to predominate when it makes up at least 50% of the vegetative cover on an areal basis.

[17]A common misconception is that the FWS definition requires only one of the three requisite attributes (i.e., proper hydrology, hydrophytic vegetation, or hydric soils) be present in order for any location to qualify as a wetland. This was never the Agency's intention. For a specific discussion of this topic, the reader is referred to Tiner, R.W. Jr. 1989. *A clarification of the U.S. Fish and Wildlife Service's wetland definition.* National Wetlands Newsletter. 11(3)6–8.

[18]This section is not a complete review of all laws and regulations pertaining to wetlands. For more information the reader is encouraged to review the following references: 1) Muir, T.A., C. Rhodes, and J.G. Gosselink. 1990. *Federal statutes and programs relating to cumulative impacts in wetlands.* Pages 223–236 in J.G. Gosselink, L.C. Lee, and T.A. Muir [Eds.]. *Ecological Processes and Cumulative Impacts: Illustrated by Bottomland Hardwood Wetland Ecosystems.* Lewis Publishers, Inc., Chelsea, MI.; and 2) Dennis, N.B. and M.L. Marcus. 1984. *Status and trends of California wetlands.* Final report prepared for the California Assembly, Resources Subcommittee.

[19]For a more detailed discussion of the elevation process see Davis, M.L. and R.C. Gardner. 1993. *Recognizing the Corps' commitment*. National Wetlands Newsletter. 15(2)9–10.

[20]Information in this section is from the Statewide Interpretive Guidelines (CCC, 1981).

[21]The consistency certification process must still be completed, even if the ACOE undertakes the work (e.g., maintenance dredging, or channel modification) .

[22]Section 30107.5 of the Coastal Act defines an environmentally sensitive area as "any area in which plant or animal life or their habitats are either rare or especially valuable

because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and developments".

[23]According to Section 30106 of the Coastal Act " 'Development' means, on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto: construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg–Nejedly Forest Practice Act of 1973 (commencing with Section 4511)."

[24]Feasible is defined in Section 30108 of the Coastal Act to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors".

[25]Based on information contained in: CCC 1988. Draft Wetlands Task Force Report, Appendix C.

[26]Percentages are calculated as the proportion of the total number of permits occurring in a specific category.

[27]See the Statewide Interpretive Guidelines (CCC, 1981) For a complete list of these 19 wetlands.

[28]Information relating to ports and port activities is taken from Section IV(E) of the Statewide Interpretive Guidelines (CCC, 1981).

[29]The Coastal Act allows local governments, with CCC approval, to divide their coastal zone into geographic segments, and to prepare a separate LCP for each segment. For this reason, there are currently 126 LCP segments, instead of 73 (the actual number of coastal zone cities and counties). To date, 80 total LCP segments (64 percent) have been effectively certified and the relevant local governments are now issuing coastal development permits.

[30]With regard to projects affecting wetlands, Coastal Act Section 30603(a)(2) limits the appeal of an action taken by a local government on a coastal development permit application to "developments... that are located within 100 feet of any wetland, estuary, or stream..."

[31]Management plans vary greatly in both format and content; however, a useful guide for the development of wetland management plans has been produced by the Lane Council of Governments (1992). *Hints on Preparing a Comprehensive Wetland Management Plan.* Pages 21-29 in The Association of State Wetland Managers. *Background Report Symposium Wetlands and Watershed (Water Resources) Management*. May 10-12, 1993. Sparks, Nevada.

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APPENDIX F

Summary of Preserve Protection Provided by the City's General Plan, Coastal Specific Plan and Municipal Code

APPENDIX F Summary of Preserve Projection Provided by City Plans and Codes

City of Rancho Palos Verdes Municipal Code

As a regulatory document, the City's Municipal Code provides another layer of environmental protection (either directly or indirectly) to lands located in the preserve. Each cited section of the Code in effect at the time of adoption of the Subarea Plan by the city addresses a different aspect of environmental protection.

Title 3, Chapter 20, Section 010 establishes an Environmental Excise Tax:

> In that construction of new residential living units and of new commercial or industrial structures within the city creates an immediate and present danger to the existing quality of life and ecology of the city and threatens to contaminate and pollute the air, water and land within and surrounding the city…[therefore] the imposition and collection of a special, nonrecurring tax upon the occupancy and construction of new residential dwelling units and of new commercial and industrial buildings within the city is the most practical and equitable method of providing revenues with which the city may meet and deal with and solve the serious ecological and environmental problems created by the occupancy and construction of such facilities within the city. This tax indirectly protects the preserve by providing a source of revenue that the City may use in paying for its share of annual preserve management costs.

Title 13 Chapter 10, Section 010 – 070:

> Establishes standards and procedures for reducing pollutants in storm water discharges into preserve areas to the maximum extent practicable by; regulating illicit connections and illicit discharges and thereby reducing the level of contamination of storm water and urban runoff into the municipal storm water system; and regulating non-storm water discharges to the municipal storm water system; and setting forth requirements for the construction and operation of certain commercial development, new development and redevelopment and other projects) that are intended to ensure compliance with the storm water mitigation measures prescribed in the current version of the Standard Urban Storm Water Mitigation Plan (SUSMP) approved by the Regional Water Quality Control Board. This ordinance indirectly protects the preserve by establishing standards and procedures for reducing pollutants in storm water discharge for major projects throughout the City, thus reducing the likelihood of contaminated storm water entering the preserve.

Title 15 Chapter 34, Section 010:

> This ordinance indirectly protects the preserve by establishing standards and procedures for the design, installation and management of water-conserving landscapes thereby reducing problems of over-watering and the resultant change in hydrologic regimes in adjacent more xeric preserve lands.

Title 17, Chapter 32

> This ordinance indirectly protects the preserve by establishing open-space hazards districts that provide the regulatory foundation for many lands located in the preserve. The ordinance requires that lands [such as those found in the preserve] be placed in the

open-space hazard district when the use of said land would endanger the public health, safety and welfare. Open-space hazard districts shall include the following:

A. Areas where the existing natural slope exceeds 35 percent, areas experiencing down slope movement, areas unstable for development, areas where grading or development of the land may endanger the public health and safety because of erosion or flooding, and the ocean bluffs; and

B. Areas subject to flooding or inundation from storm water.

It also stipulates that land in open-space hazard districts in the preserve may be used (provided, that the applicable natural overlay control district performance criteria is satisfied) for:

The preservation of areas of outstanding scenic, geologic, historic or cultural value; the preservation of natural resources, including but not limited to plant and animal life; and the conservation of water supply land, including but not limited to watershed and groundwater recharge areas.

Title 17, Chapter 40, Section 040

This ordinance directly protects the preserve by establishing a natural overlay control district that encompasses most of the preserve and serves to:

1. Maintain and enhance land and water areas necessary for the survival of valuable land and marine-based wildlife and vegetation; and

2. Enhance watershed management, control storm drainage and erosion, and control the water quality of both urban runoff and natural water bodies within the city.

This overlay district identifies the following lands and waters included in this district:

1. All lands identified in the natural environment element of the general plan under category RM-5 (Old Landslide Area) and all lands identified in the coastal-specific plan under categories CRM-3 (Hazard), CRM-4 (Marginally Stable) and CRM-5 (Insufficient Information);

2. All lands identified in the natural environment element of the general plan under category RM-6 (Hydrologic Factors); and all lands identified in the coastal-specific plan under categories CRM-7 (Flood/Inundation Hazard) and CRM-8 (Hydrologic Factors), including all identified major and minor natural drainage flows, storm channels and storm drains existing on April 25, 1975, the effective date of Ordinance No. 78 of the city, storm channels and drains proposed after that date, and outfall areas;

3. All water areas identified in the natural environment element of the general plan under category RM-7 (Marine Resource), including all intertidal marine resources, tide pools,

and the ocean waters and bottom within the projected boundaries of the city to the legally established, 3-mile offshore limit, and all ocean beaches, bluffs and cliffs;

4. All lands identified in the natural environment element of the general plan under category RM-8 (Wildlife Habitat) and lands identified in the coastal-specific plan under category CRM-9 (Wildlife Habitat);

5. All lands identified in the natural environment element of the general plan under category RM-9 (Natural Vegetation) and all lands identified in the coastal-specific plan under category CRM-10 (Natural Vegetation), also including such areas as are within category RM-8 (Wildlife Habitat) described in this section; and

6. All such lands and water areas that may be added to any of the above categories, pursuant to Chapter 17.68 (Zone Changes and Code Amendments).

These lands are to be maintained in compliance with the following criteria:

1. Cover or alter the land surface configuration by moving earth on more than 10 percent of the total land area of the portion of the parcel within the district, excluding the main structure and access;

2. Alter the course, carrying capacity or gradient of any natural watercourse or drainage course that can be calculated to carry over 100 cubic feet per second once in 10 years;

3. Fill, drain or alter the shape or quality of any water body, spring or related natural spreading area of greater than 1.0 acre;

4. Develop otherwise permitted uses within 50 feet of the edge of a watercourse or drainage course that can be calculated to carry more than 500 cubic feet per second once in 10 years;

5. Clear the vegetation from more than 20 percent of the area of the portion of the parcel within the district, or remove by thinning more than 20 percent of the vegetation on the parcel, excluding dead material and excluding brush-clearance activities necessary for fire protection;

6. Use herbicides to control or kill vegetation;

7. Remove vegetation within a designated wildlife habitat area;

8. Cover more than 20 percent of a parcel known to contain sand, gravel or other materials that may aid in natural beach replenishment;

9. Alter the characteristics of the surface soils to allow surface water to stand for over 12 hours; make the soil inadequate as a bearing surface for pedestrian, equestrian, bicycle or motorized emergency vehicle access; make the soil unstable and subject to sliding, slipping, or water or wind erosion;

10. Result in chemicals, nutrients or particulate contaminants or siltation being discharged, by storm water or other runoff, into a natural or manmade drainage course leading to the ocean or any other natural or manmade body of water;

11. Propose a sewer or wastewater disposal system involving the spreading, injecting or percolating of effluent into the ocean or into the soil of a natural or manmade drainage course, if alternative locations are available;

12. Alter, penetrate, block or create erosion or significant change of the area within 100 feet of an ocean beach or top edge of an ocean bluff or cliff;

13. Alter, penetrate, block or create erosion on the shoreline measured at mean high tide or alter the characteristics of the intertidal marine environment;

14. Alter, dredge, fill or penetrate by drilling, the ocean floor within the jurisdiction of the city; or

15. Alter any land area that has previously experienced massive down slope movement, to reactivate or create conditions that could lead to the reactivation of down slope movement.

Title 17, Chapter 56, Section 010

This ordinance indirectly protects the preserve by setting tolerance levels for adverse environmental effects created by any use or development of land, including dust control, construction fencing, and construction site maintenance.

Title 17, Chapter 70, Section 010

This ordinance directly protects the preserve by establishing a site plan review procedure enabling the director and/or planning commission to check development proposals for conformity to the above environmental protections.

The above Ordinances address a wide range of environmental protection. The cumulative effect of these Ordinances is to safeguard and enhance the natural lands included in this Subarea Plan.

Other City Ordinances

Other City of Rancho Palos Verdes ordinances, including the Grading and Subdivision Ordinance, address protection of resources.

- **Grading Ordinance.** The existing grading ordinance provides direct protection to the preserve because all grading exceeding 20 c.y., on private or public property or any grading which encroaches on or alters a natural drainage channel or watercourse in the City of Rancho Palos Verdes is subject to the Grading Ordinance. Permits are reviewed for compliance with established controls. Applications for a grading permit can be conditioned, modified or denied to ensure protection of environmentally sensitive areas such as wetlands.
- **Subdivision Ordinance.** The Subdivision Ordinance provides direct protection of the preserve by ensuring that any proposed subdivisions do not create adverse impacts to surrounding

properties. The subdivision ordinance complements the City of Rancho Palos Verdes General Plan and Zoning Ordinance. CEQA review is required for all subdivisions. A project can be conditioned, modified or denied if it is found to cause substantial damage or substantially and unavoidably injure fish or wildlife or their habitat. Additionally, all subdivisions must be found consistent with the General Plan and Zoning Ordinance.

- **Coastal Sage Scrub Conservation and Management Ordinance.** This ordinance protects coastal sage scrub habitat in the City by instituting a permit review process for the removal of any vegetation on properties 2 acres or greater in size in the City which contain Coastal Sage Scrub habitat.

Storm water Discharge Ordinance. The intent of the Storm water Discharge Ordinance is to protect and enhance the quality of the watercourses, water bodies, and wetlands in the city and region. A Storm water Pollution Prevention Plan (SWPPP) is required before major construction activity and is used as the tool to review proposals for compliance with established guidelines to reduce or eliminate pollution. If necessary, the City Engineer may require a SWPPP for business-related activities not already operating under such a plan. The ordinance provides indirect protection of the preserve by reducing the likelihood of polluted storm water entering the preserve.

Fire Protection. The City of Rancho Palos Verdes has adopted the Los Angeles County Fire Code, which, among other things, establishes regulations for the clearance of brush and combustible growth. The L.A. County Fire Department or L.A. County Department of Agricultural Commissioner determines the required clearance width of the fuel management area for existing and proposed development. The City consults with L. A. County personnel during the environmental review of proposed projects. The ordinance provides direct protection of the preserve by setting limits on how much brush clearance is required on properties within the preserve.

City of Rancho Palos Verdes General Plan

The City's General Plan, adopted on June 26, 1975, is organized into the following elements, all of which provide indirect protection to the preserve since they set goals and objectives that are consistent and relevant to the Subarea Plan:

Natural Environment Element. This element is a composite of areas requiring considerations of public health and safety and preservation of natural resources.

Socio/Cultural Element. This element identifies the City's goals and policies for preservation of its paleontological, historical, and archaeological resources and for social, service, and cultural organizations

Urban Environment Element. This element addresses concerns for city areas set aside for development, with consideration for natural environmental concerns. This element also provides goals and policies for circulation, noise, visual aspects, public services, and infrastructure.

Land Use Plan. According to the General Plan, the City's Land Use Plan is a composite of the other elements and focuses on the City's overall development, conservation, and fiscal balance. According to the Land Use Plan, Overlay Control Districts are incorporated into the General Plan to further reduce impacts that could be induced by proposed and existing development in sensitive areas. Major disruptive treatment of these land areas would alter features, including

significant natural, urban, and socio/cultural characteristics that form the city's character and environment.

Coastal-Specific Plan

The RPV City Council adopted the Coastal Specific Plan (CSP) on December 19, 1978. The CSP provides a series of polices to guide development, as well as protect natural features in the Coastal Zone along the 7.5 miles of coastline within the City's jurisdiction. The coastal specific plan provides indirect protection of the preserve because it contains elements that enforce and complement the goals and policies of the Subarea Plan which are directed toward native lands management.

The plan identifies natural habitat "*which is not only vital to local animal life, but is the key to the migratory species*" (Page N-1) while acknowledging that the "*Peninsula has already experienced the lowest ebb in habitat quality*" and notes that "*Recent programs are providing indicators that this habitat is recovering*" (Page N-2).

To ensure this successful "recovery," the following policies address the protection of these valuable resources while providing for the public health, safety, and welfare.

Page N-45 through N-47 of the local CSP identifies 20 polices addressing the Natural Environment.

Policy 1 allows only low intensity activities within the coastal resource management districts.

Policy 2 requires any development within the coastal resource management districts to provide geotechnical engineering studies to assess soil stability.

Policy 3 prohibits new permanent structures within extreme hazard areas of the coastal resource management district.

Policy 4 encourages non-residential structures (i.e., Recreational Facilities) within coastal resource management districts.

Policy 5 calls for stringent site design and maintenance criteria for areas with high wild-land fire hazard.

Policy 6 prohibits grading activities or structures within areas having flood or inundation hazards.

Policy 7 prohibits siltation and implements non-point discharge in the resource management districts.

Policy 8 requires disclosure and mitigation for impacts to wildlife habitats.

Policy 9 encourages revegetation within coastal resource management districts.

Policy 10 protects, enhances and encourages restoration of marine resources.

Policy 11 encourages the establishment of marine reserves.

Policy 12 encourages acquisition of rights over offshore tidelands.

Policy 13 encourages the support of activities of other agencies concerned with marine water quality.

Policy 14 encourages the support of activities of other agencies concerned with avoiding thermal discharge in marine waters.

Policy 15 requires mitigation measures, where possible, to mitigate.

Policy 16 encourages increased enforcement activity of the California Department of Fish and Game.

Policy 17 encourages the exploration of additional enforcement activities to protect the marine environment.

Policy 18 encourages climatic sensitive site and structure design.

Policy 19 supports monitoring of oil and gas extraction activities.

Policy 20 encourages restoration of marine environments.

The cumulative effect of these policies is to safeguard and enhance the natural lands covered in this Subarea Plan.

Page S/C-7 contains policies addressing Social/Cultural concerns:

Policy 1, although protecting cultural resources, will also as a secondary benefit protect habitat associated with Native American sites.

Page U-67 contains policies addressing the urban environment:

Policy 6 requires existing trails (where allowed in the reserve) to be left in their natural state.

Policy 7 restricts coastal access points thereby prohibiting habitat destruction via trail "cutting."

Policy 8 requires sewer pump stations to be minimized thereby protecting native habitat.

Page C-16 contains the major policy protecting Natural Corridors defined as slopes above 35 percent and all areas having habitat designated as sensitive to human intrusion, both terrestrial and marine.

The CSP then identifies site-specific policies for sub regions within the Plan's jurisdiction.

Page S 1-10 contains the following policies for Sub region One:

Policy 1 requires that the major drainage course in this sub region be protected.

Policy 2 requires native landscaping in developed areas to be beneficial to migratory and resident bird species.

Policy 3 calls for the establishment marine reserves.

Policy 5 calls for the coordination in the design and placement of open-space areas.

Policy 6 ensures that flood control improvements do not affect natural habitat.

Page S 2-15 contains the following policies for Sub region Two:

Policy 1 requires native landscaping in developed areas to be beneficial to migratory and resident bird species.

Policy 2 calls for the establishment marine reserves.

Policy 3 encourages restoration of kelp beds off Point Vicente.

Policy 5 ensures that noise and lighting impacts are mitigated at the point of origin.

Policy 7 allows for the upgrading of Marineland, as long as there are no adverse impacts to surrounding areas.

Policy 9 restricts access to fragile beach areas.

Page S 3-14 contains the following policies for Sub region Three:

Policies 1 and 2 encourage the use of Transfer of Development Rights (TDRs) relocate development away from coastal bluffs.

Page S 4-14 contains the following policy for Sub region Four:

Policy 2 requires development abutting natural drainage areas to maintain that character of the watercourse.

Page S 5-16 contains the following policy for Sub region Five:

Policy 1 ensures that flood control improvements within the sub region will be carried out in a manner consistent with preserving natural habitats.

Policy 3 encourages that a carrying capacity for beaches be established so that impacts to fragile marine environments are minimized.

Page S 6-12 contains the following policy for Sub region Six:

Policy 1 requires that that native vegetation of the two major canyons in the areas is protected.

Policy 2 encourages the establishment marine reserves to protect fragile marine environments.

Policy 4 ensures that flood control improvements are carried out in manner consistent with the preservation of natural habitat.

Policy 5 prohibits new structures in hazard areas.

Page S 7-12, 13 contains the following policy for Sub region Seven:

Policy 1 requires that natural vegetation be maintained and protected in major drainage courses.

Policies 2 and 3 initiate and support the establishment marine reserves to protect fragile intertidal marine environments.

Policy 9 requires sewer pump stations to be minimized thereby protecting native habitat.

Policy 10 requires that the natural drainage course in this sub region be protected and where flood control is necessary, sensitive to the natural environment.

Policy 12 prohibits dirt fill for traversing identified drainage courses.

The above policies address a wide range of environmental protection. The cumulative effect of the Coastal Specific Plan is to safeguard and enhance the natural lands covered by this Subarea Plan.

APPENDIX G

Plumtree Parcel Wildlife Agency Letters and NRC Biology Report (2009)

State of California - The Resources Agency ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123
(858) 637-7100

September 9, 2009

Mr. Joel Rojas
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

SUBJECT: PLUMTREE PROPERTY CONSERVATION STRATEGY, CITY OF RANCHO PALOS VERDES, LOS ANGELES COUNTY

Dear Mr. Rojas:

The California Department of Fish and Game (Department) has reviewed your request (letter to Mr. Jim York dated August 21, 2009) regarding donation of the approximately 30-acre property (29.4 acres of land) on the York Long Point Associates (YLPA) Plumtree Property ("the Donation Property") to the City of Rancho Palos Verdes (City) as part of the acquisition proposal to the City. The 30-acre Donation Property is intended to be dedicated to the City and incorporated into and managed as part of the City's Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP), which is currently underway and scheduled to be completed by the first quarter of 2010.

The Department is a Trustee Agency and a Responsible Agency pursuant to the California Environmental Quality Act (CEQA; Sections 15386 and 15381, respectively) and is responsible for ensuring appropriate conservation of the state's biological resources, including rare, threatened, and endangered plant and animal species, pursuant to the California Endangered Species Act (CESA) (Fish and Game Code 2050, *et seq.*) and other sections of the Fish and Game Code (e.g., 1600 *et seq.* and 3500 *et. seq.*). The Department also administers the statewide NCCP Program (Fish and Game Code 2800, *et seq.*): the City is located within the southern California coastal sage scrub NCCP region.

This letter confirms the Department's support of the conservation strategy developed by the City and YLPA regarding a proposed residential development project on the property known as Plumtree (Figure 1). As part of the proposed development plan, YLPA would donate and place a biological conservation easement over 30-acres of land immediately north of Plumtree (Upper Filiorum Donation Parcel; Figure 1). This land (29.4 acres) would be conveyed to the City concurrently with the City's purchase of the Upper Filiorum Acquisition Parcel using State Coastal Conservancy/matching funds (Figure 1).

The Wildlife Agencies have reviewed the draft biology report (Natural Resource Consultants [NRC] 2007-2009), which documents the biological resources that are known to exist on the Plumtree Property, as well as the configuration of the proposed 30-acre Donation Property. However, no site or grading plans are currently available for Department review at this time. Although no federally or state-listed species were observed in 2007 or 2008, one pair of the federally-threatened coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher) was observed in 2009. The site contains approximately 2.8 acres of disturbed coastal sage scrub, known to support gnatcatchers. In addition, the coastal cactus wren (*Campylorhynchus brunneicapillus*; wren) was observed on the property in 2007 (NRC, 2007) and during surveys in the 1990s (Atwood et al, 1998). Although the wren is not currently federally or state-listed, it is considered a California State Species of Special Concern.

The Upper Filiorum Donation Parcel supports habitat that provides higher conservation value than the Plumtree parcel. Based on the 1990s surveys and site-specific surveys in 2000, the Upper Filiorum Donation Parcel is known to be consistently occupied by both the gnatcatcher and wren (Atwood et al. 1998; Natural Resource Consultants 2001). Conservation of the Upper Filiorum Donation Parcel would contribute to the establishment of a large block of viable habitat that, together with the Upper Filiorum Acquisition Parcel and proper management, can support gnatcatchers and wrens as well as maintain habitat connectivity.

YLPA proposes to dedicate the Upper Filiorum Donation Parcel to the City's "NCCP/HCP Preserve" as defined in the draft City of Rancho Palos Verdes NCCP/HCP. Under the NCCP/HCP, this parcel would be conserved and managed in perpetuity by a qualified land management entity. The conservation strategy for the development of Plumtree will be fully described in the proposed NCCP/HCP, as well as the federal application pursuant to Section 10[a][1][B] of the Federal Endangered Species Act of 1973, as amended [16 U.S.C. 1531 *et seq.*].

The Department has worked closely with the Fish and Wildlife Service and City to develop the draft NCCP/HCP and fully supports the plan's conservation strategy, which includes development of the Plumtree property. As a result of this coordination, the Department supports the City's conclusion that, provided conditions do not change on or adjacent to the 30-acre Donation Property from future development or otherwise (including brush management and slope stability), and the City completes its NCCP/HCP as scheduled, the dedication and inclusion of the Donation Property into the NCCP/HCP Preserve (with management and monitoring) would provide upland biological mitigation for the YLPA Plumtree development consistent with the anticipated losses/gains as currently proposed in the City's NCCP/HCP; therefore, it would adequately offset upland impacts to natural resources from the Plumtree project. This conclusion is based on the biological value of the Upper Filiorum Donation Parcel, as described in the aforementioned NRC and Atwood et al. biological evaluations.

Please note that this consistency evaluation does not preclude future Department review/comment on development associated with the YLPA Plumbtree Property through the California Environmental Quality Act (CEQA, PRC 2100, *et. seq.*), 1600 and/or other applicable State laws and regulations. As you are aware, processing the NCCP/HCP permit will require submittal of the appropriate environmental document (e.g., EIR) under CEQA for public comment. Therefore, the Department must fully consider any public comments on the proposed NCCP/HCP during the CEQA process and formally analyze impacts to joint and state-listed species prior to making any permit decision. Alternatively, the Department would also support the application by YPLA for incidental take coverage for the gnatcatcher on the Plumtree property independently from the City through the Fish and Wildlife (i.e., 10 [a]) and would continue to support the conservation strategy described above for the Plumtree project. Last, since the City is a participant in the Department's NCCP process, impacts to coastal sage scrub and the gnatcatcher on Plumtree could also be addressed through the NCCP Interim Process for CSS, consistent with the 4(d) rule, using the currently proposed conservation strategy for the draft NCCP/HCP permit.

If you have any questions regarding this letter, please contact David Mayer at (858) 467-4234/dmayer@dfg.ca.gov or Randy Rodriguez at (858) 637-7100/RFRodriguez@dfg.ca.gov.

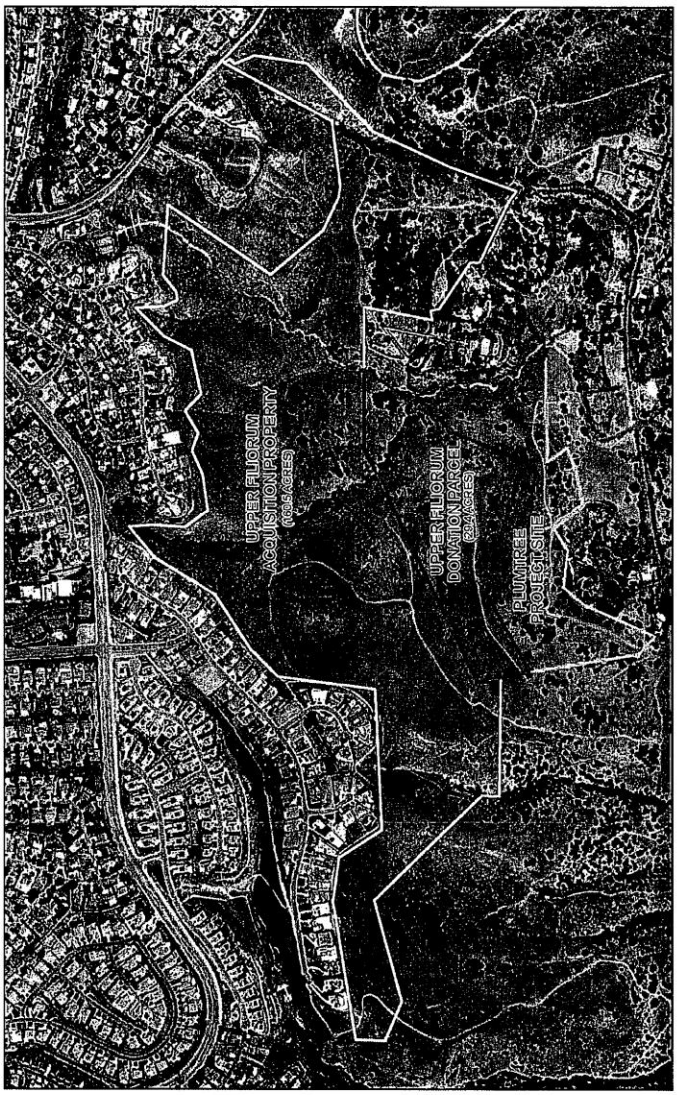
Sincerely,

Stephen M. Juarez
Environmental Program Manager
South Coast Region (5)

Enclosure(s): Figure 1.

cc: Carol Lynch, Richards, Watson & Gershon, Los Angeles, CA
Ken Corey, U.S. Fish and Wildlife Service

Figure 1


UPPER FIJORUM
ACQUISITION PROPERTY
(104 ACRES)
UPPER FIJORUM
DONATION PARCEL
(24 ACRES)
PLUMTREE
PROJECT SITE

Literature Cited:

Atwood, J. L., H. S. Tsai, C. A. Reynolds, and M. R. Fugagli. 1998. Distribution and population size of California gnatcatchers on the Palos Verdes Peninsula, 1993-1997. Western Birds 29:340-350.

Natural Resource Consultants. 2001. Results of focused coastal California gnatcatcher surveys on the approximately 234-acre Upper Filiorum site, located in the City of Rancho Palos Verdes, Los Angeles County, California

Natural Resource Consultants. 2007. Biological resources evaluation of the approximately 30-acre Plumtree site, City of Rancho Palos Verdes, Los Angeles County, California. Submitted to Carlsbad Fish and Wildlife Office June 25, 2007.

Natural Resource Consultants. 2008. Results of presence/absence surveys for the California gnatcatcher (*Polioptila californica californica*) on the approximately 30-acre Plumtree site, Rancho Palos Verdes, Los Angeles County, California.

Natural Resource Consultants. 2009. Results of presence/absence surveys for the California gnatcatcher (*Polioptila californica californica*) on the approximately 58-Acre Plumtree Site, Rancho Palos Verdes, Los Angeles County, California.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

In Reply Refer To:
FWS-LA-09B0417-09TA1119

SEP 0 8 2009

James York
York Long Point Associates, L.P.
550 Silver Spur Road, Suite 250
Rancho Palos Verdes, California 90275

Subject: Plumtree Property Conservation Strategy, City of Rancho Palos Verdes, Los Angeles County, California

Dear Mr. York:

This letter confirms the U.S. Fish and Wildlife Service's (Service) support of the conservation strategy developed by the City of Rancho Palos Verdes (City) and York Long Point Associates (YLPA) to address compliance with the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), regarding a proposed residential development project on the property known as Plumtree (Figure 1). As part of the proposed development plan, YLPA would donate and place a conservation easement over approximately 30 acres of land (or 29.4 acres of land) immediately north of Plumtree (Upper Filiorum Donation Parcel; Figure 1). This land would be donated concurrently with the City's purchase of the Upper Filiorum Acquisition Parcel (Figure 1).

Biological surveys were conducted on the Plumtree property in 2007, 2008, and 2009 (Natural Resource Consultants 2007, 2008, 2009), and although no federally listed species were observed in 2007 or 2008, one pair of federally threatened coastal California gnatcatchers (*Polioptila californica californica*, "gnatcatcher") was observed in 2009. The site contains approximately 2.8 acres of disturbed coastal sage scrub, which is known to support gnatcatchers. In addition, the coastal cactus wren (*Campylorhynchus brunneicapillus*, "wren") was observed on the property in 2007 (Natural Resource Consultants 2007) and during surveys in the 1990s (Atwood et al. 1998). Although the wren is not currently listed as federally threatened or endangered, it is considered a California State Species of Special Concern.

The Upper Filiorum Donation Parcel supports habitat that provides higher conservation value than the Plumtree parcel. Based on the 1990s surveys and site-specific surveys in 2000, the Upper Filiorum Donation Parcel is known to be consistently occupied by both the gnatcatcher and wren (Atwood et al. 1998, Natural Resource Consultants 2001). Conservation of the Upper Filiorum Donation Parcel would contribute to the establishment of a large block of habitat

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together with the Upper Filiorum Acquisition Parcel that can support gnatcatchers and wrens, and help maintain habitat connectivity.

YLPA proposes to dedicate the Upper Filiorum Donation Parcel to the "Preserve" as defined in the draft City of Rancho Palos Verdes Natural Communities Conservation Plan (NCCP)/Habitat Conservation Plan (HCP). Under the NCCP/HCP, this parcel would be conserved and managed in perpetuity by a qualified land management entity. The conservation strategy for the development of Plumtree will be fully described in the proposed NCCP/HCP as part of the City's application for an incidental take permit under section 10(a)(1)(B) of the Act.

Based on the biological value of the Upper Filiorum Donation Parcel, the Service fully supports the conservation strategy proposed to offset impacts to natural resources from the Plumtree project. The Service has worked closely with the City to develop the draft NCCP/HCP and fully supports the plan's conservation strategy, which includes development of the Plumtree property. Processing the NCCP/HCP permit will require submittal of an Environmental Assessment under the National Environmental Policy Act for public comment. Therefore, the Service must fully consider any public comments on the proposed NCCP/HCP and formally analyze impacts to federally listed species prior to making any permit decision. Alternatively, the YLPA could apply for incidental take coverage for the gnatcatcher independently from the City, and the Service would continue to support the conservation strategy described above for the Plumtree project. In addition, because the City is a participant in the NCCP process, impacts to coastal sage scrub and the gnatcatcher on Plumtree may be addressed through section 4d of the Act using the currently proposed conservation strategy prior to the issuance of an NCCP/HCP permit to the City.

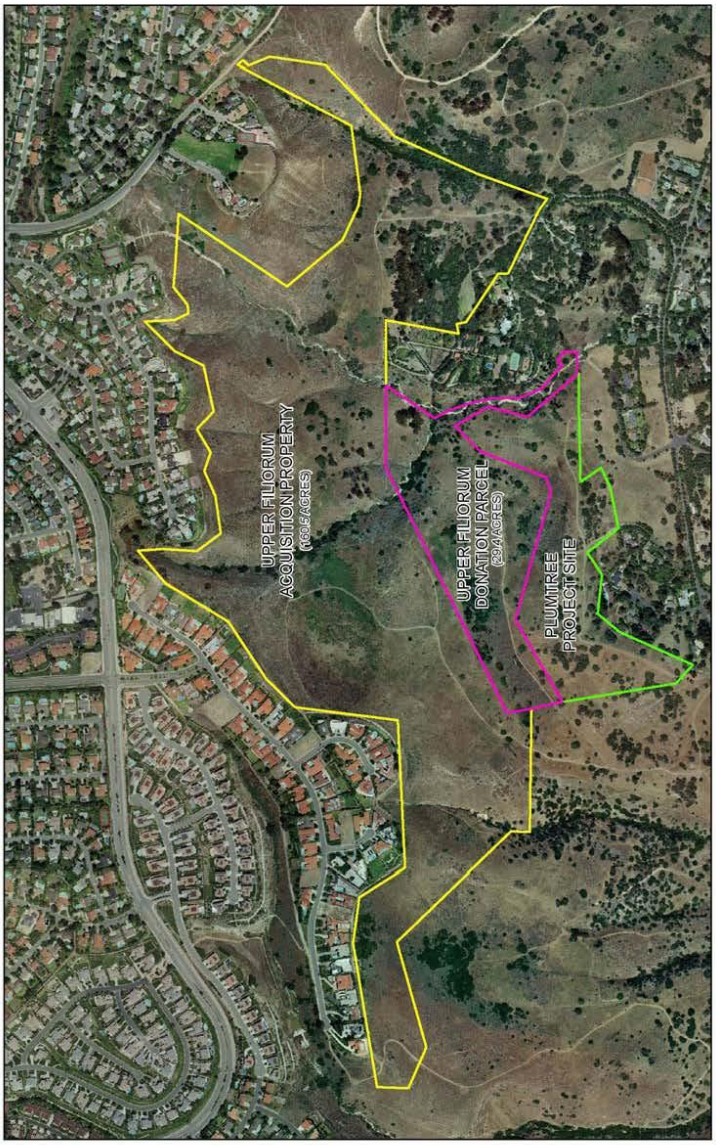
If you have any questions regarding this letter please contact Ken Corey at (760) 431-9440, extension 269.

Sincerely,

for Karen A. Goebel
Assistant Field Supervisor

cc
Joel Rojas, City of Rancho Palos Verdes, Rancho Palos Verdes, CA
Carol Lynch, Richards, Watson & Gershon, Los Angeles, CA
Owen P. Gross, Cox, Castle & Nicholson, LLP, Los Angeles, CA
Ronald Buss, Buss-Shelger Associates, Los Angeles, CA
David Mayer, California Department of Fish and Game, San Diego, CA

Figure 1


UPPER FILIORUM
ACQUISITION PROPERTY
(16.6 ACRES)
UPPER FILIORUM
DONATION PARCEL
(2.94 ACRES)
PLUMTREE
PROJECT SITE

Literature Cited:

Atwood, J. L., H. S. Tsai, C. A. Reynolds, and M. R. Fugagli. 1998. Distribution and population size of California gnatcatchers on the Palos Verdes Peninsula, 1993-1997. Western Birds 29:340-350.

Natural Resource Consultants. 2001. Results of focused coastal California gnatcatcher surveys on the approximately 234-acre Upper Filiorum site, located in the City of Rancho Palos Verdes, Los Angeles County, California

Natural Resource Consultants. 2007. Biological resources evaluation of the approximately 30-acre Plumtree site, City of Rancho Palos Verdes, Los Angeles County, California. Submitted to Carlsbad Fish and Wildlife Office June 25, 2007.

Natural Resource Consultants. 2008. Results of presence/absence surveys for the California gnatcatcher (*Polioptila californica californica*) on the approximately 30-acre Plumtree site, Rancho Palos Verdes, Los Angeles County, California.

Natural Resource Consultants. 2009. Results of presence/absence surveys for the California gnatcatcher (*Polioptila californica californica*) on the approximately 58-Acre Plumtree Site, Rancho Palos Verdes, Los Angeles County, California.

Natural Resource Consultants

August 14, 2007

Mr. Gary Weber
Weber Consulting
2024 North Broadway #202
Santa Ana, California 92706

SUBJECT: Biological Resources Evaluation of the Approximately 30-Acre Plumtree Site, City of Rancho Palos Verdes, Los Angeles County, California.

Dear Mr. Weber:

Natural Resource Consultants (NRC) was retained by York Long Point Associates to prepare a biological resources evaluation of the approximately 30-acre Plumtree site located in the City of Rancho Palos Verdes, Los Angeles County, California. The purpose of this evaluation is to document all biological resources present on the site and evaluate the potential for sensitive species to occur on the site. The following letter includes the methods, results and conclusions of NRC's 2007 evaluation.

SITE LOCATION & DESCRIPTION

The Plumtree site is situated high on the slopes of the Portuguese Bend area of the Palos Verdes peninsula, above Palos Verdes Drive South and Abalone Cove Park Shoreline Park (Exhibit 1). To the south of the site is Narcissa Drive within a residential community. An unimproved road provides access to much of the site (Exhibit 2). Rising above the site to the north and across to the west is undeveloped land. The eastern edge of the site is atop a small, steep canyon. Terrain on the site is comprised of moderate to steep slopes that rises from south to north. Elevations on the site range from approximately 440 feet above mean sea level (msl) in the southwestern corner to approximately 635 feet above msl in the northern portions of the site. The site is located at the confluence of the USGS 7.5' *Redondo Beach, Torrance,* and *San Pedro* topographic maps.

Vegetation communities on the site consist mostly of non-native annual grassland and non-native trees with two locations of disturbed coastal sage scrub. The site has been subject to periodic fire disturbance, the most recent of which occurred in 2006. NRC biologists documented that approximately 7 acres (23 percent) of the site had been burned by the fire.

THE CITY OF RANCHO PALOS VERDES NATURAL COMMUNITIES CONSERVATION PLAN (NCCP)

The CEQA Lead Agency for the Plumtree site is the City of Rancho Palos Verdes, a jurisdiction that has entered into an NCCP planning agreement with the California Department of Fish and Game (CDFG) and the U.S Fish and Wildlife Service (USFWS). On August 31, 2004, the City Council approved the City's NCCP Subarea Plan, certified the related NCCP EIR and conceptually approved the NCCP Implementing Agreement. However, formal approval of the NCCP documents by the resource agencies is still pending and is not expected to occur until late 2007. The Subarea Plan is intended to provide for the take of covered species and their habitats associated with developments. Take authorization is requested by the City for the following federally protected species: endangered Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*), endangered El Segundo blue butterfly (*Euphilotes battoides allyni*), threatened coastal California gnatcatcher (*Polioptila californica californica*), and endangered Lyon's pentachaeta (*Pentachaeta*

lyonii). Lyon's pentachaeta is the only species listed by the CDFG under the State ESA currently known to occur near this Subarea Plan Area. Take authorization is requested for eight additional covered species not currently listed under the State or Federal ESA that have specific known locations in the city and would have sufficient levels of conservation under this Subarea Plan. These species include the California Native Plant Society (CNPS) Lists 1B and List 4 plants and the cactus wren (*Campylorhynchus brunneicapillus*), a State Species of Concern (SSC) that is also a NCCP focal species.

The site is located immediately adjacent to the Upper Filiorum area of the City's NCCP preserve (Exhibit 3). The City intends to create a Public Use Master Plan (PUMP) that will guide land uses within and adjacent to this and other NCCP preserves. While this document was not available at the time this report was prepared, it was explicitly stated in the Subarea Plan that "all brush management and fuel modification requested by the L.A. County Fire Department for new development should occur outside the Reserve. Any new development adjacent to the Reserve that requires brush management within the Reserve shall mitigate impacts to CSS at a 3:1 mitigation ratio" (Page 3-23, URS 2004). As is the case in other NCCPs, the PUMP may provide other land uses restrictions, particularly to moderate edge effects that development can have on natural resources.

Field Studies and Analytical Methods

NRC's evaluation of the Plumtree site is based on four site visits conducted between May 18 and July 26, 2007. These surveys included general biological surveys and a focused search to determine the presence or absence of the federally-listed California gnatcatcher. Survey dates, times, weather conditions and personnel are summarized in Table I.

Table I. Survey Dates, Times, and Weather Conditions.

Date	Time	Biologists*	Weather Conditions	Reason for Survey**
5/18/07	1000-1130h	EK, CI	Overcast; light westerly breezes; 61 to 63°F.	CAGN/General
5/25/07	1000-1100h	EK, CI	Overcast to 75% cloud cover; light westerly breezes; 64 to 66°F.	CAGN/General
6/1/07	1000-1100h	EK, VT	Overcast to 95% cloud cover; light westerly breezes; 67 to 69°F.	CAGN/General
7/26/07	1230-1510h	EK, SR	Clear to 25% cloud cover; light westerly breezes; 71 to 80°F.	General/Plants

*Biologists: EK = Erik Kline, CI = Caroline Inwood, VT = Vanessa Tisdale, SR = Stephen Reynolds.
**Reason for Survey: CAGN = California gnatcatcher survey, Veg = Vegetation mapping, General = General survey, Plants = Sensitive plant survey.

General Biological Surveys

NRC conducted general biological surveys on the Plumtree site between May 18 and July 26, 2007. All areas of the site were covered on foot during these surveys. The surveys included vegetation mapping, photographic documentation of any significant resources, and detailed recording of all plant and wildlife species observed. Community boundaries were mapped using GIS and knowledge of the site from high resolution aerial photography. Prior to map finalization a poster-sized map was then brought into the field for final verification and field editing. The final map was then subsequently created in ArcGIS based on this field evaluation.

Sensitive Plant Surveys

A focused survey for sensitive plant species was conducted on July 26, 2007 by Stephen Reynolds with the assistance of Eric Kline. During this survey special emphasis was placed on detecting the presence of the southern California locoweed (*Astragalus trichopodes* var. *lonchus*) the larval host-plant of the federally

endangered Palos Verdes blue butterfly *(Glaucopsyche lygdamus palosverdesensi)*. This plant was not observed on the site. NRC biologists searched for other sensitive plant species during the July 2007 survey, however, the dessicated conditions on the site given the time of year, post fire conditions and the lack of rainfall made substantive plant surveys impractical. Sensitive plant surveys should be performed by NRC biologists during the spring to determine the presence of sensitive plants.

CALIFORNIA GNATCATCHER SURVEYS

NRC biologist Eric Kline (TE 110373-0) conducted protocol surveys for California gnatcatcher from May through June of 2007. These surveys followed the U.S. Fish and Wildlife Service (USFWS) protocols for conducting California gnatcatcher presence/absence surveys (USFWS 1997). The surveys covered all slope aspects, terrain and plant communities on the site with emphasis on coastal sage scrub vegetation.

GENERAL BIOLOGICAL CONDITIONS

This section discusses the general biological characteristics of the site, including vegetation communities, site disturbance, and diversity of plant and wildlife species present. This discussion is intended to provide the background for the sensitive species evaluation provided in the following section.

VEGETATION COMMUNITIES

The Plumtree site supports four types of vegetation communities as well as areas of developed and disturbed land. These vegetation communities include non-native grassland, non-native trees, disturbed coastal sage scrub and ruderal vegetation. The extent of these vegetation communities are summarized in Table II below and shown graphically in Exhibit 4.

TABLE II. EXTENT OF VEGETATION COMMUNITIES ON THE PLUMTREE SITE

Vegetation Community	Acreage
Non-native Grassland	19.7
Non-native Trees	5.8
Disturbed Coastal Sage Scrub	2.8
Ruderal	0.7
Disturbed	0.9
Developed	0.1
Total	**30.0**

Non-Native Grassland

Non-native grassland is the most extensive vegetation community on the site covering 19.7 acres (or 65.6 percent of the site). This vegetation community generally consists of invasive non-native grasses and mustards that are primarily of Mediterranean origin and which have become the dominant ground cover formation on disturbed sites throughout the western states. Dominant species found on the site include bromes (*Bromus madritensis* ssp. *rubens*, *B. hordeaceus*, *B. tectorum*), Mediterranean schismus (*Schismus barbatus*), and wild oats (*Avena barbata*, *A. fatua*). Herbaceous plants commonly observed in the grassland community were the introduced red-stemmed filaree (*Erodium cicutarium*), tocalote (*Centaurea melitensis*), and mustards (*Hirschfeldia incana*, *Brassica nigra*). It is estimated that the 2006 fire affected approximately 4.3 acres of this community. However this community type is known to be highly resistant to fire damage and is expected to reestablish rapidly.

Non-Native Trees

Non-native trees cover an estimated 5.8 acres (19.3 percent) of the site. The most common species are Peruvian pepper (*Schinus molle*), Brazilian pepper (*Schinus terebinthifolius*) and Aleppo pine (*Pinus halepensis*). Most of the mature trees within the fire area were not seriously affected with few specimens showing signs of permanent damage.

Disturbed Coastal Sage Scrub

The Plumtree site contains two discreet patches of disturbed coastal sage scrub which together total 2.8 acres or 9.3 percent of the site. Prior to the 2006 fire, the larger area of coastal sage scrub, located towards the center of the site, already showed evidence of disturbance from a previous fire which had affected shrub and allowed invasive annuals to become established. Both areas contained greater than 50% cover of non-native species and were therefore categorized as disturbed coastal sage scrub. The 2006 fire charred many of the remaining shrubs in that patch.

The dominant coastal sage scrub species in these areas include coast prickly pear (*Opuntia littoralis*), bush sunflower (*Encelia californica*), laurel sumac (*Malosoma laurina*), and lemonadeberry (*Rhus integrifolia*). Also present were California sagebrush (*Artemisia californica*), bladderpod (*Isomeris arorea*), and cane cholla (*Opuntia parryi*). Non-native weed species include black mustard (*Brassica nigra*), tocalote (*Centaurea melitensis*), and *Bromus* sp.

Ruderal

A single patch of ruderal vegetation (0.7 acres) is present in the eastern corner of the site. This area is dominated by tall, dense and in some areas almost impenetrable stands of fennel (*Foeniculum vulgare)* with little understory vegetation.

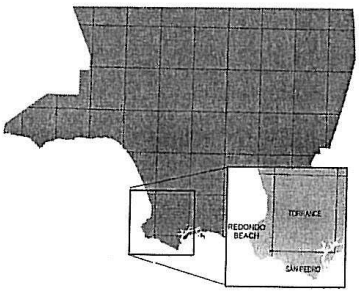
PLANT AND WILDLIFE DIVERSITY

As a result of recent fire disturbance the site lacks any significant plant and wildlife diversity. The majority of the site is composed of non-native grassland and non-native trees therefore many of the plant species documented during NRC's surveys were species commonly found in regularly disturbed areas or in association with human habitation. NRC documented the presence of 55 plant species and twenty wildlife species, complete lists of which can found in Appendix A and B respectively. Common wildlife species recorded on site include house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), rock pigeon (*Columba livia*) and mourning dove (*Zenaida macroura*). One sensitive wildlife species the cactus wren (*Campylorhynchus brunneicapillus*) was observed on-site within the central patch of disturbed coastal scrub.

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources include vegetation communities, plants and wildlife that are recognized by one or more local, state or federal agencies as being of significant conservation concern. While many governmental and non-governmental organizations create such status lists, we limit our analysis here to sensitivity designations that, when applied to a resource

FIGURE 1. REGIONAL STUDY AREA



present on a site, can affect the attainment of development entitlements. NRC's analysis of sensitive biological resources that could potentially occur on the site includes all records known to us of species that have occurred within the USGS 7.5' *Redondo Beach, Torrance and San Pedro* quadrangles. Our primary source for this information is the California Natural Diversity Database (CNDDB, CDFG 2007). Status designations are described in the following section of this report.

DESCRIPTION OF STATUS DESIGNATIONS

Federal Designations

Under the Federal Endangered Species Act (FESA), an **endangered species** is a species of invertebrate, plant, or wildlife formally recognized as facing extinction throughout all or a significant portion of its geographic range. A **threatened species** is recognized as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. "Take" of a federally endangered or threatened animal species or its habitat is generally prohibited by federal law without a special permit. "Take" of a federally endangered or threatened plant species on private property is generally not prohibited under the federal Endangered Species Act unless a federal action is involved. The term "take", under the federal ESA, means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct." "Harm" is defined by the USFWS to encompass "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR § 17.3).

State Designations

The State of California considers an **endangered species** one whose prospects of survival and reproduction are in immediate jeopardy; a **threatened species** is one present in such small numbers throughout its range that it is considered likely to become an endangered species in the near future in the absence of special protection or management; and a **rare species** is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. The designation "rare species" applies only to California native plants. State threatened and endangered species include both plants and wildlife, but do not include invertebrates. State threatened and endangered animal species are legally protected against "take" as this term is defined in the California ESA (California Fish & Game Code Section 2050 *et seq.*). State threatened and endangered plant species are regulated largely under the Native Plant Preservation Act in conjunction with the California ESA.

Species of special concern is an informal designation used by the California Department of Fish and Game (CDFG) for some declining wildlife species that are not officially listed as endangered, threatened, or rare (Jennings and Hayes, 1994; Remsen 1978; CDFG and PRBO, 2004; Williams, 1986). This designation does not provide legal protection, but signifies that these species are recognized as vulnerable by CDFG.

Species that are **California fully protected** include those protected by special legislation for various reasons, such as the white-tailed kite (*Elanus leucurus*).

The CNPS is a statewide resource conservation organization that has developed an inventory of California's special status plant species (Tibor, 2001). This inventory is a summary of information on the distribution, rarity, and endangerment of California's vascular plants. This rare plant inventory consists of four lists. CNPS presumes that **List 1A** plant species are extinct because they have not been seen in the wild for many years. CNPS considers **List 1B** plants as rare, threatened, or endangered throughout their range. **List 2** plant species are considered rare, threatened, or endangered in California, but more common elsewhere.

Plant species on lists 1A, 1B, and 2 typically meet CDFG criteria for endangered, threatened, or rare listing. Plant species for which CNPS requires additional information in order to properly evaluate their status are included on **List 3**. **List 4** plant species are those of limited distribution in California whose susceptibility to threat is considered low at this time.

SENSITIVE RESOURCES OCCURRING IN THE REGIONAL STUDY AREA

The CNDDB contains records of one sensitive community, 16 plant species and 14 wildlife species within the regional study area covered in this analysis (Exhibits 5 and 6). Of these, ten plant species and seven wildlife species have been determined absent from the site due to lack of available habitat to support them. A detailed list of these of these species is attached as Table III. The results of NRC's sensitive species surveys are described in the following sections.

Sensitive Plant Survey Results

No sensitive plant species have been observed on site, however, the dessicated conditions on the site given the time of year, post fire conditions and the lack of rainfall made substantive plant surveys impractical. Sensitive plant surveys should be performed by NRC biologists during the spring to determine the presence of sensitive plants.

Palos Verdes Blue Butterfly Host Plant Survey Results

The southern California locoweed, the larval host-plant of the Palos Verdes blue butterfly was documented on the site during surveys conducted for the NCCP (City of Rancho Palos Verdes 2004b). This species was not present on the site during NRC's July 2007 post-fire survey.

California Gnatcatcher Survey Results

No California gnatcatchers were observed on or adjacent to the site during the 2007 protocol gnatcatcher surveys. The site during the surveys was dry with little foliage expression on the native shrubs. The disturbed coastal sage scrub that previously existed on the site provided a low percent cover of native shrub species and provided only marginally suitable habitat for the California gnatcatcher.

OTHER SENSITIVE WILDLIFE SPECIES

A California Species of Special Concern and a focal species of the NCCP, a single coastal cactus wren was observed during NRC's surveys using the central disturbed coastal sage scrub patch.

If you have any questions or comments regarding this report, please contact me directly at 949.497.0931.

Sincerely,

NATURAL RESOURCE CONSULTANTS

Eric Kline
Project Ecologist

TABLE III. CNDDB SENSITIVE COMMUNITY AND SPECIES OCCURRENCES WITHIN THE REGIONAL STUDY AREA

The following table lists one sensitive vegetation community, sixteen sensitive plant species and fourteen sensitive wildlife species recorded within the USGS 7.5' *Redondo Beach, Torrance and San Pedro* quadrangles within the California Natural Diversity Database, or that have been recorded by NRC. Status (FED, CAL) and California Native Plant Society (CNPS) code definitions are provided at the end of the table.

Scientific Name	Common Name	FED	CAL	CNPS	NCCP	Notes
VEGETATION COMMUNITIES						
	Southern Coastal Bluff Scrub	—	—	—		—
PLANTS						
Aphanisma blitoides	Aphanisma	—	—	1B.2	Y	Not detected during NRC's focused survey.
Atriplex parishii	Parish's brittlescale	—	—	1B.1	N	Not present on the site. No habitat is present.
Atriplex pacifica	South Coast saltscale	—	—	1B.2	Y	Not detected during NRC's focused survey.
Atriplex serenana var. davidsonii	Davidson's saltscale	—	—	1B.2	N	Not detected during NRC's focused survey.
Centromadia parryi ssp. australis	Southern tarplant	—	—	1B.1	Y	Not present on the site. No habitat is present.
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	—	—	1B.1	N	Not present on the site. No habitat is present.
Cordylanthus maritimus ssp. maritimus	Salt marsh bird's-beak	E	E	1B.2	N	Not present on the site. No habitat is present.
Crossosoma californicum	Catalina crossosoma	—	—	1B.2	Y	Not present on the site. No habitat is present.
Dithyrea maritime	Beach spectaclepod	—	T	1B.1	N	Not present on the site. No habitat is present.
Dudleya virens ssp. insularis	Island green dudleya	—	—	1B.2	N	Not present on the site. No habitat is present.
Lycium brevipes var. hassei	Santa Catalina Island desert-thorn	—	—	1B.1	Y	Not detected during NRC's focused survey.
Navarretia prostrata	Prostrate navarretia	—	—	1B.1	N	Not present on the site. No habitat is present.
Nemacaulis denudata var. denudata	Coast woolly-heads	—	—	1B.2	N	Not present on the site. No habitat is present.
Pentachaeta lyonii	Lyon's pentachaeta	E	E	1B.1	Y	Not detected during NRC's focused survey.
Phacelia stellaris	Brand's phacelia	—	—	1B.1	N	Not detected during NRC's focused survey.
Suaeda esteroa	Estuary seablite	—	—	1B.2	N	Not present on the site. No habitat is present.
INVERTEBRATES						
Rhaphiomidas terminatus terminatus	El Segundo flower-loving fly	—	—		Y	Not detected during NRC's surveys.
Danaus plexippus	Monarch butterfly	—	—		N	Not detected during NRC's surveys.
Glaucopsyche lygdamus palosverdesensis	Palos Verdes blue butterfly	E			Y	Not detected during NRC's surveys.
Tryonia imitator	Mimic tryonia (California brackishwater snail)	—	—		N	Not present on the site. No habitat is present.
Cicindela hirticollis gravida	Sandy beach tiger beetle	—	—		N	Not present on the site. No habitat is present.
FISH						
Gila bicolor mohavensis	Mojave tui chub	E	E		N	Not present on the site. No habitat is present.
REPTILES						
Phrynosoma coronatum (blainvillii population)	Coast (San Diego) horned lizard	—	—		N	Not detected during NRC's surveys.
BIRDS						
Agelaius tricolor	Tricolored blackbird	—	SC		N	Not present on the site. No habitat is present.
Campylorhynchus brunneicapillus couesi	Coastal cactus Wren	—	SC		Y	Observed on the site.
Polioptila californica californica	Coastal California gnatcatcher	T	SC		Y	Not detected during NRC's focused survey.

Scientific Name	Common Name	FED	CAL	CNPS	NCCP	Notes
Sterna antillarum browni	California least tern	E	E		N	Not present on the site. No habitat is present.
MAMMALS						
Neotoma lepida intermedia	San Diego desert woodrat	—	SC		N	Not detected during NRC's surveys.
Nyctinomops femorasaccus	Pocketed free-tailed bat	—	SC		N	Not present on the site. No habitat is present.
Perognathus longimembris pacificus	Pacific pocketmouse	E	SC		N	Not present on the site. No habitat is present.

FED (Federal Status)

FE: Species designated as Endangered under the Federal Endangered Species Act. Endangered = "any species in danger of extinction throughout all or a significant portion of its range."

FT: Species designated as Threatened under the Federal Endangered Species Act. Threatened = "species likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range."

FPE: Proposed for federal listing as Endangered.

FPT: Proposed for federal listing as Threatened.

SOC: Species of Concern

CAL (California Status)

ST: Threatened = "a species that, although not Detectedly Threatened with extinction, is likely to become an Endangered species in the foreseeable future in the absence of the special protection and management efforts required by this Act (California Endangered Species Act)."

SE: Endangered = "a species is endangered when its prospects of survival and reproduction are in immediate jeopardy from one or more causes."

SC: Species of Special Concern.

FP: Fully Protected

CNPS (California Native Plant Society)

1A Plants Presumed Extinct in California

1B Plants Rare, Threatened, or Endangered in California and Elsewhere

2 Plants Rare, Threatened, or Endangered in California But More Common Elsewhere

3 Plants About Which We Need More Information- A Review List

4 Plants of Limited Distribution - A Watch List

NCCP (City of Rancho Palos Verdes)

Y Proposed covered species under the Subarea plan

N Not covered by the Subarea plan

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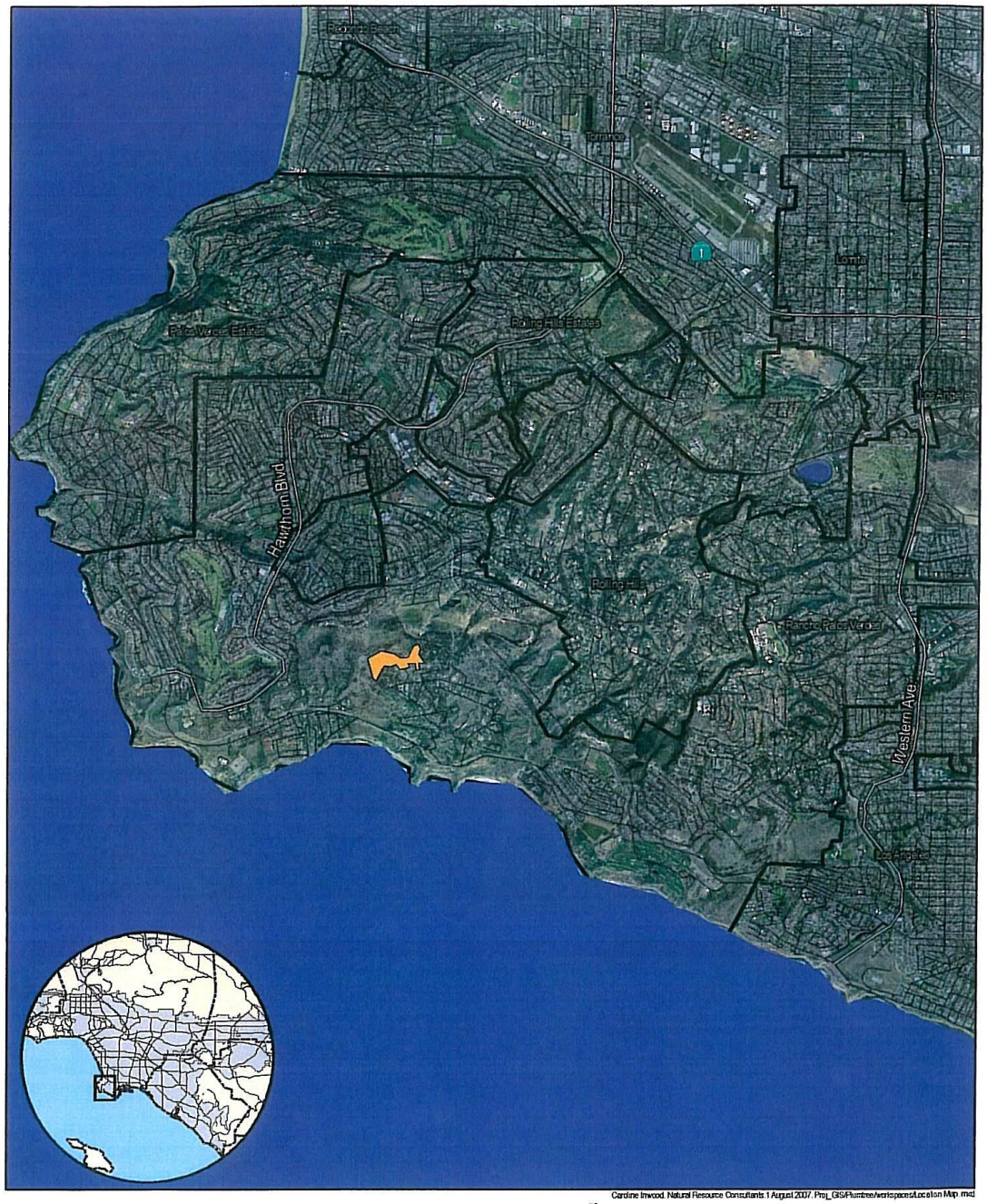


EXHIBIT 1: LOCATION MAP
PLUMTREE | RANCHO PALOS VERDES, LOS ANGELES COUNTY



EXHIBIT 2: SITE MAP
PLUMTREE | RANCHO PALOS VERDES, LOS ANGELES COUNTY

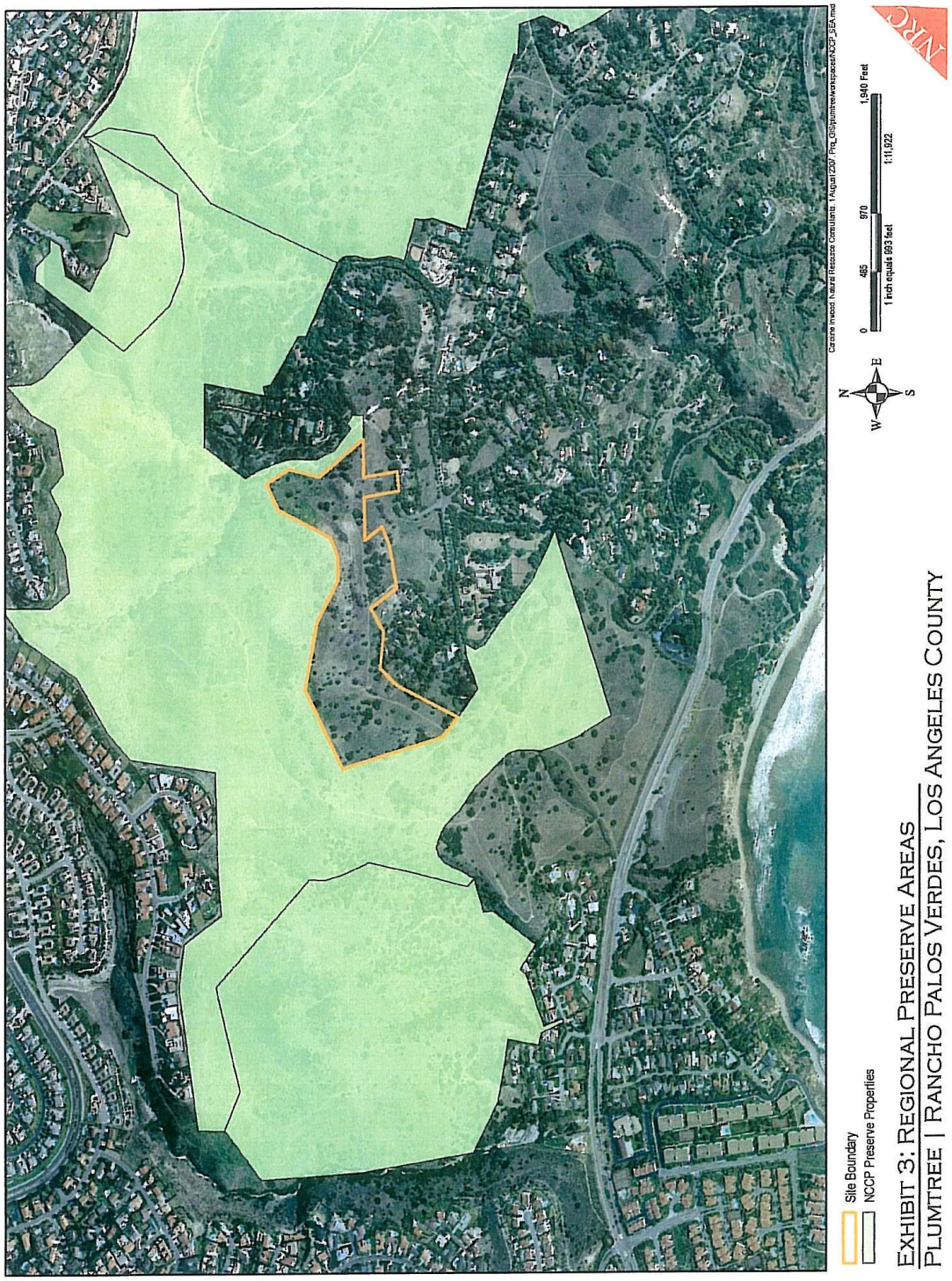


EXHIBIT 3: REGIONAL PRESERVE AREAS
PLUMTREE | RANCHO PALOS VERDES, LOS ANGELES COUNTY

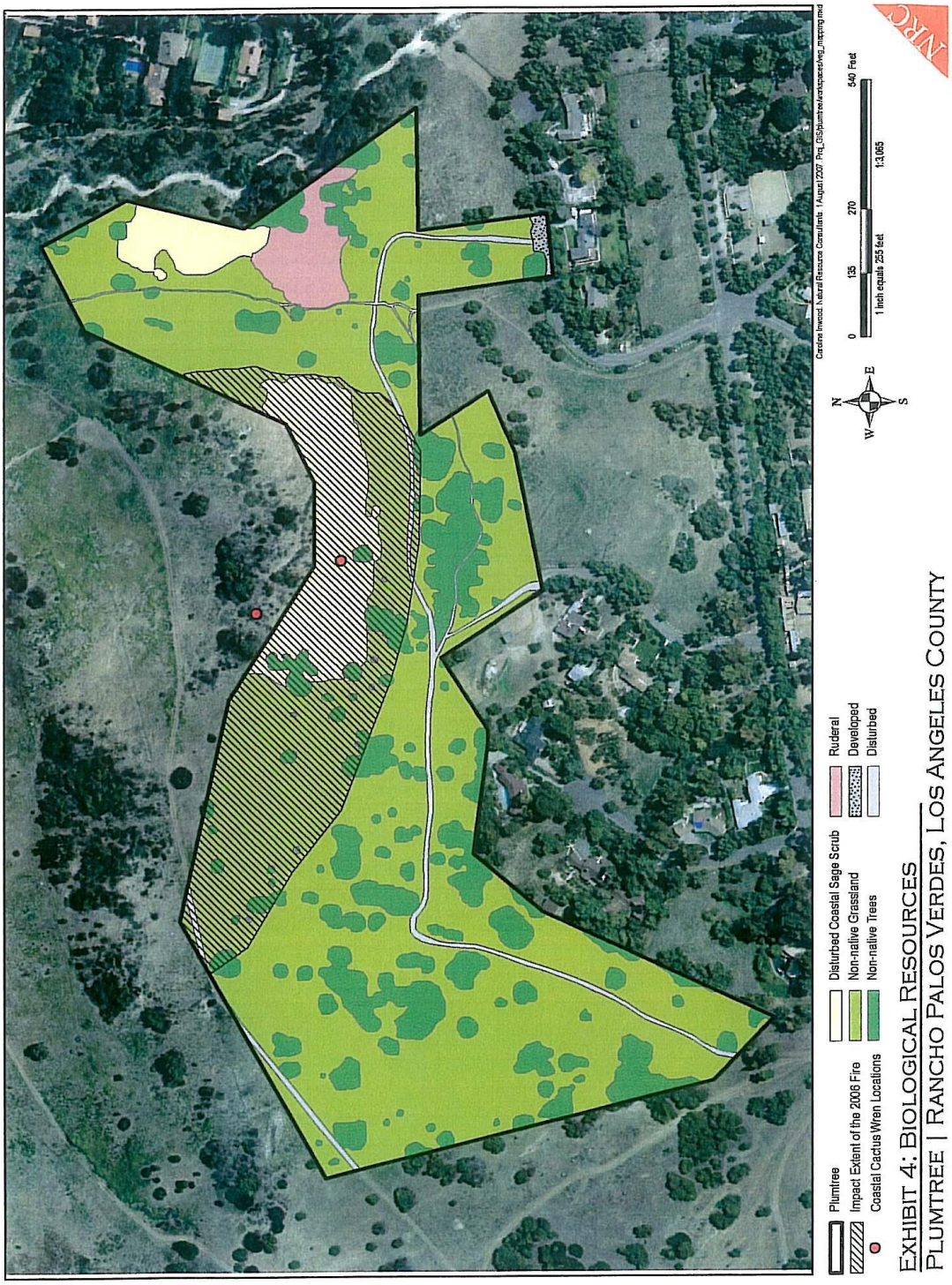


EXHIBIT 4: BIOLOGICAL RESOURCES
PLUMTREE | RANCHO PALOS VERDES, LOS ANGELES COUNTY

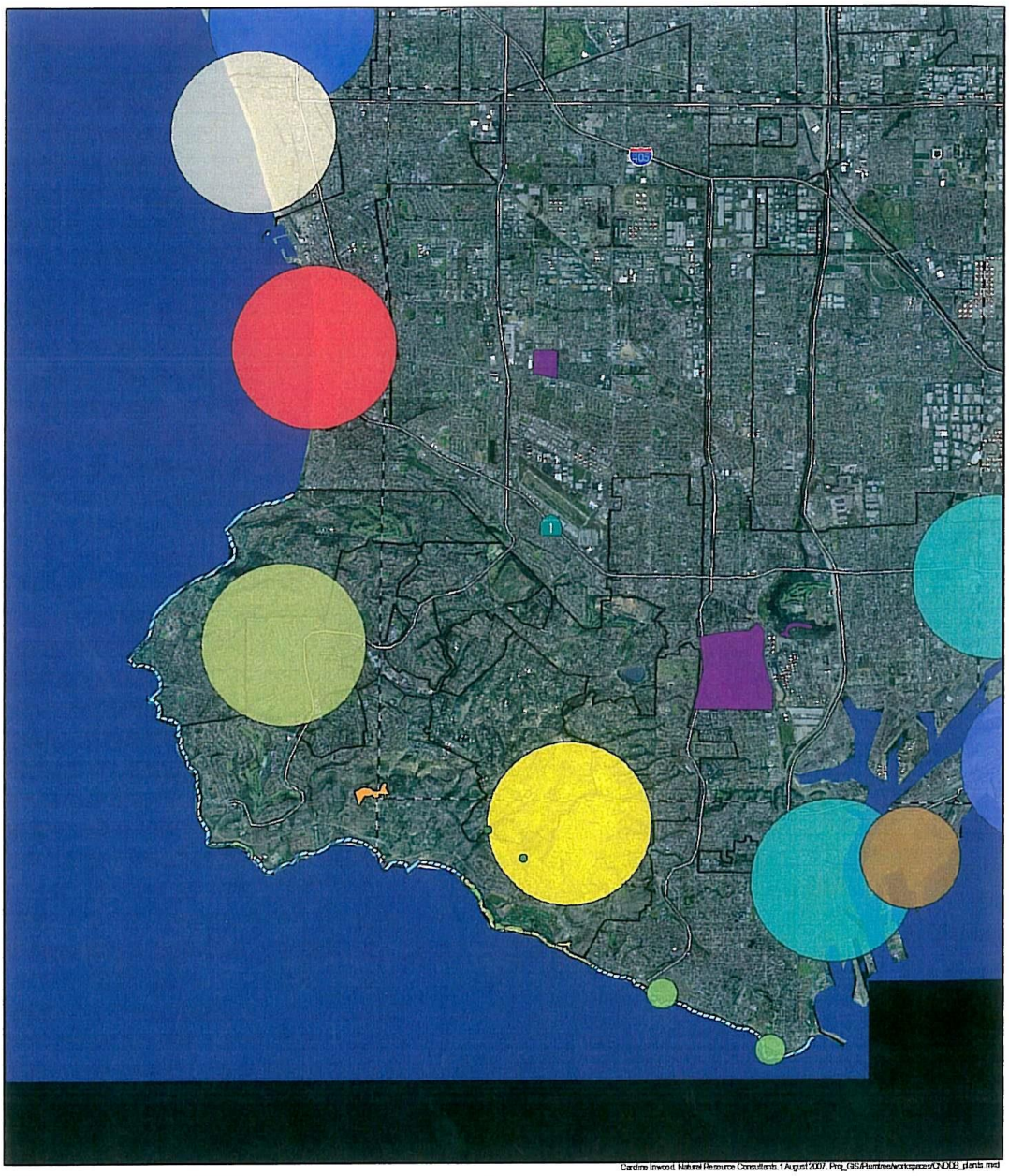


EXHIBIT 5: CNDDB SENSITIVE PLANT OCCURENCES
PLUMTREE | RANCHO PALOS VERDES, LOS ANGELES COUNTY



EXHIBIT 6: CNDDB SENSITIVE WILDLIFE OCCURENCES
PLUMTREE | RANCHO PALOS VERDES, LOS ANGELES COUNTY

APPENDIX A.
VERTEBRATE FAUNAL COMPENDIUM
Plumtree

The following table depicts all vertebrate wildlife species observed on the site during surveys performed by Natural Resource Consultants. The table shows the species' common name, scientific name, status as an introduced or native species, and listing status under the federal and state endangered species acts, protected status under California statutes, and species of concern status as determined by CDFG. Code definitions are presented at the bottom of the page.

Common Name	Scientific Name	Native/Intro	FESA	CESA	CAL	CDFG
	AVES					
	APODIFORMES					
	TROCHILIDAE					
Anna's Hummingbird	*Calypte anna*	Native				
	COLUMBIFORMES					
	COLUMBIDAE					
Rock Pigeon	*Columba livia*	Introduced				
Mourning Dove	*Zenaida macroura*	Native				
	FALCONIFORMES					
	ACCIPITRIDAE					
Red-tailed Hawk	*Buteo jamaicensis*	Native				
	PASSERIFORMES					
	AEGITHALIDAE					
Bushtit	*Psaltriparus minimus*	Native				
	CORVIDAE					
Common Raven	*Corvus corax*	Native				
Western Scrub-Jay	*Aphelocoma californica*	Native				
	EMBERIZIDAE					
California Towhee	*Pipilo crissalis*	Native				
	FRINGILLIDAE					
House Finch	*Carpodacus mexicanus*	Native				
Lesser Goldfinch	*Carduelis psaltria*	Native				
	MIMIDAE					
Northern Mockingbird	*Mimus polyglottos*	Native				
	REGULIDAE					
Ruby-crowned Kinglet	*Regulus calendula*	Native				
	TROGLODYTIDAE					
Bewick's Wren	*Thryomanes bewickii*	Native				
Cactus Wren	*Campylorhynchus brunneicapillus*	Native				SC

E = Endangered, T = Threatened, FC = Federal Candidate for Listing, CFP = California Fully Protected, CP = California Protected, SC = Species of Concern.

Report generated by Natural Resource Consultants' NRC_DB v1.0 on Wednesday, August 08, 2007

Page 1 of 2

Common Name	Scientific Name	Native/Intro	FESA	CESA	CAL	CDFG
	TYRANNIDAE					
Cassin's Kingbird	*Tyrannus vociferans*	Native				
Ash-throated Flycatcher	*Myiarchus cinerascens*	Native				
Pacific-slope Flycatcher	*Empidonax difficilis*	Native				
Olive-sided Flycatcher	*Contopus cooperi*	Native				
	MAMMALIA					
	LAGOMORPHA					
	LEPORIDAE					
Desert Cottontail	*Sylvilagus audubonii*	Native				
	REPTILIA					
	SQUAMATA					
	PHRYNOSOMATIDAE					
Western Fence Lizard	*Sceloporus occidentalis*	Native				

E = Endangered, T = Threatened, FC = Federal Candidate for Listing, CFP = California Fully Protected, CP = California Protected, SC = Species of Concern.

Report generated by Natural Resource Consultants' NRC_DB v1.0 on Wednesday, August 08, 2007

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APPENDIX B.
FLORAL COMPENDIUM
Plumtree

The following table depicts all plant species observed on the site during surveys performed by Natural Resource Consultants. The table shows the species' common name, scientific name and growth habit.

Scientific Name	Common Name	Growth Habit
	Aizoaceae	
Carpobrotus chilensis	sea fig	Perennial herb
	Amaranthaceae	
Amaranthus blitoides	mat amaranth+ Prostrate pigweed	Annual herb
	Anacardiaceae	
Schinus terebinthifolius	Brazilian pepper tree	Tree+ Shrub
Schinus molle	Peruvian pepper tree	Tree
Rhus ovata	sugar bush+ sugar sumac	Shrub
Rhus integrifolia	lemonade berry+ lemonade sumac	Shrub
Malosma laurina	laurel sumac+ laurel sumac	Tree+ Shrub
	Apiaceae	
Foeniculum vulgare	fennel+ sweet fennel	Perennial herb
	Asteraceae	
Rafinesquia californica	California chicory+ California plumseed	Annual herb
Helianthus annuus	common sunflower+ Sunflower	Annual herb
Gnaphalium canescens	everlasting cudweed	Perennial herb
Encelia californica	California encelia+ California encelia	Shrub
Deinandra	various tarweed spp.	
Centaurea melitensis	tocalote+ Maltese star thistle+ Napa star thistle	Annual herb
Stephanomeria virgata	virgate stephanomeria+ Tall stephanomeria	Annual herb
Lactuca serriola	prickly lettuce+ prickly lettuce	Annual herb
Isocoma acradenia	alkali goldenbush+ alkali jimmyweed+ Desert isocoma	Shrub
Baccharis pilularis	coyote brush	Shrub
Artemisia californica	California sagebrush+ Coast sagebrush	Shrub
Stephanomeria exigua	small wirelettuce	Annual herb
	Brassicaceae	
Hirschfeldia incana	shortpod mustard	Perennial herb
Raphanus sativus	wild radish	Annual+ Biennial herb
Brassica nigra	black mustard	Annual herb
	Cactaceae	
Opuntia ficus-indica	tuna+ tuna cactus	Shrub (stem succulent)

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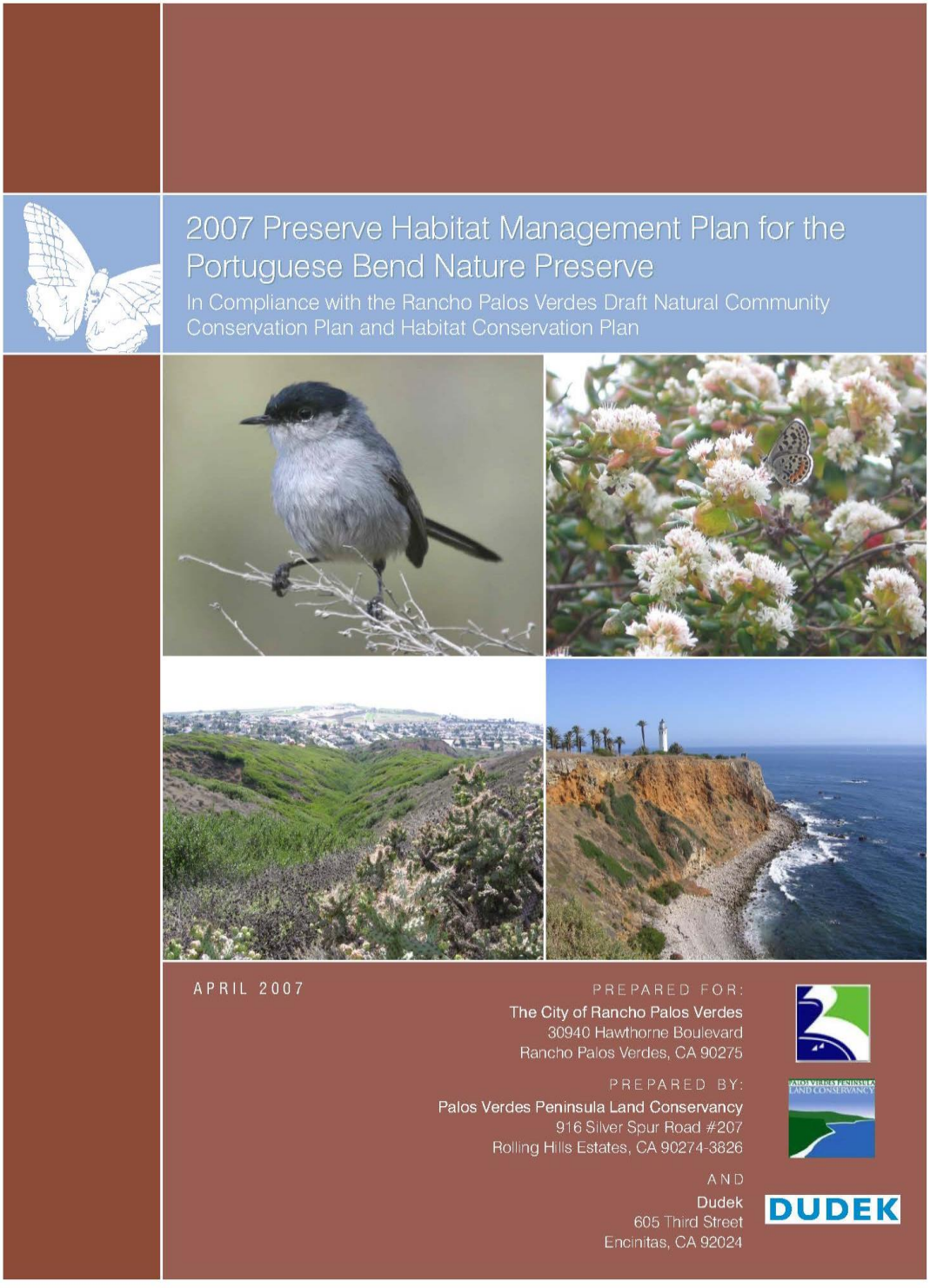
Page 1 of 3

Scientific Name	Common Name	Growth Habit
Opuntia prolifera	cholla+ coastal cholla	Shrub (stem succulent)
Opuntia littoralis	coast prickly-pear+ Western prickly pear	Shrub (stem succulent)
	Capparaceae	
Isomeris arborea	bladderpod+ Coastal bladderpod	Shrub
	Chenopodiaceae	
Salsola tragus	tumbleweed+ Russianthistle	Annual herb
	Convolvulaceae	
Convolvulus arvensis	field bindweed	Perennial herb+ Vine
	Cucurbitaceae	
Marah macrocarpus	southern wild-cucumber	Perennial herb+ Vine
	Cuscutaceae	
Cuscuta californica	California dodder	nual herb+ Vine (parasit
	Euphorbiaceae	
Eremocarpus setigerus	turkey mullein	Annual herb
Chamaesyce albomarginata	rattlesnake weed	Perennial herb
	Fabaceae	
Astragalus douglasii	Jacumba milk-vetch	Perennial herb
Acacia farnesiana var. farnesiana	sweet acacia	Tree
Acacia cyclops	coastal wattle+ cyclops acacia	Shrub
Lotus scoparius	deerweed+ common deerweed	Perennial herb
	Geraniaceae	
Erodium cicutarium	red-stemmed filaree+ Redstem filaree	Annual herb
	Lamiaceae	
Marrubium vulgare	horehound	Perennial herb
Salvia leucophylla	purple sage	Shrub
	Malvaceae	
Malva parviflora	cheeseweed+ cheeseweed mallow	Annual herb
	Nyctaginaceae	
Mirabilis californica	California four o'clock+ California four o'clock	Perennial herb
	Pinaceae	
Pinus haleppensis	Aleppo pine	Tree
	Plumbaginaceae	
Limonium perezii	Canarian sea-lavender	Perennial herb
	Poaceae	
Avena fatua	wild oats+ Common wild oats	Annual herb
Hordeum murinum	foxtail barley+ mouse barley	Annual herb

Scientific Name	Common Name	Growth Habit
Schismus barbatus	common Mediterranean grass	Annual herb
Bromus diandrus	ripgut brome+ Ripgut	Annual herb
Bromus madritensis	foxtail chess+ Spanish brome	Annual herb
Pennisetum setaceum	crimson fountaingrass+ Fountaingrass	Perennial herb
Nassella lepida	small-flowered needlegrass+ tussockgrass+ Foothill sti	Perennial herb
	Polygonaceae	
Eriogonum cinereum	coastal buckwheat+ Grey coast eriogonum	Shrub
Eriogonum fasciculatum	California buckwheat+ California buckwheat	Shrub
	Rosaceae	
Heteromeles arbutifolia	toyon+ Toyon+ christmas berry	Shrub
	Solanaceae	
Nicotiana glauca	tree tobacco	Tree+ Shrub

APPENDIX H

Initial Preserve Habitat Management Plan


2007 Preserve Habitat Management Plan for the Portuguese Bend Nature Preserve
In Compliance with the Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan
APRIL 2007
PREPARED FOR:
The City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275
PREPARED BY:
Palos Verdes Peninsula Land Conservancy
916 Silver Spur Road #207
Rolling Hills Estates, CA 90274-3826
AND
Dudek
605 Third Street
Encinitas, CA 92024
DUDEK

Preserve Habitat Management Plan (PHMP) for the Portuguese Bend Nature Preserve

EXECUTIVE SUMMARY

This initial Preserve Habitat Management Plan (PHMP) for the Portuguese Bend Nature Preserve (PBNP) was prepared in accordance with requirements of the Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan (Draft NCCP/HCP). The initial PHMP consists of numerous subsidiary plans and reports (described below) which have been reviewed and approved by the City of Rancho Palos Verdes, the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

This initial PHMP consists of four plans and reports (*Table 1*), including an Initial Management and Monitoring Report (IMMR), a Predator Control Plan (PCP), a Habitat Restoration Plan (HRP) and a Targeted Exotic Removal Program for Plants (TERPP). A brief description of each is provided below; however, specific details about each of the plans and reports can be found within those documents, included herein.

TABLE 1
PHMP Report and Plan Submittals

Type of Preserve Activity	Initial Plans/Reports	Annual Submittals (due October 1)	Every Third Year Submittals (due October 1)
Species Monitoring	Initial Management and Monitoring Report (IMMR)	Draft NCCP/HCP-Covered Plant Species Monitoring Report	Comprehensive Management and Monitoring Report
Predator Control	Predator Control Plan (PCP)		Updated PCP
Habitat Restoration	Habitat Restoration Plan (HRP)	HRP Annual Monitoring Report	Updated HRP
Exotic Plant Removal	Targeted Exotic Removal Program for Plants (TERPP)	TERPP Status Report	
Habitat Tracking		Habitat Tracking Report	

In addition to the initial plans and reports, the following are to be submitted annually (following the initial PHMP submittal), including the HRP annual monitoring report, TERPP status report, Covered Plant Species Monitoring Report and Habitat Tracking Report (*Table 1*). Every three years, the PHMP requires a Comprehensive Management and Monitoring Report, an updated PCP and an updated HRP. Each of the reports and updated plans are due by October 1.

Preserve Habitat Management Plan (PHMP) for the Portuguese Bend Nature Preserve

The IMMR includes the results of the focused surveys for Draft NCCP/HCP-covered plant and wildlife species and is included in *Section 1* of this document. It was prepared to document the results of the initial focused surveys for Draft NCCP/HCP-covered plant and wildlife species within the PBNP, identify potential disturbance factors/threats to Draft NCCP/HCP-covered plant and wildlife species, and to make management recommendations for the preservation of the existing Draft NCCP/HCP-covered plant and wildlife species populations. Other special-status plant and wildlife species were also documented if observed on site.

The PCP describes potential provisions for control of predators to wildlife within the PBNP and is included in *Section 2*. It provides the framework for the pet/feral animal education program, the education program regarding native predators, and establishes the parameters for monitoring for feral or domestic animals, native large predators and mesopredators.

The HRP (located in *Section 3*) identifies a 15-acre site within the Alta Vicente Ecological Reserve in the PBNP as the proposed location for the first three-year habitat restoration project in accordance with the requirements of the Draft NCCP/HCP. It includes the restoration implementation strategy and provides guidelines for the establishment of coastal sage scrub, coastal cactus scrub, and butterfly habitat. It also presents information on the project location and work descriptions, planting recommendations, maintenance requirements, monitoring methodology and revegetation success criteria. According to the HRP, the primary functional goal of the restored coastal sage scrub, cactus scrub, and butterfly habitats is to restore vegetation that contains a diversity of native coastal sage scrub and cactus scrub plant species that provide habitat value for sensitive wildlife species.

And finally, the TERPP provides details regarding the prioritization of exotic plant control within the PBNP and is located in *Section 4*. It describes the methodology of the proposed TERPP, wherein each year exotic plants on five acres or 20 individual sites are to be removed to have a beneficial effect on the habitat in the area.

2006 Initial Management and Monitoring Report

2006 INITIAL MANAGEMENT AND MONITORING REPORT for the RANCHO PALOS VERDES DRAFT NATURAL COMMUNITY CONSERVATION PLAN AND HABITAT CONSERVATION PLAN

Prepared for:

THE CITY OF RANCHO PALOS VERDES
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

On behalf of:

Palos Verdes Peninsula Land Conservancy
916 Silver Spur Road #207
Rolling Hills Estates, CA 90274-3826
Contact: Andrea Vona
(310) 541-7613

Prepared by:

DUDEK
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Encinitas, CA 92024
Contact: Andy Thomson
(760) 479-4282

APRIL 2007

2006 Initial Management and Monitoring Report for the
Rancho Palos Verdes Draft NCCP/HCP

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Rancho Palos Verdes Draft NCCP/HCP

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Rancho Palos Verdes Draft NCCP/HCP

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2006 Initial Management and Monitoring Report for the Rancho Palos Verdes Draft NCCP/HCP

1.0 INTRODUCTION

This Initial Management and Monitoring Report (IMMR) for the Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan (Draft NCCP/HCP) was prepared by Dudek to document the results of the initial focused surveys for Draft NCCP/HCP-covered plant and wildlife species within the Portuguese Bend Nature Preserve (PBNP), identify potential disturbance factors/threats to Draft NCCP/HCP-covered plant and wildlife species, and to make management recommendations for the preservation of the existing Draft NCCP/HCP-covered plant and wildlife species populations. Other special-status plant and wildlife species were also documented if observed on site. This report was prepared in accordance with the requirements of the Draft NCCP/HCP (URS 2006) for the City of Rancho Palos Verdes, California (City).

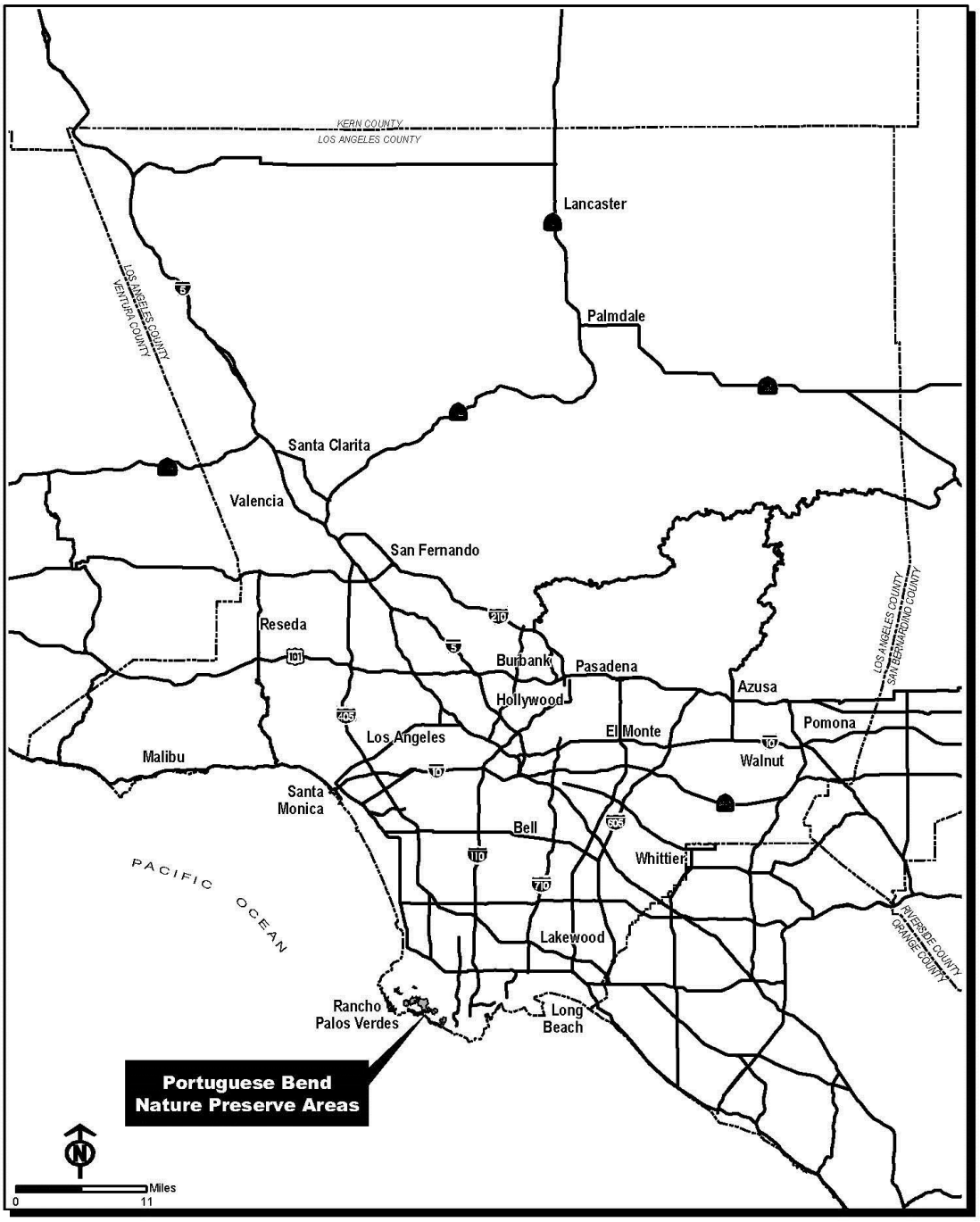
As of the writing of this plan, the Draft NCCP/HCP Implementing Agreement has not been signed by the regulatory agencies, and therefore, the Draft NCCP/HCP is technically not officially executed. However, the City and the Palos Verdes Peninsula Land Conservancy (PVPLC) are continuing to coordinate with the resource agencies to complete this plan.

The Draft NCCP/HCP was prepared to "maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the City and region pursuant to the requirements of the NCCP Act and Section 10(a) of the ESA (URS 2004a)." As a primary component of the Plan, a Reserve design was proposed to conserve regionally important habitat areas and provide habitat linkages in order to benefit sensitive plants and wildlife.

2.0 SITE DESCRIPTION

The PBNP is located on the southern side of the Palos Verdes Peninsula, north of the Pacific Ocean in the City of Rancho Palos Verdes, California (*Figures 1* and *2*). The approximately 1,428-acre survey area lies in unsectioned lands in the following U.S. Geological Survey (USGS) 7.5 minute topographic maps: Redondo Beach, San Pedro, Torrance and Rancho Palos Verdes quadrangles; Township 5 South, Range 14 West and 15 West.

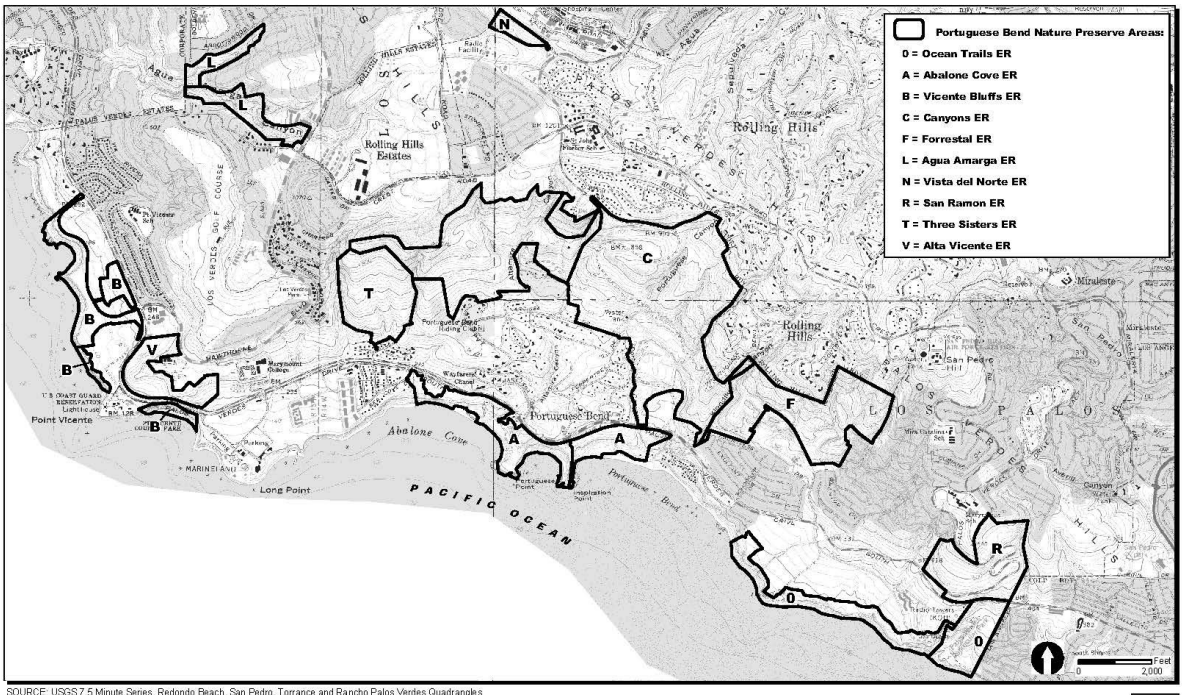
The PBNP has been divided into ten Ecological Reserve (ER) areas, including Agua Amarga (Area L), Vicente Bluffs (Area B), Alta Vicente (Area V), Three Sisters (Area T), Abalone Cove (Area A), Canyons (Area C), Forrestal (Area F), Ocean Trails (Area O), San Ramon (Area R), and Vista del Norte (Area N) (*Figure 2*). Topography is diverse, ranging from relatively flat



Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report

Regional Map

FIGURE 1



SOURCE: USGS 7.5 Minute Series, Redondo Beach, San Pedro, Torrance and Rancho Palos Verdes Quadrangles

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report

FIGURE 2

Vicinity Map

lowland areas in the south, above steep coastal bluffs, to very steep slopes, ridgelines, and gullies on the slopes to the north. Elevations range from approximately sea level along the coastal edges of Areas B, A, and O to approximately 1,300 feet above mean sea level at the northernmost parcel, Area N (*Figure 2*). Adjacent land uses include single-family residences on most sides, open space associated with neutral lands on the peninsula that are under investigation for purchase by the PVPLC, 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 study area.

2.1 Plant Communities and Land Covers

Plant communities and land covers within the PBNP are representative of those found in this region. Vegetation mapping and coastal California gnatcatcher (*Polioptila californica californica*) (CAGN) and cactus wren (*Campylorhynchus brunneicapillus*) (CAWR) distribution data of the Peninsula used in the Draft NCCP/HCP were prepared by Atwood et al. (1994) and updated and verified by Ogden (1999). Plant community classification in the Draft NCCP/HCP generally follows Holland (1986), with some minor adaptations following Sawyer and Keeler-Wolf (1995). Plant communities and land covers within the PBNP include coastal sage scrub (and coastal sage scrub sub-associations), southern cactus scrub, saltbush scrub, southern coastal bluff scrub, grassland, riparian scrub, exotic woodland, disturbed vegetation, cliff faces and rocky shores, disturbed areas, agriculture and developed areas.

2.2 Geology and Soils

The area is an old marine terrace with relatively steep eroded canyons which drain southwesterly into the Pacific Ocean. According to the Report and General Soil Map for Los Angeles County (USDA 1967), two soil types occur within the study area; the Diablo–Altamont association (2 percent–9 percent slopes), and the Altamont–Diablo association (30 percent–50 percent slopes). Soils of the Diablo–Altamont association occur on gently sloping to rolling foothills throughout the Los Angeles basin as far north as Point Dume. Diablo soils are 22 to 52 inches deep, are well drained, and have slow subsoil permeability. Altamont soils are 24 to 36 inches deep, are well drained, and have slow subsoil permeability. They have dark brown, neutral, clay surface layers about 12 inches thick underlain by a brown, calcareous clay subsoil. The Diablo–Altamont association is comprised of approximately 60 percent Diablo soils, 30 percent Altamont soils, and 5 percent each of Cropley and San Benito soils. Cropley soils are over 60 inches deep, are well-drained, and have slow subsoil permeability. San Benito soils are 36 to 48 inches deep, are well drained, and have moderately slow subsoil permeability. The Altamont–Diablo association is comprised of approximately 60 percent Altamont soils, 30 percent Diablo soils, and 10 percent San Benito soils.

2006 Initial Management and Monitoring Report for the Rancho Palos Verdes Draft NCCP/HCP

3.0 SURVEY METHODS

The 2006 botanical and wildlife surveys that form the basis of the initial baseline information were focused on documenting the presence and monitoring the status of Draft NCCP/HCP-covered plant and wildlife species. Additional sensitive plant and wildlife species and host plants for Draft NCCP/HCP-covered butterfly species were also documented during the surveys. Collectively, Draft NCCP/HCP-covered species, additional sensitive plant species, and host plant species for Draft NCCP/HCP-covered butterfly species are termed special-interest plant species in this report. Data regarding additional non-covered botanical and wildlife resources potentially present within the PBNP were obtained through a review of the pertinent literature, field reconnaissance, and focused surveys for special-interest species, with varying levels of specificity; all of which are described below.

3.1 Literature Review

Special-interest botanical and wildlife resources present or potentially present within the PBNP were identified through a literature search using the following sources: California Natural Diversity Database (CNDDB) (California Department of Fish and Game [CDFG] 2005), the CDFG Special Animals List (Accessed April 15, 2006 from http://www.dfg.ca.gov/whdab/pdfs/SPAnimals.pdf), local botanical resources including multi-year botanical surveys conducted by local botanist, Angelika Brinkmann-Busi, and California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants (2001) including any revisions provided on http://www.cnps.org/inventory (Accessed April 2006). General information regarding vegetation communities was obtained from Holland (1986) and Sawyer and Keeler-Wolf (1995). Plant species nomenclature follows Hickman (1993).

General information regarding wildlife species present in the region was obtained from Garrett and Dunn (1981) for birds, Hall (1981) for mammals, Stebbins (2003) for reptiles and amphibians, and Emmel and Emmel (1973) for butterflies.

In addition to these general documents referenced for botanical and wildlife resources potentially present, the Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan (URS 2006), the Final Environmental Impact Report for the Rancho Palos Verdes Natural Communities Conservation Planning Subarea Plan (URS 2004b) and the Rancho Palos Verdes Natural Communities Conservation Planning Subarea Plan (URS 2004a) were reviewed to identify known locations of Draft NCCP/HCP-covered species and to determine habitat preferences and species characteristics prior to the 2006 surveys.

3.2 Field Reconnaissance Methods

Botanical and wildlife surveys were conducted by Dudek staff biologists with assistance provided by biological staff from the PVPLC, independent botanist Angelika Brinkmann-Busi, lepidopterist Dr. Gordon F. Pratt and his assistant, Cecilia L. Pierce. All surveys were conducted on foot. All plant and wildlife species encountered during the field surveys were identified and recorded for inclusion in *Appendix A* and *B*, respectively. Latin and common names of plants follow *The Jepson Manual* (Hickman 1993) or other recent published taxonomic treatments. Where not listed in Hickman (1993), common names of plants were taken from Abrams (1923). Where not found in this reference, a variety of sources were used (e.g., Abrams 1923, Dale 1986, or Roberts 1998). For wildlife, resources for Latin and common names follow Garrett and Dunn (1981) for birds, Hall (1981) for mammals, Stebbins (2003) for reptiles and amphibians, and Emmel and Emmel (1973) for butterflies.

3.2.1 Botanical Surveys

Botanical surveys of the site were conducted between early May and mid-October of 2006 in accordance with the schedule provided in *Table 1* below. Surveys were conducted by Dudek biologists Andrew C. Thomson (ACT), Colin K. Khoury (CKK), and Douglas A. Gettinger (DAG) and by independent botanist Angelika Brinkmann-Busi (AB) with assistance from PVPLC biologist Andrea Vona (AV). Surveys focused on the identification and location of Draft NCCP/HCP-covered plant species and host plants for Draft NCCP/HCP-covered butterfly species. Additional sensitive plant species incidentally observed during surveys were also recorded (*Figures 3* and *4a–4m*).

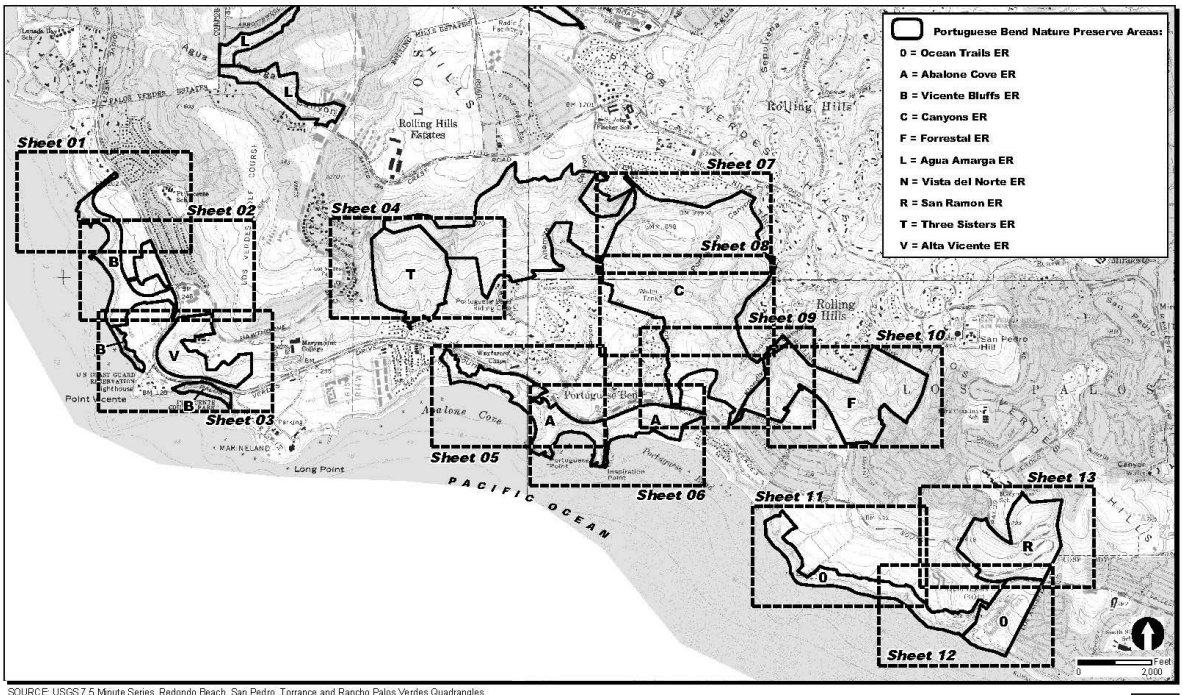
Sensitive plant species are those species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes. This includes those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates and species on the *CNPS Inventory of Rare and Endangered Plants of California* (CNPS 2001) or CNPS online inventory (http://www.cnps.org/inventory).

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TABLE 1
2006 Plant Survey Schedule and Personnel – Portuguese Bend Nature Preserve

Date	Biologists	Survey Area
5/4/06	AB	V
5/8/06	AB	V,A
5/10/06	AB	F
5/11/06	AB	A
5/18/06	AB	A,F
5/22/06	ACT, DAG	R
5/23/06	ACT, DAG	O
5/24/06 to 5/25/06	ACT	O
6/23/06	ACT, CKK	A
6/26/06	AB	F
6/28/06	AB	T
6/30/06	AB	F
6/30/06	ACT, AV, ABB	A, B
7/3/06	AB	T
7/5/06	ACT	B
7/18/06	ACT	B
7/20/06	AB	P
7/21/06	DAG	O
07/25/06	AB	P
07/26/06	AB	P
08/02/06	AB	F
08/04/06	AB	F
08/07/06	AB	T
08/10/06	AB	P
08/11/06	AB	P
10/12/06	DAG	O

The Draft NCCP/HCP includes a total of six covered plant species, including aphanisma (*Aphanisma blitoides*), south coast saltscale (*Atriplex pacifica*), Catalina crossosoma (*Crossosoma californicum*), island green dudleya (*Dudleya virens* ssp. *insularis*), Santa Catalina Island desert-thorn (*Lycium brevipes* var. *hassei*), and woolly sea-blite (*Suaeda taxifolia*). Focused surveys were conducted throughout PBNP for each of the Draft NCCP/HCP-covered plant species. In addition to the Draft NCCP/HCP-covered plant species, focused surveys were also conducted for dune buckwheat (*Eriogonum parvifolium*) because it is the primary host plant for the Draft NCCP/HCP-covered El Segundo blue butterfly (*Euphilotes battoides allyni*) (ESBB). No focused surveys were conducted for additional plant species; however, additional sensitive plant species and host plants for the Palos Verdes blue butterfly (*Euphilotes battoides allyni*) (PVB) were documented during the 2006 botanical surveys when observed.



SOURCE: USGS 7.5 Minute Series, Redondo Beach, San Pedro, Torrance and Rancho Palos Verdes Quadrangles

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species Sheet Index Map

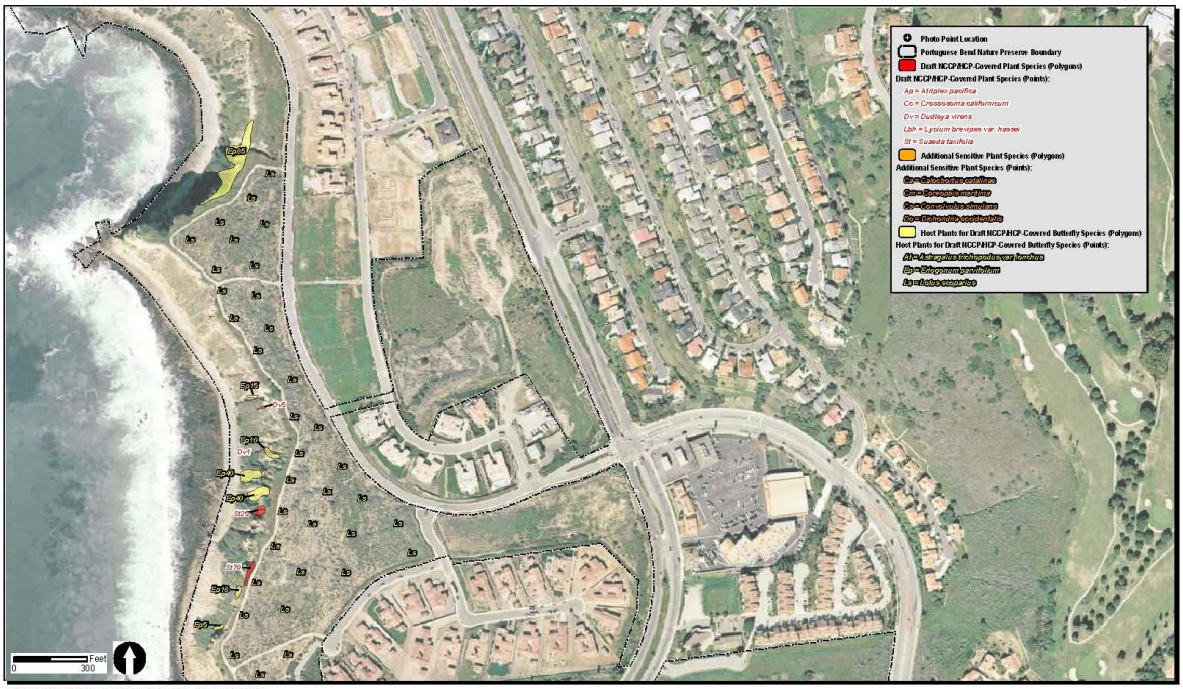
FIGURE 3



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 01

FIGURE 4a



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 02

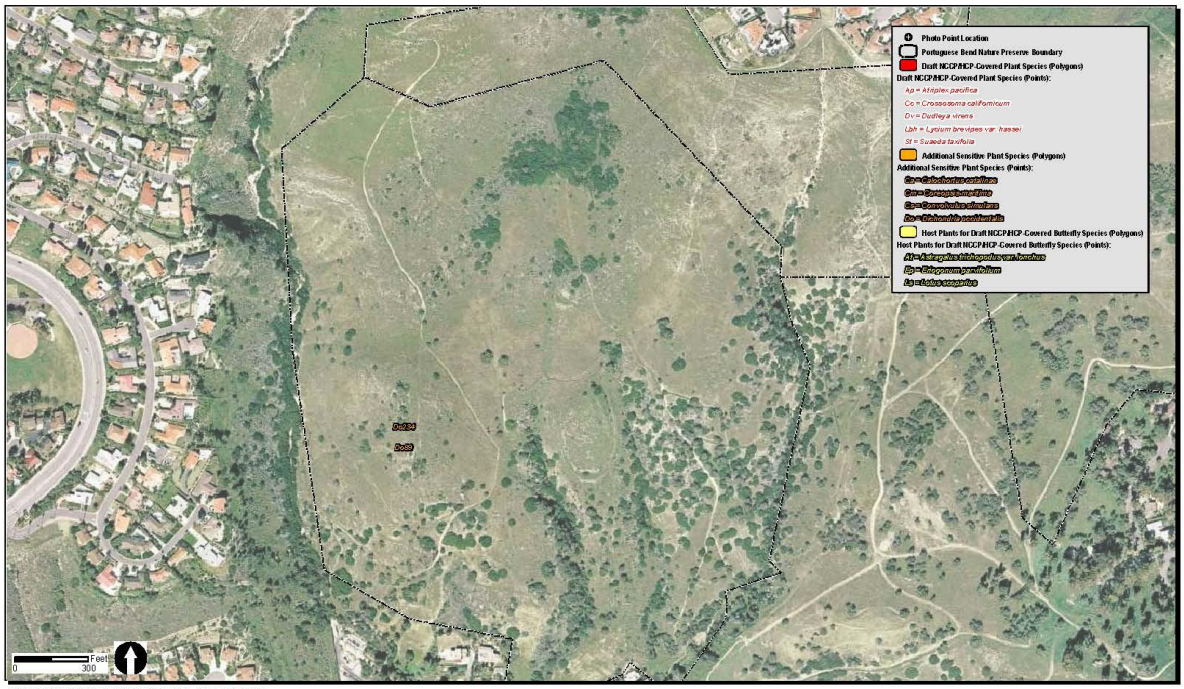
FIGURE 4b



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 03

FIGURE 4c



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 04

FIGURE 4d



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 05

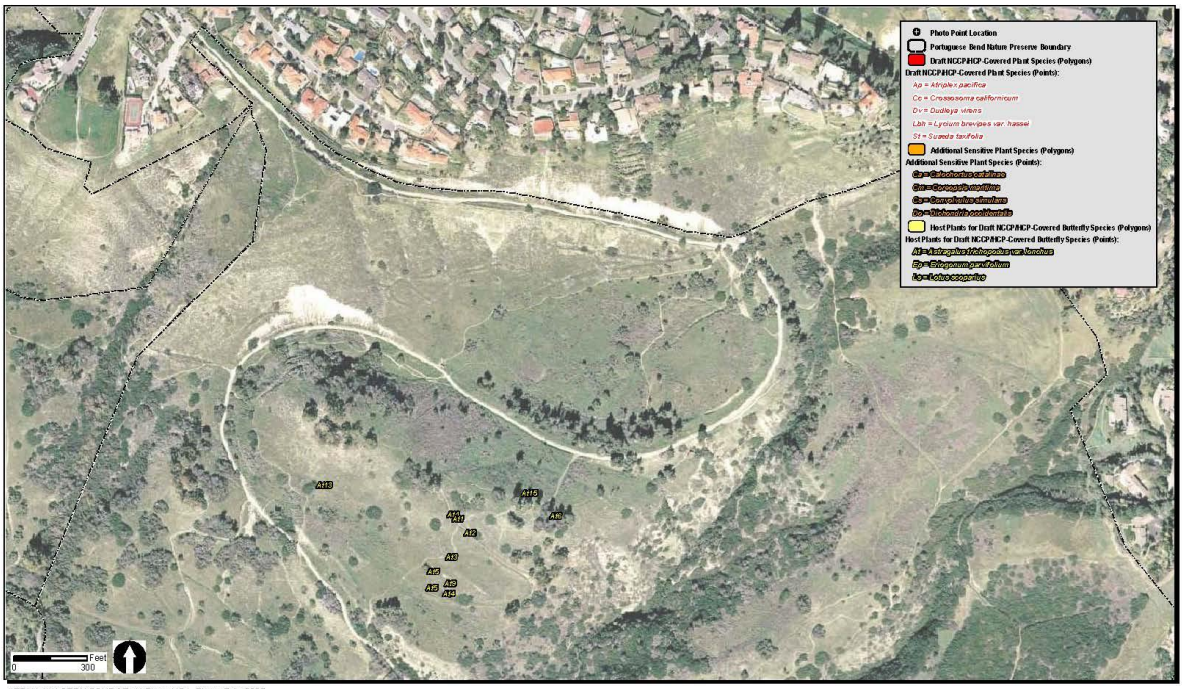
FIGURE 4e



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 06

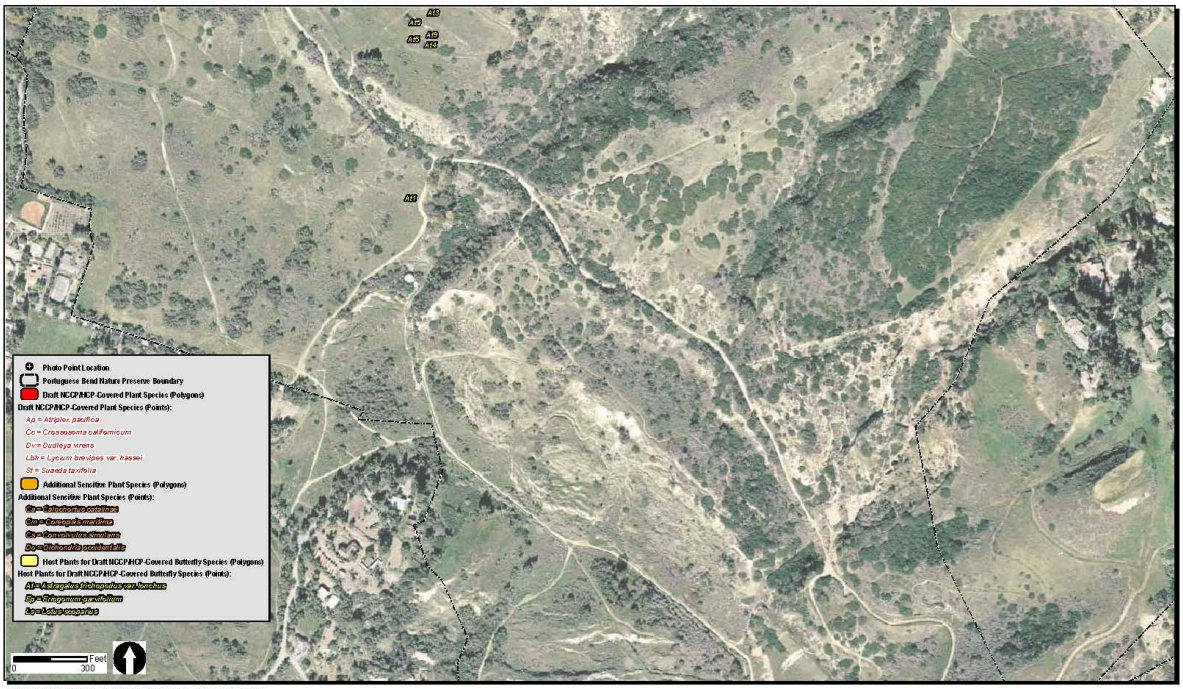
FIGURE 4f



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 07

FIGURE 4g



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 08

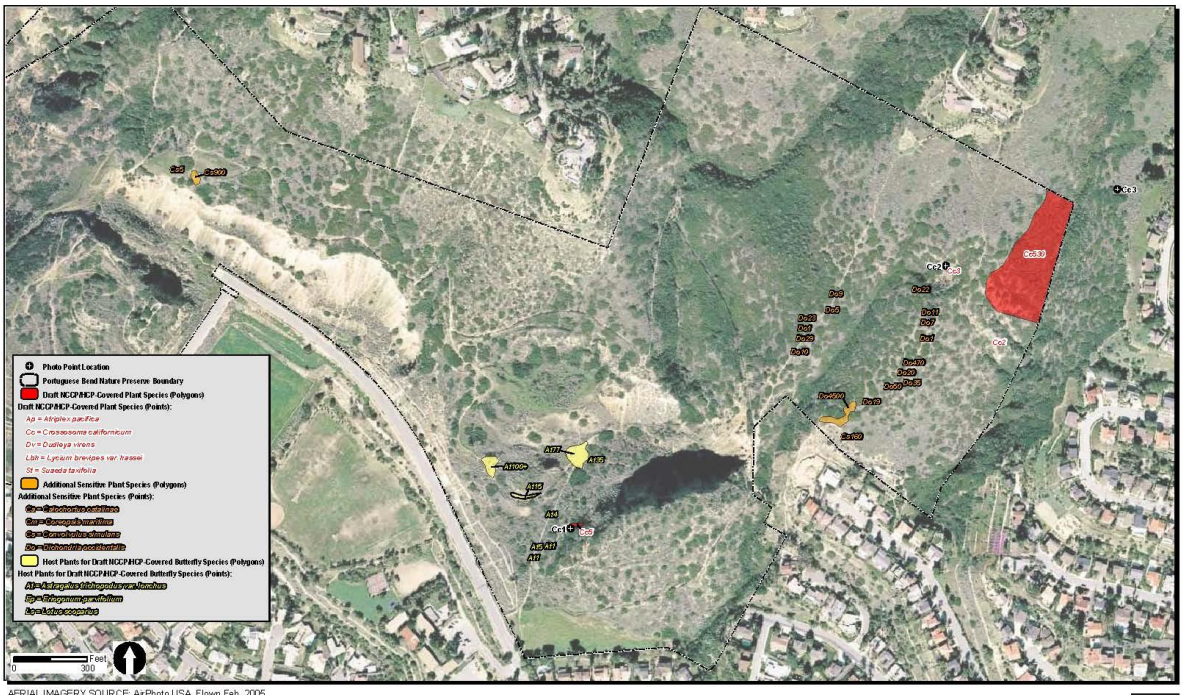
FIGURE 4h



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 09

FIGURE 4i



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 10

FIGURE 4j



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 11

FIGURE 4k



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 12

FIGURE 4l



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Plant Species - Sheet 13

FIGURE 4m

2006 Initial Management and Monitoring Report for the Rancho Palos Verdes Draft NCCP/HCP

Field data sheets were prepared that include pertinent survey parameters such as plant species, population estimates/counts, population structure, natural recruitment, slope, aspect, soil texture, dominant vegetation community, estimate of percent native, bare ground, and non-native cover, disturbance factors/threats, and associated species (*Appendix C*). Each occurrence (i.e., point or polygon) was assigned a unique polygon or point identification code that identifies the survey area, the surveyor, and the record number. A pre-survey site meeting was held to determine survey methodologies for the Draft NCCP/HCP-covered plant species in order to ensure consistency among surveyors in population estimation methods and results.

The Draft NCCP/HCP recommends timing surveys during the most phenologically appropriate time for each species, including between April and May for aphanisma, between May and July for south coast saltscale, between April and June for island green dudleya, June for Santa Catalina Island desert-thorn, and between February and May for Catalina crossosoma, which is generally coincident with the blooming periods for these species. The blooming period is not necessarily the easiest time of the year to locate these species, however. For example, the stems of both aphanisma and south coast saltscale tend to turn red in the summer, which can provide good color contrast between these species and the surrounding vegetation, thereby making them easier to locate. Further, the flowers for these two species are inconspicuous, and do not aid in the location of these species. Similarly, the leaves of Catalina crossosoma turn red in the late summer, making them stand out among the surrounding shrubs and easier to count. The remaining three Draft NCCP/HCP-covered species (island green dudleya, Santa Catalina Island desert-thorn and woolly sea-blite) are all perennials that can be observed year round, although island green dudleya and Santa Catalina Island desert-thorn are probably easiest to identify during the blooming periods.

The timing of the 2006 botanical surveys generally coincided with appropriate survey periods for the Draft NCCP/HCP-covered plant species. Focused surveys were conducted for Santa Catalina Island desert-thorn in May while they still had some flowers and had developed some fruits. For south coast saltscale, aphanisma, and island green dudleya, focused surveys were conducted between May and July, when south coast saltscale and island green dudleya were easily observable and when aphanisma would have been observable. Focused surveys were conducted for woolly sea-blite between June and July. The surveys for Catalina crossosoma were conducted in August, when the leaves began to turn red, making them more easily observable amongst the surrounding vegetation. Focused surveys for dune buckwheat were conducted between June and July, when the plants were in the early blooming stages.

While surveying in the field and mapping Draft NCCP/HCP-covered plant species, a 5-meter rule for annual species and a 10-meter rule for perennial species was used to separate polygons

for mapping purposes. This distance is a heuristic mapping tool based on the topography, vegetation, detectability of the plants, the general accuracy of the GPS, and time constraints. This heuristic criterion is not specifically tied to biology (i.e., reproductive biology, seed dispersal) of the plant species and thus is not intended to reflect reproductively isolated sub-populations, the total extent of the seed bank, or any other feature of the species life history. When observed, polygons for additional sensitive plant species were mapped similarly, though not as rigorously, using professional judgment and experience to delineate polygons based on the detectability of the species, topography, and vegetation. While the 5-meter and 10-meter rules were generally applied for mapping special-interest species, in some instances difficult terrain or topography precluded the ability to accurately measure distances between individuals (e.g., island green dudleya on the coastal cliffs). In these instances, the surveyor's best judgment of the approximate 10-meter distance was estimated from a vantage point.

When surveying a large group of plants, the outer perimeter of each polygon was searched in one continuous direction until returning to the starting point, with plants being located within at least every 0 to 5 meters for annuals and 0 to 10 meters for perennials along the boundary. If the location of the polygons were accessible, the perimeter of the polygons was recorded with a global positioning system (GPS). If not accessible, then the perimeter of the polygons was drawn on aerial maps of the survey area. Sometimes a combination of GPS and drawn polygons was used if only portions of polygons were accessible. Each species polygon was given a unique identifier (i.e., survey area code–surveyor initials–record number) in the field. Field data sheets were completed for each of the Draft NCCP/HCP-covered plant polygons that include data on site conditions (i.e., plant number estimates, population structure, natural recruitment, aspect, slope, soil texture, vegetation community, associated species, and disturbance factors/threats).

When possible, a direct count of individuals at each point location or polygon was made. In some instances when populations were inaccessible, binoculars (10×42; 8×42) were used to aid in counting individuals. This method was particularly relevant on the coastal bluffs, which were surveyed from above and below. When a direct count was infeasible (due to access constraints, high number of individuals, visual obscurity, etc.), an estimate was made by sampling a subset of the polygon. For example, after mapping the boundaries of the polygon, the number of individuals was counted/estimated in a square sample estimation area, which is a subset of the total polygon. The sample estimation area was 1 meter square (1 m × 1 m). The number of subsets within the total polygon was determined and added/multiplied, resulting in a total estimate of the number of individuals of the polygon (e.g., 4×125=500, 8×12=96, 9×100=900). For population estimates, a modified magnitude scale was used to arrive at an estimate of the number of individuals within each polygon. This number was then rounded to the nearest magnitude or multiple of a magnitude (e.g., 500; 100; 1,000).

Sometimes individual plants are difficult to detect due to the growth habitat or method of reproduction. For example, island green dudleya grows in clumps, with multiple pups growing from a centralized rooting structure. For instances when differentiating individual plants was difficult, a standard method was developed in the field and used consistently throughout the surveys. For island green dudleya, closely-spaced pups within a clump were counted as one individual. For woolly sea-blite, Santa Catalina Island desert-thorn, and Catalina crossosoma, individual shrubs occasionally grow together to form masses. In this instance, individuals were estimated by counting the mounds of the approximate size of mature specimens within the masses of plants. For western dichondra, which spreads rhizomatously, individual stems emerging from the ground were counted as individuals when estimating total numbers. For south coast saltscale, Catalina mariposa lily (*Calochortus catalinae*), small-flowered morning-glory (*Convolvulus simulans*), and sea dahlia (*Coreopsis maritima*), individual plants were typically discernable.

Photo-documentation points were established for the five Draft NCCP/HCP-covered species located on site in 2006, including south coast saltscale (three locations), island green dudleya (three locations), Catalina crossosoma (three locations), Santa Catalina Island desert-thorn (two locations), and woolly sea-blite (three locations). Photo-documentation points were recorded with GPS or marked on survey maps for future monitoring periods (*Figures 4c*, *4f*, *4j*, and *4l*).

3.2.2 Wildlife Surveys

Focused wildlife surveys within the PBNP were conducted for Draft NCCP/HCP-covered coastal California gnatcatcher (CAGN), cactus wren (CAWR), and El Segundo blue butterfly (ESBB). Also, additional sensitive wildlife species detected during these surveys were recorded (*Appendix B*). The details of the methods used for conducting the focused wildlife surveys are included below.

Coastal California Gnatcatcher and Cactus Wren Surveys

Focused surveys for CAGN and CAWR were conducted between March 30 and July 18, 2006 within Area O and between June 1 and August 18, 2006 within all other areas of the PBNP in accordance with the schedule provided in *Table 2*. Surveys were conducted by Dudek biologists holding federal permits to conduct surveys for CAGN: Jeff Priest (JP; TE-840619), Brock Ortega (BO; TE-813545), Jennifer Turnbull (JT; PRT-780565), Paul M. Lemons (PL; TE-051248), and Kam Muri (KM; TE-051250), with the assistance of PVPLC biologists Andrea Vona (AV) and Becky Harper (BH). Area O was surveyed under the Trump National Golf Course (TNGC) California Gnatcatcher Monitoring Project. Data from the TNGC surveys were incorporated in

this report. Additional Dudek biologists assisting with surveys for the TNGC project include Tricia Wotipka (TW), Rebekah Krebs (RK), and Thomas Liddicoat (TL).

TABLE 2
2006 Wildlife Survey Schedule and Conditions – Portuguese Bend Nature Preserve

Date	Personnel	Time	Temp. (°F)	Wind Speed (mph)	% Cloud Cover
Agua Amarga Ecological Reserve (Area L)					
Survey 1 1st half, 7/5/06	JT, AV	0745–1330	65–85	3–5	0
Survey 1 2nd half, 7/8/06	JT	0730–1100	62–80	2–1	100–0
Survey 2, 7/17/06	PL, AV	0800–1200	72–90	3–5 to 4–6 with 8–10 gusts	100–0
Survey 3, 8/9/06	PL	0700–1130	72–82	0–2; 2–4 with gusts to 6	100–5
Vicente Bluffs Ecological Reserve (Area B)					
Survey 1, 6/30/06	JT	0730–0930	65–70	0–5	0
Survey 2, 7/10/06	JT	0730–1000	66–72	0–2	0
Survey 3, 7/24/06	KM, AV	0700–0950	70–88	0–1	0–100
Alta Vicente Ecological Reserve (Area V)					
Survey 1 1st half, 6/16/06	JT	1100–1345	75–80	2–10	0
Survey 1 2nd half, 6/30/06	JT	0640–0720	65–65	0–2	0
Survey 2, 7/11/06	PL	0700–1130	68–79	0–5	100–0
Survey 3, 7/27/06	PL, AV, BH	0715–1050	71–73	0–3	100
Three Sisters Ecological Reserve (Area T)					
Survey 1, 6/8/06	JT	0800–1245	65–75	0–3	100
Survey 2, 7/11/06	KM	0655–1245	62–84	1–4	0
Survey 3, 7/28/06	KM, AV, BH	0700–1135	75–88	0–5	40–0
Abalone Cove Ecological Reserve (Area A)					
Survey 1, 6/23/06	JT, BH	0730–1230	63–75	0–9	100–0
Survey 2, 7/11/06	BO, AV	0700–1115	68–85	0–5	100–0
Survey 3, 8/1/06	PL, AV, BH	0730–1130	68–88	0–2	70–5
Canyons Ecological Reserve (Area C)					
Survey 1 1st half, 6/15/06	JT, AV	0715–1300	65–80	0–5	0
Survey 1 2nd half, 6/16/06	JT, AV	0700–1030	65–75	0–5	0
Survey 2 1st half, 7/13/06	JP	0645–1100	68–84	0–2	0
Survey 2 2nd half, 7/14/06	JP	0630–1200	67–86	0–2	10–40
Survey 3 1st half, 8/17/06	JP, AV, BH	0650–1100	63–72	<1	95–0
Survey 3 2nd half, 8/18/06	JP, AV, BH	0615–1015	58–73	0–2	30–0
Forrestal Ecological Reserve (Area F)					
Survey 1, 6/7/06	JT, BH	0650–1200	65	0–1	100
Survey 2, 7/13/06	JT	0715–1215	60–75	0–1	100–0
Survey 3, 8/18/06	BO	0530–1030	65–77	0–3	10–0

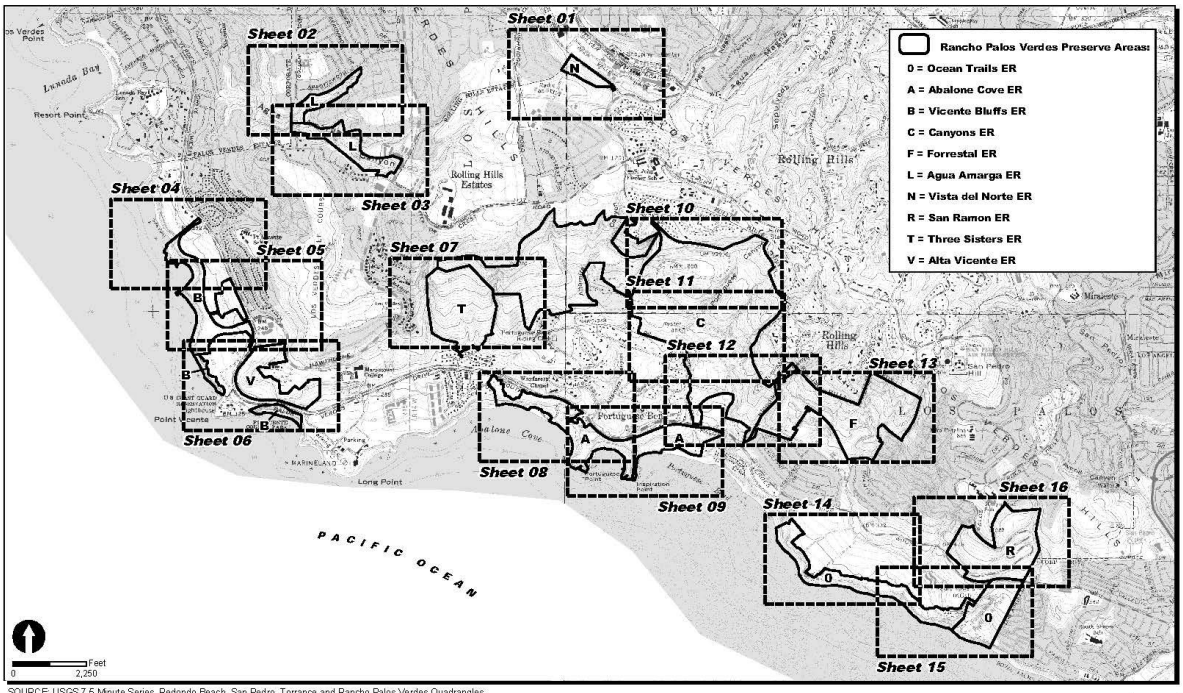
2006 Initial Management and Monitoring Report for the Rancho Palos Verdes Draft NCCP/HCP

TABLE 2
2006 Wildlife Survey Schedule and Conditions – Portuguese Bend Nature Preserve

Date	Personnel	Time	Temp. (°F)	Wind Speed (mph)	% Cloud Cover
Ocean Trails Ecological Reserve (Area O)					
TGNC Survey 1, 3/30/06	JP, JT, PL, RK, AV	0620–1230	52–68	0–4	95–10
TGNC Survey 2, 4/25/06	JP, JT, BO, TL, AV	0620–1300	55–63	0–3	95–100
TGNC Survey 3, 5/23/06	JP, KM, TW, RK	0630–1245	56–76	0–4	0
TGNC Survey 4, 6/19/06	JP, JT, BO, RK	0630–1130	66–78	0–5	100–0
TGNC Survey 5, 7/18/06	JP, JT, PL, RK, BH	0630–1050	69–85	0–2	5–15
San Ramon Ecological Reserve (Area R)					
Survey 1, 6/1/06	JT, AV	0730–1111	63–74	8–6	100–0
Survey 2, 6/30/06	JT	1005–1350	70–80	3–6	0
Survey 3, 8/11/06	JP, AV, BH	0630–0900	63–73	0–3	98–30
Vista del Norte Ecological Reserve (Area N)					
Survey 1, 6/1/06	JT	1130–1215	80–85	0–2	0
Survey 2, 7/11/06	PL	1130–1315	83–85	0–2	0
Survey 3, 7/24/06	KM	1020–1045	88–88	1–3	0

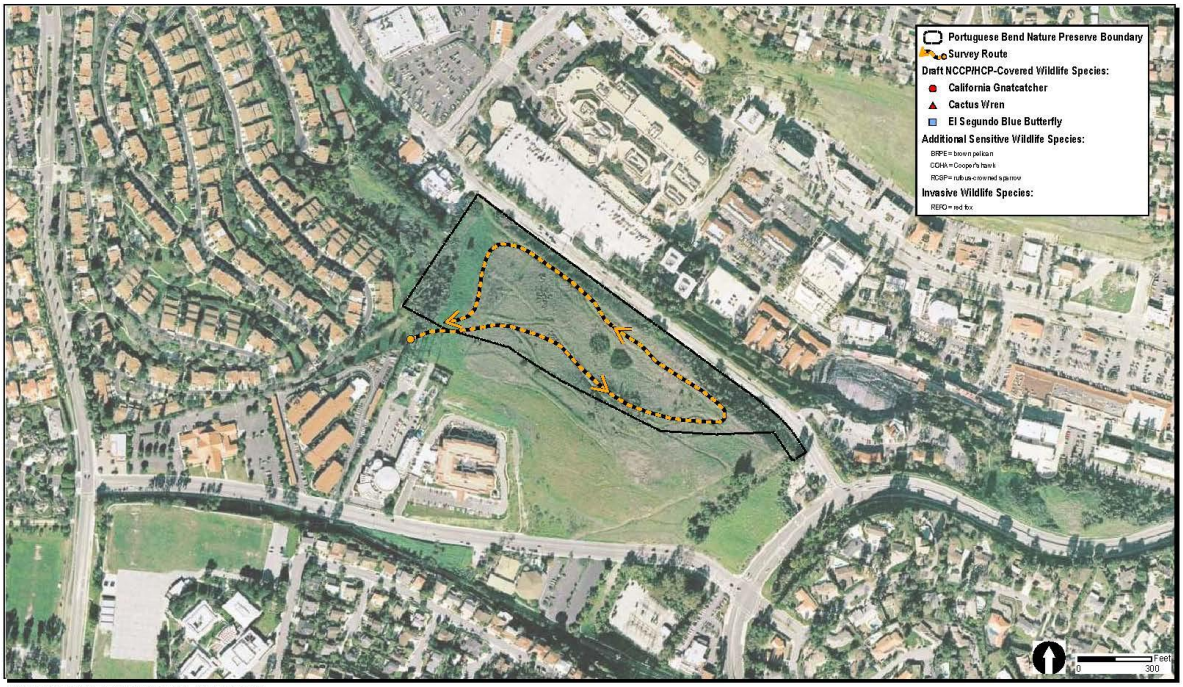
The surveys were conducted following the current protocol of the US Fish and Wildlife Service, Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Protocol (July 28, 1997). The surveys included the typical three visits at a minimum of weekly intervals as required by the protocol in NCCP-enrolled areas. Survey rates were consistent with those recommended by the USFWS survey protocol (i.e., a maximum of 100 acres per day, per biologist). The average survey rates for each pass were 16.18 acres per hour for pass one; 17.02 acres per hour for pass two; and 19.13 acres per hour for pass three. The route used to complete the survey for CAGN was arranged to ensure complete coverage of the suitable habitat on site (see the *Figure 5 Index Map* and *Figures 6a–6p*). Binoculars (10×42; 8×42) were used to aid in detecting and identifying bird species. The weather conditions were within protocol limits as shown in *Table 2* below. A tape of recorded vocalizations was used in order to elicit a response from the species. The tape was played approximately every 50 to 100 feet and when a CAGN was detected, the playing of the tape ceased in order to avoid harassment.

The surveys for Area O on the TNGC property were conducted using the same methods described above; however, more extensive breeding season monitoring was conducted for the TNGC project. This involved mapping observed use areas over the five-visit monitoring period, determining breeding status, and spending more time to locate and map nest locations than is spent during a typical presence/absence survey.



SOURCE: USGS 7.5 Minute Series, Redondo Beach, San Pedro, Torrance and Rancho Palos Verdes Quadrangles

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species Sheet Index Map
FIGURE 5



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

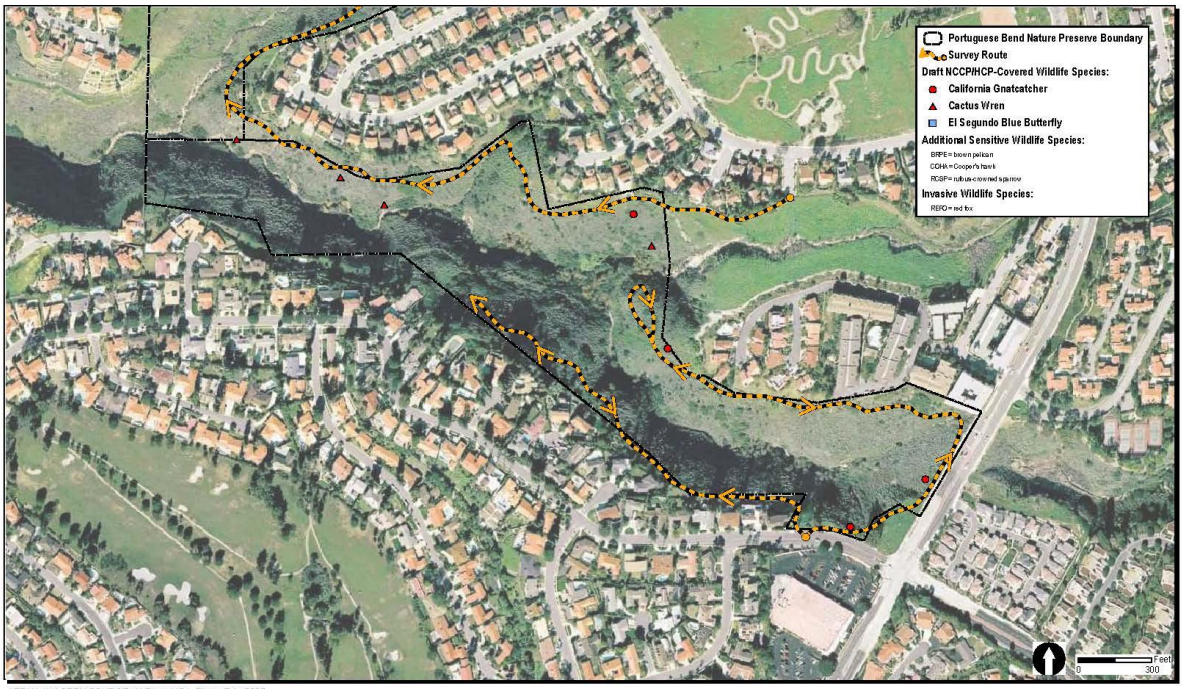
Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 01
FIGURE 6a



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 02

FIGURE 6b



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 03

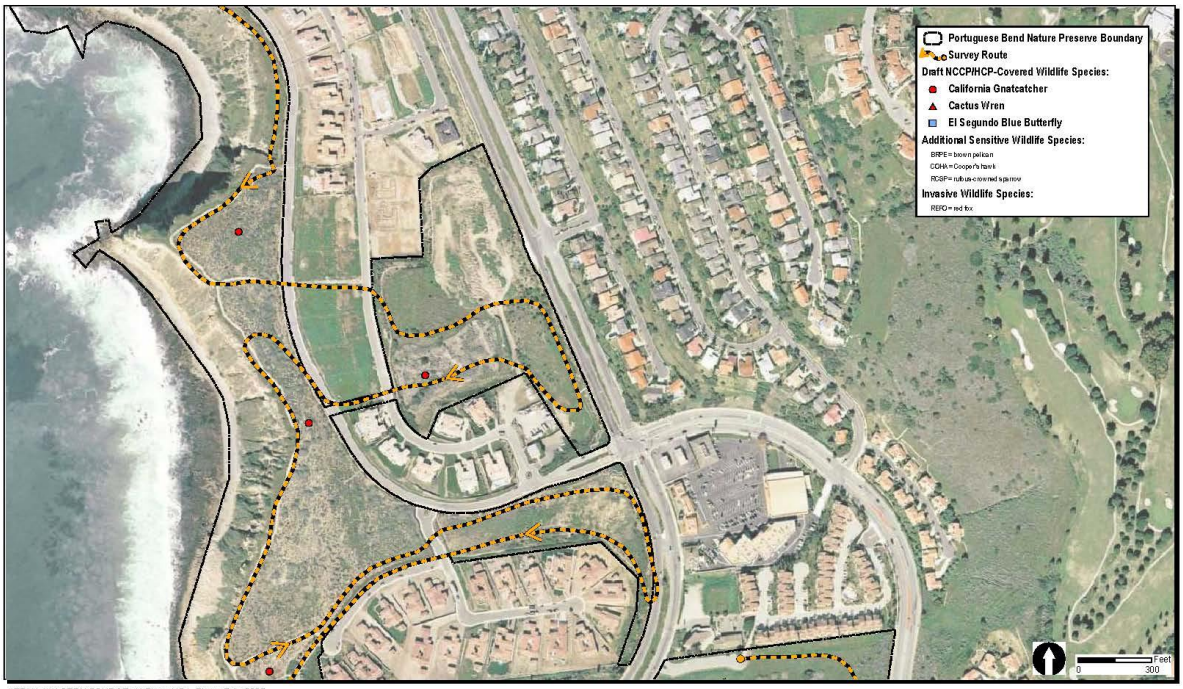
FIGURE 6c



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 04

FIGURE 6d



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 05

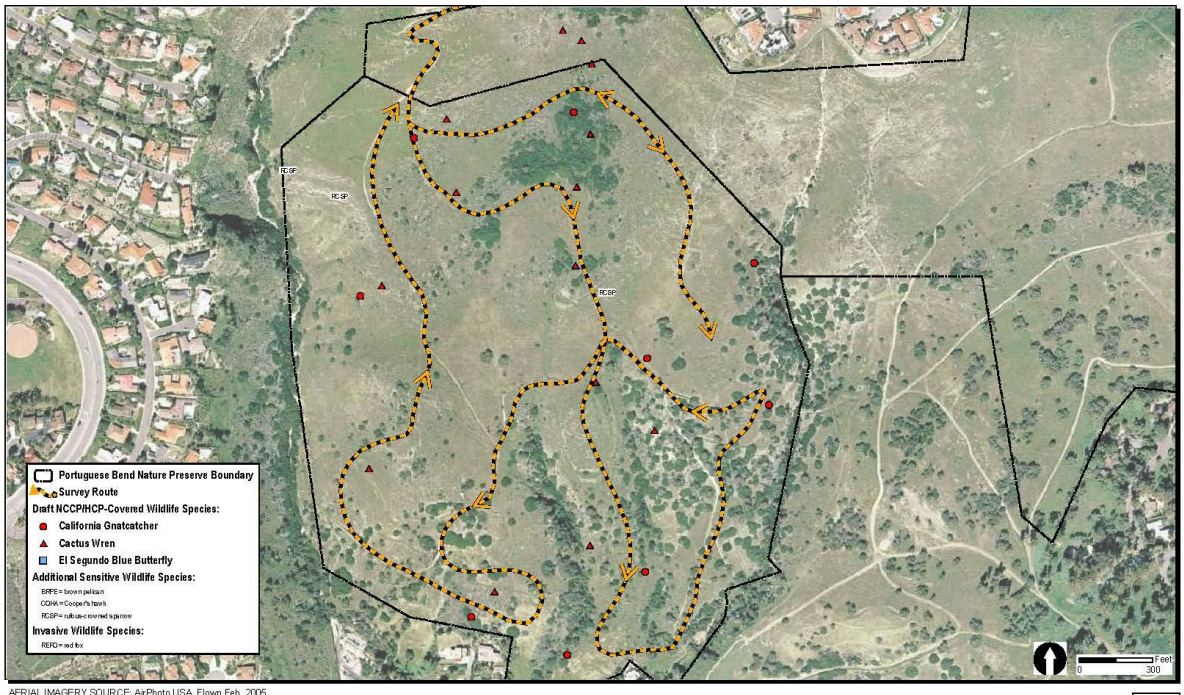
FIGURE 6e



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 06

FIGURE 6f



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 07

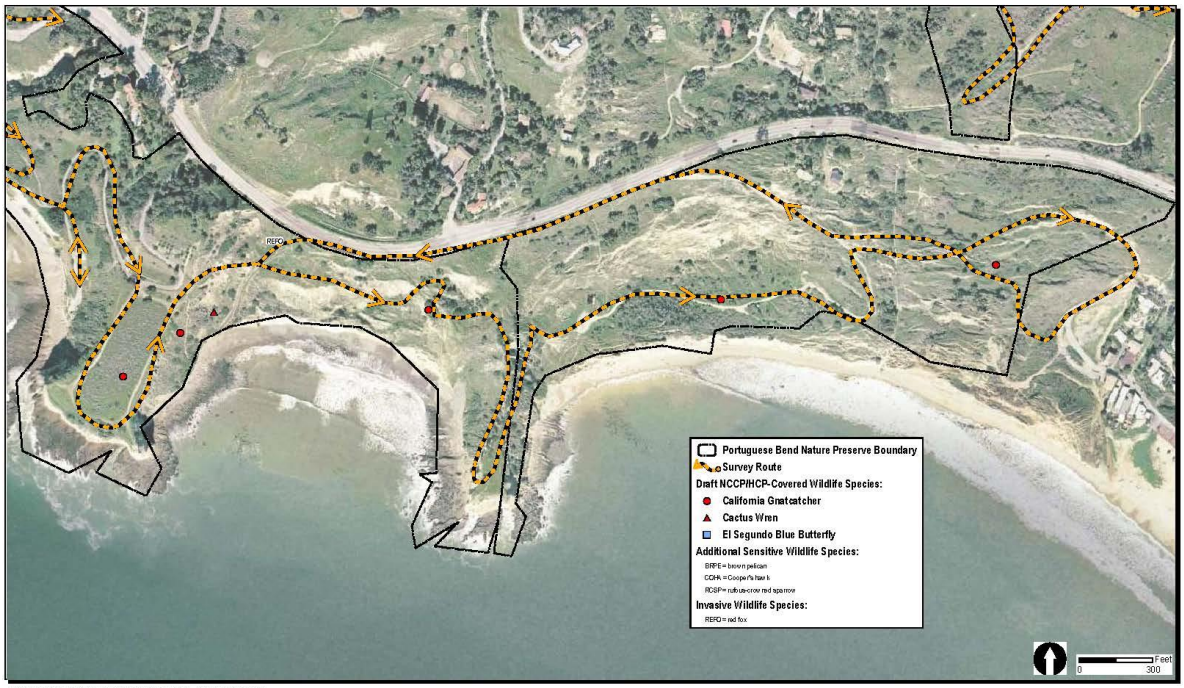
FIGURE 6g



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 08

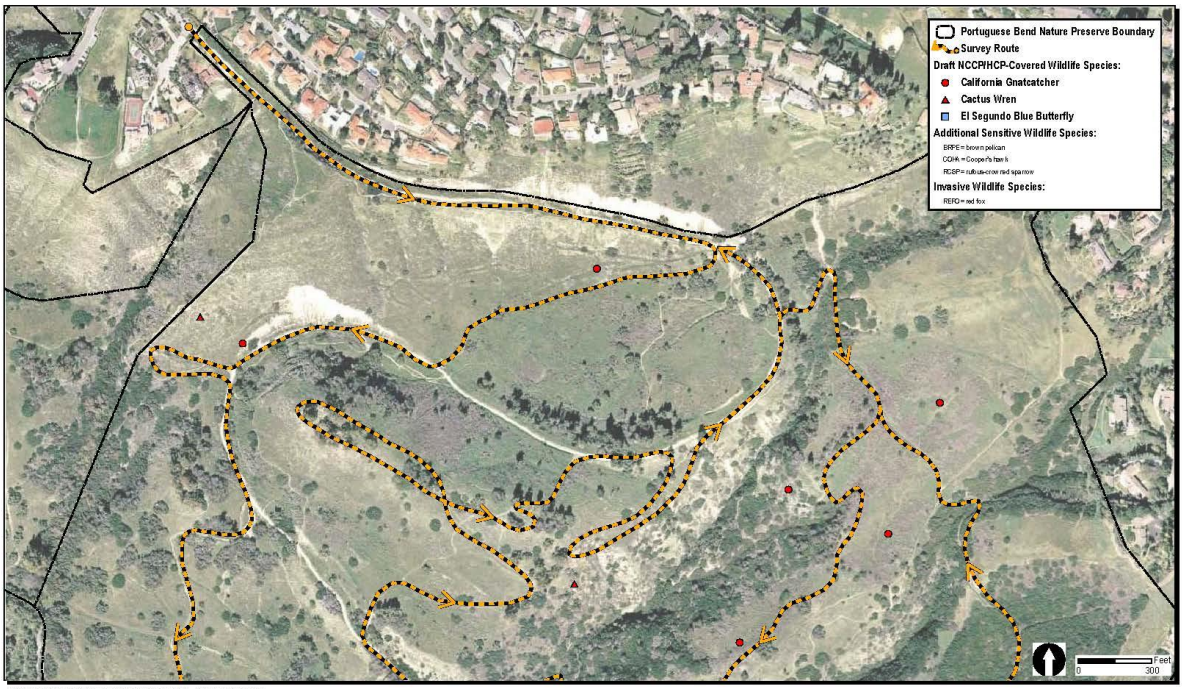
FIGURE 6h



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 09

FIGURE 6i



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 10

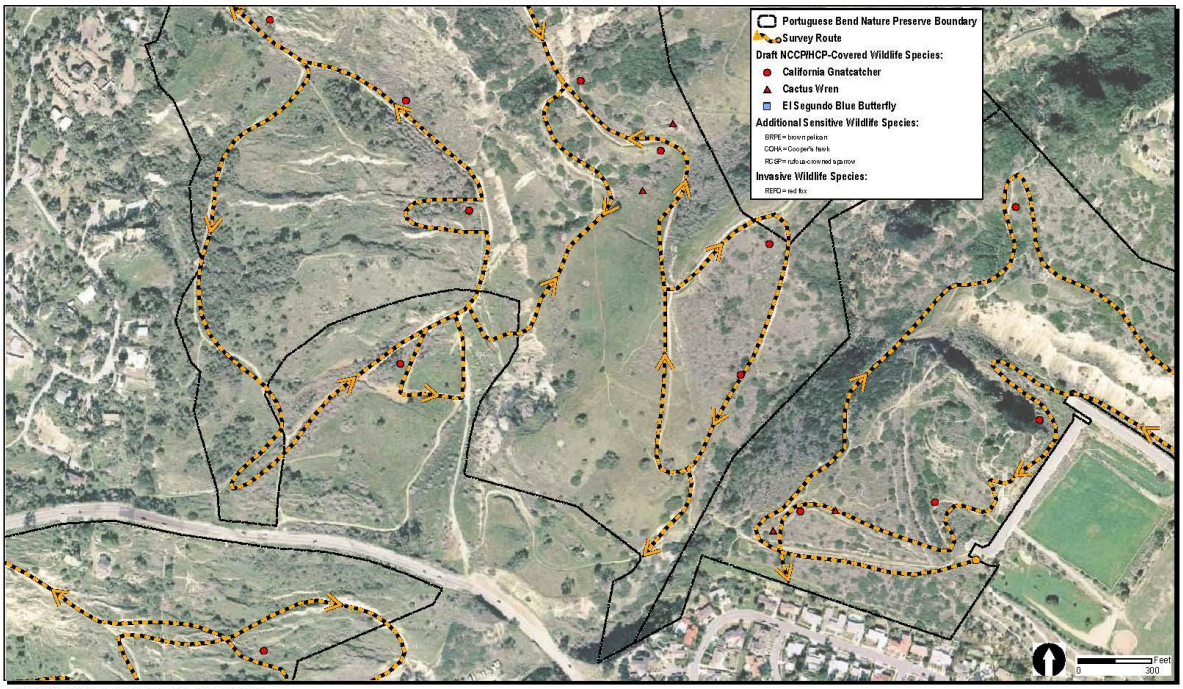
FIGURE 6j



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 11

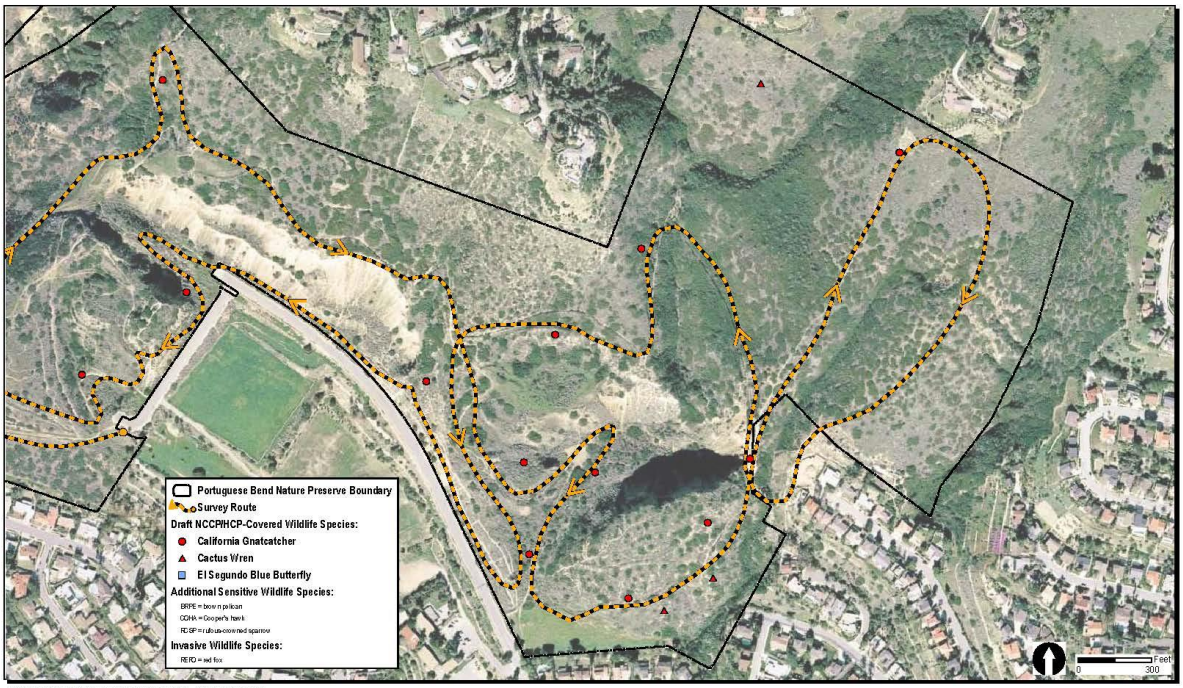
FIGURE 6k



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 12

FIGURE 6l



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 13

FIGURE 6m



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 14

FIGURE 6n



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 15

FIGURE 6o



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Wildlife Species & Survey Routes - Sheet 16

FIGURE 6p

Throughout the breeding season, each CAGN pair in Area O was monitored to determine annual reproductive success, as well as behavioral responses to construction activities, revegetation efforts, and other factors likely to affect the species. Only anecdotal information regarding the exact number of eggs and nestlings associated with each clutch, or the presence or absence of brown-headed cowbird (*Molothrus ater*) parasitism could be obtained due to the approximately 4-week interval between site visits in this area.

The surveys on the TNGC were generally conducted in conformance with current USFWS and NCCP Scientific Review Panel (SRP) survey guidelines for NCCP-enrolled areas. Weather conditions, time of day, and season were appropriate for the detection of CAGN, CAWR, and other wildlife (*Table 2*).

Similar to the field data sheets for the botanical surveys, field data sheets were prepared and used during the CAGN and CAWR surveys to document age of birds (i.e., juvenile or adult), sex, presence of nest (and associated factors), stage of nesting, slope, elevation, vegetation community, and disturbance factors/threats (*Appendix C*).

El Segundo Blue Butterfly Survey

The focused surveys for ESBB were conducted by Dr. Gordon F. Pratt and Cecilia L. Pierce on July 13 and 18, 2006. A focused survey for the host plant, dune buckwheat, had been conducted prior to the focused survey for ESBB by Dudek biologist Andrew C. Thomson. Dr. Pratt utilized the maps prepared by Dudek depicting the locations of dune buckwheat within the PBNP to identify survey locations for ESBB.

The focused survey for ESBB was a presence/absence survey. A protocol-level survey was not conducted in 2006 due to the late start of the survey (approximately 1 week past prime). A protocol-level survey should span the flight period for ESBB, which closely corresponds with the blooming period of dune buckwheat.

Due to the extremely rugged terrain along the coastal bluffs where dune buckwheat occurs within the PBNP, not all of the locations of dune buckwheat could be accessed for conducting ESBB surveys. All accessible locations of dune buckwheat were visited on foot by Dr. Pratt and Ms. Pierce. All individual ESBB observed were recorded on survey maps of the area.

3.2.3 Survey Limitations

Botanical surveys were conducted during appropriate survey periods for each of the Draft NCCP/HCP-covered plant species and dune buckwheat, as described in *Section 3.2.1* above and

recorded in *Table 1*. Surveying during these time periods maximized the potential for detection of Draft NCCP/HCP-covered plant species and dune buckwheat during the survey effort.

Surveys for Draft NCCP/HCP-covered plant species and dune buckwheat were concentrated in areas of suitable habitat, which varied depending on the species. Other sensitive species were recorded when observed. The focused surveys for Draft NCCP/HCP-covered plant species and dune buckwheat were conducted during daylight hours under weather conditions that did not preclude observation of these species (e.g., surveys were not conducted during heavy fog or rain).

The primary limitation of the 2006 surveys was the below-average rainfall received in the region during the growing season prior to the surveys (see *Section 5.1* below). Annual species and geophytes are dependent upon adequate rainfall to grow and bloom. Therefore, the detection of annual species and geophytes is expected to be lower during the 2006 survey period compared to years with at least average rainfall.

4.0 RESULTS OF SURVEYS

4.1 Botany – Floral Diversity

A total of 264 plant species was identified within the PBNP in 2006. Of these, 127 species (48 percent) are native to the region and 137 species (52 percent) are non-native. Included with the native species are eight plant species that were introduced during restoration projects on the Palos Verdes peninsula that are native to the region, but are not known to naturally occur on the peninsula. The list of plant species identified on the site in 2006 is provided as *Appendix A*.

4.2 Special-Interest Plant Species

In 2006, all Draft NCCP/HCP-covered plant species except aphanisma were identified within the PBNP. Four sensitive plant species were also identified within the PBNP during the 2006 surveys, including Catalina mariposa lily, small-flowered morning-glory, sea dahlia, and western dichondra (*Dichondra occidentalis*). Additionally, three host plants for Draft NCCP/HCP-covered butterfly species, including dune buckwheat, deerweed (*Lotus scoparius*), and ocean locoweed (*Astragalus trichopodus* var. *lonchus*) were documented on site (*Figures 3* and *4a–4m*). These plant species are discussed in greater detail below.

4.2.1 Draft NCCP/HCP-Covered Plant Species

Survey results for Draft NCCP/HCP-covered plant species are described below and included in *Table 3*. While aphanisma was not observed during surveys in 2006, a description is included because it likely still occurs within the preserve.

TABLE 3
Survey Results for the Draft NCCP/HCP-Covered Plant Species

Draft NCCP/HCP-Covered Plant Species	Number of Locations		Estimated Area of Polygons (sq. ft.)	Average Density of Plants in Polygons (per sq. ft.)*	Total Estimated Number of Individuals (points and polygons)
	Points	Polygons			
Atriplex pacifica (south coast saltscale)	8	3	224	0.09	164
Crossosoma californica (Catalina crossosoma)	2	2	96,134	0.01	540
Dudleya virens ssp. *insularis* (island green dudleya)	4	15	1,154,586	0.01	6,530
Lycium brevipes var. *hassei* (Santa Catalina Island desert-thorn)	0	2	13,355	0.10	750
Suaeda taxifolia (woolly sea-blite)	5	8	104,410	0.02	742

* Average density of plants in polygons was calculated using the population estimates for polygons. Individuals counted at point locations were not used in the density calculation.

Photographs from the photo-documentation points were taken for the five Draft NCCP/HCP-covered species located on site in 2006, including south coast saltscale, island green dudleya, Catalina crossosoma, Santa Catalina Island desert-thorn, and woolly sea-blite (*Figures 7–9*).

***Aphanisma blitoides* (aphanisma)**

Aphanisma is a Draft NCCP/HCP-covered plant species, a USFWS Federal Species of Concern, and a CNPS List 1B.2 plant. According to CNPS (2006), it is typically found in coastal bluff scrub, coastal dunes, or coastal scrub, at elevations between sea level and approximately 305 meters (0–860 feet) above mean sea level (AMSL). It is an annual herb that typically blooms between March and June and tends to grow in sandy or sandy loam soils. It has been previously documented within the PBNP at several locations along the coastal bluffs in areas O and A. However, it was not observed during the 2006 surveys. This is likely a result of below-average precipitation during the growing season in the 2005/6 rainy season.



Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Photo Documentation Points for Draft NCCP/HCP-covered Plant Species FIGURE 7



Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report
Photo Documentation Points for Draft NCCP/HCP-covered Plant Species FIGURE 8



Photo Point St1



Photo Point St2



Photo Point St3

Rancho Palos Verdes Draft NCCP/HCP - 2006 Initial Management & Monitoring Report

Photo Documentation Points for Draft NCCP/HCP-covered Plant Species

FIGURE 9

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***Atriplex pacifica* (south coast saltscale)**
South coast saltscale is a Draft NCCP/HCP-covered plant species, a USFWS Federal Species of Concern, and a CNPS List 1B.2 plant species. According to CNPS (2006), it is typically found in coastal bluff scrub, coastal dunes, coastal scrub, or playas at elevations between sea level and 140 meters (0–395 feet) AMSL. It is an annual herb that typically blooms between March and October and tends to grow in sandy or sandy loam soils.

South coast saltscale was identified at 11 locations in Survey Areas O and A within the PBNP in 2006, with an estimated number of 164 individuals within an estimated area of approximately 224 square feet (0.005 acre) (*Figures 4e*, *4f*, and *4l*). The average density of plants in polygons was approximately 0.09 individuals per square foot. It was found primarily along hiking trails in disturbed vegetation or in openings in coastal sage scrub vegetation. While *The Jepson Manual* (Hickman 1993) lists this species as an annual, it appears to be growing as a perennial at several of the locations within the PBNP. Natural recruitment was observed at all but one of the identified locations, with both mature individuals and seedlings present.

***Crossosoma californicum* (Catalina crossosoma)**
Catalina crossosoma is a Draft NCCP/HCP-covered plant species and a CNPS List 1B.2 plant species. According to CNPS (2006), it is typically found in chaparral or coastal scrub at elevations between sea level and 500 meters (0–1,411 feet) AMSL. It is a perennial shrub that typically blooms between February and May and tends to grow in rocky soils.

Catalina crossosoma was identified at four locations in Survey Area F within the PBNP in 2006, with an estimated number of 540 individuals within an estimated area of approximately 96,134 square feet (2.21 acres). The average density of plants in polygons was approximately 0.01 individual per square foot. The majority of individuals of this species occur in one large, contiguous polygon in very steep, rocky terrain in the northeastern portion of Area F (*Figure 4j*). Two point locations were also observed in the near vicinity of the large polygon, and one additional small polygon was observed approximately 2,000 feet to the southwest. Various age classes of this species and natural recruitment were observed within the polygons of this species. However, the point locations consisted of mature individuals only with no evidence of natural recruitment. All documented occurrences are located in coastal sage scrub vegetation dominated by lemonadeberry (*Rhus integrifolia*).

***Dudleya virens* ssp. *insularis* (island green dudleya)**
Island green dudleya is a Draft NCCP/HCP-covered plant species and a CNPS List 1B.2 plant species. According to CNPS (2006), it is typically found in coastal bluff scrub or coastal scrub at

elevations between 5 and 300 meters (14–846 feet) AMSL. It is a perennial herb that typically blooms between April and June and tends to grow in sandy or sandy loam soils.

Island green dudleya was identified at 19 locations within the PBNP in 2006 with an estimated number of 6,530 individuals within an estimated area of approximately 1,154,586 square feet (26.51 acres). The average density of plants in polygons was approximately 0.01 individual per square foot. It occurs primarily within Area O and occasionally within Area B on the coastal bluffs, usually in southern coastal bluff scrub vegetation and occasionally within coastal sage scrub vegetation (*Figures 4c*, *4k*, and *4l*). Various age classes of this species were observed throughout the PBNP, with abundant vegetative reproduction observed.

***Lycium brevipes* var. *hassei* (Santa Catalina Island desert-thorn)**
Santa Catalina Island desert-thorn is a Draft NCCP/HCP-covered plant species and a CNPS List 1B.1 plant species. According to CNPS (2006), it is typically found in coastal bluff scrub or coastal scrub at elevations between 10 and 300 meters (28–846 feet) AMSL. It is a perennial shrub that typically blooms in June and tends to grow in sandy or sandy loam soils.

Santa Catalina Island desert-thorn was identified at two locations within the PBNP in 2006 with an estimated number of 750 individuals within an estimated area of approximately 13,355 square feet (0.31 acre). The average density of plants in polygons was approximately 0.10 individual per square foot. It occurs within Area A on the top of the coastal bluffs and has formed dense, impenetrable stands associated with southern coastal bluff scrub vegetation (*Figures 4e* and *4f*). No natural recruitment was observed within either of the polygons.

***Suaeda taxifolia* (woolly sea-blite)**
Woolly sea-blite is a Draft NCCP/HCP-covered plant species and a CNPS List 4.2 plant species. According to CNPS (2006), it is typically found in coastal bluff scrub, coastal dunes, or marshes and swamps at elevations between sea level and 50 meters (0–141 feet) AMSL. It is an evergreen shrub that typically blooms between January and December and tends to grow in a variety of soil types, including sandy and sandy loam.

Woolly sea-blite was identified at 13 locations within the PBNP in 2006 with an estimated number of 742 individuals within an estimated area of approximately 104,410 square feet (2.40 acres). The average density of plants in polygons was approximately 0.02 individual per square foot. It occurs within Areas B, A, and O, usually at the base and along the lower portions of the coastal bluffs, but occasionally at the top and the upper portions of the coastal bluffs (*Figures 4a*, *4b*, *4c*, *4e*, *4f*, *4k*, and *4l*). It is primarily associated with southern coastal bluff scrub vegetation

and occasionally with coastal sage scrub vegetation. Natural recruitment was observed at nine of the 15 identified locations, with both mature and young individuals present.

4.2.2 Additional Sensitive Plant Species

Focused surveys were not conducted for additional sensitive plant species. However, the presence of additional sensitive plant species was documented during the 2006 surveys when they were incidentally observed. Survey results for additional sensitive plant species are described below and included in *Table 4*.

TABLE 4
Survey Results for Additional Sensitive Plant Species

Additional Sensitive Plant Species	Number of Locations		Estimated Area of Polygons (sq. ft.)	Average Density of Plants in Polygons (per sq. ft.)*	Total Estimated Number of Individuals (points and polygons)
	Points	Polygons			
Calochortus catalinae	16	0	N/A	N/A	16
Convolvulus simulans	3	1	1,549	0.58	1,075
Coreopsis maritima	0	2	16,260	0.01	205
Dichondra occidentalis	17	1	4,740	0.95	5,569

* Average density of plants in polygons was calculated using the population estimates for polygons. Individuals counted at point locations were not used in the density calculation.

***Calochortus catalinae* (Catalina mariposa lily)**
Catalina mariposa lily is a CNPS List 4.2 plant species. It is not a Draft NCCP/HCP-covered plant species and has no state or federal status. According to CNPS (2006), it is typically found in chaparral, cismontane woodland, coastal scrub, or valley and foothill grassland at elevations between 15 and 700 meters (42–1,974 feet) AMSL. It is a bulbiferous herb that typically blooms between March and May.

Catalina mariposa lily was identified within Areas O and R within the PBNP in 2006 (*Figures 4k* and *4m*). Focused surveys were not conducted for this species, and all observations were incidental. According to the Draft NCCP/HCP (2006), Catalina mariposa lily occurs in coastal sage scrub vegetation near the Rancho Palos Verdes City Hall, in the canyon north of Barkentine Road, in the Forrestal area, in the northern part of the Portuguese Bend landslide near the closed portion of the Crenshaw Road extension, at the West Bluff and the Upper La Rotonda Preserves at Trump National Golf Club, and in the Switchbacks enhancement area north of the intersection of Palos Verdes Drives North and East.

2006 Initial Management and Monitoring Report for the Rancho Palos Verdes Draft NCCP/HCP

***Convolvulus simulans* (small-flowered morning-glory)**
Small-flowered morning-glory is a CNPS List 4.2 plant species. It is not a Draft NCCP/HCP-covered plant species and has no state or federal status. According to CNPS (2006), it is typically found in chaparral, coastal scrub, or valley and foothill grassland at elevations between 30 and 700 meters (85–1,974 feet) AMSL. It is an annual herb that typically blooms between March and July and tends to grow in clay soils.

Small-flowered morning-glory was found at four locations within the PBNP in 2006 on the eastern edge of Area O within a coastal sage scrub habitat restoration area for the Trump National Golf Club and at three locations within the eastern portions of Area F (*Figures 4j* and *4l*). Focused surveys were not conducted for this species, and all observations were incidental. According to the Draft NCCP/HCP (2006), small-flowered morning glory occurs north of Forrestal Drive and northwest of the terminus of Coolheights Drive.

***Coreopsis maritima* (sea dahlia)**
Sea dahlia is a CNPS List 2.2 plant species. It is not a Draft NCCP/HCP-covered plant species and has no state or federal status. According to CNPS (2006), it is typically found in coastal bluff scrub or coastal scrub at elevations between 5 and 150 meters (14–141 feet) AMSL. It is a perennial herb that typically blooms between March and May and tends to grow in rocky soils.

Sea dahlia was identified at two locations within the PBNP in 2006. It occurs within Area A primarily on a steep northwest-facing slope in lower Altamira Canyon in coastal sage scrub vegetation (*Figure 4e*). Focused surveys were not conducted for this species, and all observations were incidental. This species was not identified in the Draft NCCP/HCP (2006) and was not known to occur within PBNP prior to the 2006 surveys.

***Dichondra occidentalis* (western dichondra)**
Western dichondra is a CNPS List 4.2 plant species. It is not a Draft NCCP/HCP-covered plant species and has no state or federal status. According to CNPS (2006), it is typically found in chaparral, cismontane woodland, coastal scrub, or valley and foothill grassland at elevations between 50 and 500 meters (164–1,640 feet) AMSL. It is a rhizomatous herb that typically blooms between March and July.

Western dichondra was found at 16 locations, mostly within Area F within coastal sage scrub dominated by lemonadeberry, and a few within Area V within coastal sage scrub dominated by cactus (*Opuntia littoralis, O. oricola, O. prolifera*). Focused surveys were not conducted for this species, and all observations were incidental. According to the Draft NCCP/HCP (2006), western dichondra occurs in coastal sage scrub vegetation northwest of Coolheights Drive in Area F.

4.2.3 Host Plants for Draft NCCP/HCP-Covered Butterfly Species

Focused surveys were conducted for dune buckwheat because it is the larval host plant for ESBB, which is known to occur within the PBNP. However, focused surveys for the larval host plants for PVB were not conducted because PVB is not known to occur within the PBNP. The presence of ocean locoweed and California broom was documented during the 2006 when they were observed. Survey results for host plants for Draft NCCP/HCP-covered butterfly species are described below and included in *Table 5*.

TABLE 5
Survey Results for Host Plants for
Draft NCCP/HCP-Covered Butterfly Species

Host Plants for Draft NCCP/HCP-covered Butterfly Species	Number of Locations		Estimated Area of Polygons (sq. ft.)	Average Density of Plants in Polygons (per sq. ft.)*	Total Estimated Number of Individuals (points and polygons)
	Points	Polygons			
Astragalus trichopodus var. *lonchus*	35	4	16,984	0.03	1,516
Eriogonum parvifolium	0	13	73,068	0.01	547
Lotus scoparius	47	0	N/A	N/A	189

* Average density of plants in polygons was calculated using the population estimates for polygons. Individuals counted at point locations were not used in the density calculation.

***Astragalus trichopodus* var. *lonchus* (ocean locoweed)**
Ocean locoweed is not listed by CNPS, nor does it have state or federal status. This species was documented during the surveys because it is one of two primary host plants for the NCCP-covered PVB. Ocean locoweed is typically found in coastal bluffs at elevations between sea level and 300 meters (0–846 feet) AMSL. It is a perennial herb that blooms between April and July.

Ocean locoweed occurs as an occasional component of southern coastal bluff scrub and coastal sage scrub vegetation throughout the PBNP. Focused surveys were not conducted for this species, and all observations were incidental. It has been planted in habitat restoration areas associated with the Trump National Golf Club in Area O.

***Eriogonum parvifolium* (dune buckwheat)**
Dune buckwheat is not listed by CNPS, nor does it have state or federal status. Focused surveys were conducted for this species because it is the primary host plant for ESBB. Dune buckwheat

is typically found in coastal dunes or coastal bluffs at elevations between sea level and 700 meters (0–1,974 feet) AMSL. It is a perennial shrub that blooms between June and July and tends to grow in sandy soils.

Dune buckwheat was identified at 13 locations within the PBNP in 2006. It occurs within Areas B and A on the coastal bluffs as a component of southern coastal bluff scrub vegetation, particularly on steep, north-facing aspects (*Figures 4a*, *4b*, *4c*, *4e*, and *4f*). A focused survey was conducted for this species because it is the host plant for ESBB. Dune buckwheat commonly occurs clinging to rocks on north-facing coastal cliffs or at the base of north-facing coastal cliffs.

***Lotus scoparius* (California broom; deerweed)**
California broom is not listed by CNPS, nor does it have state or federal status. This species was documented during the surveys because it is one of two primary host plants for the NCCP-covered PVB. All observations of California broom were incidental, as focused surveys for this plant species were not conducted. California broom is typically found in chaparral, roadsides, coastal sand, desert slopes, flats, or washes at elevations between sea level and 1,500 meters (0–4,230 feet) AMSL. It is a perennial shrub that blooms between April and July.

California broom was identified at 47 locations within the PBNP in 2006. California broom occurs as an occasional component of coastal sage scrub vegetation throughout the PBNP. It has been planted in habitat restoration areas associated with the Trump National Golf Club and Ocean Point Estates in Areas O and B, respectively. Because this species was planted, and is a common component of the vegetation community at the Ocean Point Estates restoration area, individuals were not counted, and general notations were made documenting its occurrence within the restoration area (*Figures 4a*, *4b*, and *4c*).

4.3 Special-Interest Wildlife Species

In 2006, three Draft NCCP/HCP-covered wildlife species were identified within the PBNP, including CAGN, CAWR, and ESBB. Three additional sensitive wildlife species were also identified within the PBNP during the 2006 surveys, including Cooper's hawk (*Accipiter cooperii*), rufous-crowned sparrow (*Aimophila ruficeps canescens*), and brown pelican (*Pelecanus occidentalis californicus*). These wildlife species are discussed in greater detail below. Additionally, a description of PVB is also included because it is a Draft NCCP/HCP-covered species and its larval host plants were documented within the PBNP during the 2006 surveys. *Figures 6a* through *6p* depict the locations of special-interest wildlife species.

4.3.1 Draft NCCP/HCP-Covered Wildlife Species

***Campylorhynchus brunneicapillus* (cactus wren)**

The CAWR is a Draft NCCP/HCP-covered wildlife species, a State Species of Concern (SSC), and a focal species of the NCCP. The cactus wren is an obligate, non-migratory resident of the coastal sage scrub plant community (as defined by Westman 1983 and O'Leary 1990). It is closely associated with cacti and occurs almost exclusively in thickets of cholla (*Opuntia prolifera*) and prickly pear (*Opuntia littoralis* and *Opuntia oricola*) in coastal sage scrub habitat below 457 meters in elevation on mesas and lower slopes of the coast ranges (Proudfoot et al. 2000). A detailed description of the habitat, biogeography, biology, and threats to CAWR are included in a species account attached in *Appendix D*.

During 2006 focused surveys, CAWR was observed in all survey areas within PBNP except Area N and Area B, with the highest number of individuals observed in Area T (*Figures 6a–6p*) (*Table 6*). CAWR was observed in dense patches of cacti within coastal sage scrub habitat and occasionally southern coastal bluff scrub.

A total of 89 CAWR were documented within the PBNP during the 2006 surveys, with 12 pairs and three family groups observed (*Table 6*). Three juveniles were also observed during the surveys. The number of pairs and family groups is likely underestimated because the presence/absence surveys for CAWR in 2006 were not intended to determine breeding status. Furthermore, the total number of CAWR is likely also underestimated because surveys were partially conducted during the breeding season of CAWR when female CAWR may have been incubating eggs on nests. Therefore, sightings would have likely favored individual adults which do not participate in egg incubation.

***Polioptila californica californica* (coastal California gnatcatcher)**

CAGN is federally-listed as threatened, is a California Species of Special Concern, and is an NCCP focal species. It inhabits coastal sage scrub habitats, especially below 950-foot elevation in coastal regions and higher inland, and on slopes less than about 40 percent. This species' habitat is formally protected and managed through the NCCP program and the Endangered Species Act (ESA Sections 10 and 7). A description of the habitat, biogeography, biology, and threats to CAGN are described in detail in a species account attached in *Appendix D*.

TABLE 6
CAGN and CAWR Survey Results for the Portuguese Bend Nature Preserve

Survey Area	Pairs		Family Groups		Lone Adults		Juveniles		TOTAL	
	CAGN	CAWR	CAGN	CAWR	CAGN	CAWR	CAGN	CAWR	CAGN	CAWR
N	0	0	0	0	0	0	0	0	0	0
L	2	0	0	0	2	4	1	0	7	4
B	4	0	1	0	0	0	1	0	9	0
V	7	4	2	0	1	7	5	0	20	15
T	7	7	4	3	1	7	11	3	26	24
A	7	0	9	0	1	9	11	0	29	9
C	14	0	7	0	0	4	23	0	54	4
F	10	0	7	0	2	6	15	0	37	6
O	14	1	10	0	3	15	29	0	62	17
R	7	0	3	0	0	10	12	0	26	10
TOTAL	**72**	**12**	**43**	**3**	**10**	**62**	**108**	**3**	**270**	**89**

Table 6 depicts the results of the 2006 focused surveys within PBNP for CAGN. A total of 270 CAGN were documented within the PBNP during the 2006 surveys, with 72 breeding pairs observed (*Table 6*). CAGN was observed in all survey areas within PBNP except Area N, with the highest number of individuals observed in Areas O and C with 62 and 54 individuals, espectively (*Figures 6a–6p*) (*Table 6*). CAGN was observed primarily in coastal sage scrub habitat and occasionally in non-native grasslands, disturbed vegetation, and southern coastal bluff scrub.

***Euphilotes battoides allyni* (El Segundo blue butterfly)**

The El Segundo Blue butterfly (ESBB) is a federally-listed endangered subspecies of the square-spotted blue butterfly (Subfamily Polyommatinae) that are specifically adapted to wild buckwheats (*Eriogonum* spp.) (Pratt and Emmel 1998). According to Pratt (2006), the larvae of these butterflies feed specifically on flowers and seeds of their buckwheat food plants. The adult emergence of the butterflies is timed with the early bloom period of their specific buckwheat food plant (Pratt 2006).

The ESBB is specifically adapted to dune buckwheat, which occurs within the PBNP in a few isolated locations along the coastal bluffs of the Palos Verdes Peninsula. Previously, the ESBB was only known from the El Segundo Dunes and other dune habitats, but has more recently been documented on steep slopes, such as at Malaga Cove (Pratt 2006).

Within the PBNP, Dr. Richard Arnold conducted a butterfly survey in the summer of 1998 with negative results for ESBB in this area of the City. Subsequent biological surveys in 2000 for proposed development of the York Long Point site detected a small population of ESBB in coastal bluff scrub habitat.

During focused surveys for ESBB, the species was documented in two locations within the PBNP. One of the locations is just north of Point Vicente in a large patch of dune buckwheat where approximately 36 ESBB were observed (*Figure 6f*). The other location is southeast of Point Vicente at the Fisherman's access area where approximately 13 ESBB were observed (*Figure 6f*). It appears as though 12 of the ESBB that were observed in this latter area may actually occur right on the boundary or just outside the boundaries of the preserve. The 13th individual appeared to have strayed approximately 1,300 feet away from the nearest dune buckwheat plant (Pratt 2006), but was documented within the PBNP. In addition to those observed during the focused surveys conducted by Pratt and Pierce, ESBB was observed during the focused surveys for dune buckwheat by Thomson (Dudek) in additional areas to the north of those documented by Pratt and Pierce. The species identification was corroborated by photographs of the ESBB taken by Thomson, but the incidental observations were not included in the monitoring results because Mr. Thomson is not qualified to survey for this species.

Due to a slightly late start of the survey for ESBB (past the peak bloom period of dune buckwheat), the survey results are likely conservative (both in total numbers and extent of occupied habitat). Additionally, the quantity of butterflies that emerge from diapause is greater during years of higher rainfall when the flowering of dune buckwheat is more abundant and of a longer duration (Pratt 2006).

***Glaucopsyche lygdamus palosverdesensis* (Palos Verdes blue butterfly)**
The following description of the PVB is taken from the Draft NCCP/HCP (2006):

> The PVB is a rare subspecies of the silvery blue butterfly (Perkins and Emmel 1977; Arnold 1987). The PVB is restricted to open CSS habitats that support either ocean locoweed (*Astragalus trichopodus* var. *lonchus*) or deerweed (*Lotus scoparius*), which are this species' larval host plants (Mattoni 1992a). Currently, PVB is known to occur only at the Naval Fuel Depot in San Pedro (between Western Avenue and Gaffey Street, south of Palos Verdes Drive North; Mattoni 1992a), at Malaga Dunes, and was recently reintroduced at the Chandler Preserve. Historical occurrences of PVB in RPV include locations near the "Switchback" area of Palos Verdes Drive East, locations within the landslide moratorium area (Edward's Canyon in Area 4, Portuguese Canyon, and Forrestal [Klondike]

Canyon), and Agua Amarga (Arnold 1984, 1987, 1990; Mattoni 1992a). Habitat for PVB is typified by open CSS and ecotone areas between sage scrub and grassland. Locoweed is the primary larval host plant present in RPV. Deerweed does not generally occur in RPV and is restricted mostly to the northeast slope of the peninsula. Locoweed is an early successional or disturbance-associated species and will decline if there is an extended period without disturbance (e.g., fire). Habitat loss and fragmentation associated with agriculture and residential development, fire suppression (e.g., fuel modification activities), severe weather conditions, and over-collecting by butterfly enthusiasts have contributed to the current endangered status of this species (Arnold 1987; Mattoni 1992a). Federally designated critical habitat for the PVB includes the "Switchback" area of Palos Verdes Drive East, Fred Hesse Park, and Agua Amarga Canyon (USFWS 1980).

Like the ESBB, PVB is federally listed as endangered. Focused surveys for this species were not required by the Draft NCCP/HCP because it is not known to occur within the PBNP. However, incidental observations of its larval host plants (ocean locoweed and California broom) were documented when observed.

4.3.2 Additional Sensitive Wildlife

***Accipiter cooperii* (Cooper's hawk)**
Cooper's hawk is a California Special Concern Species. It is not a Draft NCCP/HCP-covered species and it is not state- or federally-listed as threatened or endangered. It typically occurs in riparian and oak woodlands and montane canyons. Focused surveys for this species were not conducted; however, it was observed incidentally during focused surveys for CAGN and CAWR in Area C within the PBNP (*Figure 6k*).

***Aimophila ruficeps canescens* (rufous-crowned sparrow)**
Southern California rufous-crowned sparrow is a California Special Concern Species. It is not a Draft NCCP/HCP-covered species and is not state- or federally-listed as threatened or endangered. It typically occurs in grass-covered hillsides, coastal sage scrub, and chaparral with boulders and outcrops. Focused surveys for this species were not conducted; however, it was observed incidentally during focused surveys for CAGN and CAWR in Area T in coastal sage scrub habitat within the PBNP (*Figure 6g*).

***Pelecanus occidentalis californicus* (brown pelican)**
Brown pelican is state-listed endangered and federally-listed endangered. It is not a Draft NCCP/HCP-covered species. It typically occurs in open sea, large water bodies, coastal bays,

and harbors. Focused surveys for this species were not conducted; however, it was observed incidentally during focused surveys for CAGN and CAWR in Area O along the shoreline within the PBNP (*Figure 6n*). This species is expected to occur along the entire shoreline in the area.

5.0 DISCUSSION

This section discusses the results of the 2006 surveys in relation to weather conditions during the monitoring period, potential threats/disturbance factors of the Draft NCCP/HCP-covered species, management recommendations to minimize threats/disturbance factors, and the status of Draft NCCP/HCP-covered species based on data collected since the initiation of the Draft NCCP/HCP species monitoring program.

5.1 Weather Conditions during the Monitoring Period

Two resources were used to determine weather conditions during the 2005/6 season, including California Irrigation Management Information System (CIMIS) and the Western Regional Climate Center (WRCC). Both resources are needed because neither provides complete data sets for temperature and precipitation for the nearest weather stations to the PBNP. Weather data from the two sources were compared to determine the most appropriate source and weather station for climatic data for the PBNP. There are three weather stations listed as occurring within the vicinity of the PBNP, including Palos Verdes, Long Beach, and Torrance.

Data for the Palos Verdes weather station were included in WRCC; however, the data are incomplete. The WRCC resource, however, does include average precipitation data from 1949 to the current year for the Palos Verdes weather station. According to the available data from CIMIS and WRCC, the Long Beach weather station (as opposed to the Torrance weather station) has the most similar temperature and precipitation data to that of the Palos Verdes weather station. For example, the average annual precipitation for the Palos Verdes weather station from 1949 to present was 12.34 inches (WRCC, accessed from http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6663), compared to the average annual precipitation for the Long Beach weather station of 12.14 inches from 1927 to 1969 (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5082). Therefore, climatic data for the PBNP was taken from the Long Beach weather station for this report.

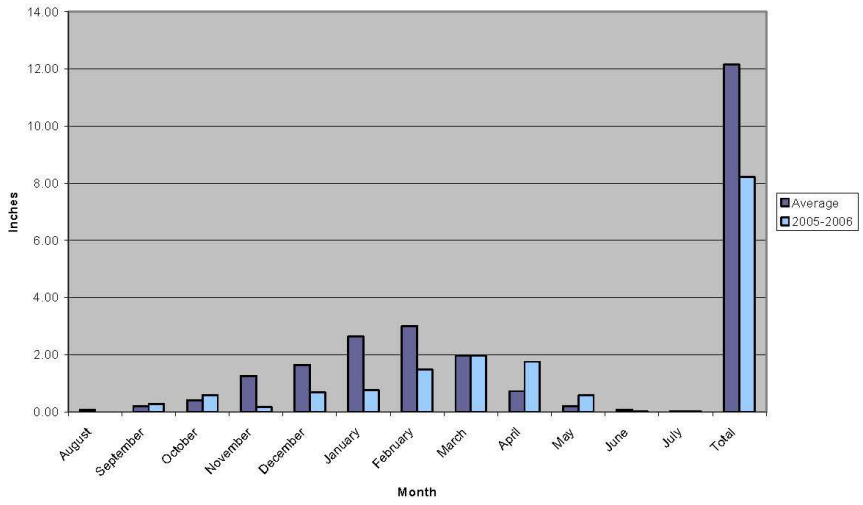
Because the rainy season (which occurs from late fall to spring) is so closely tied to the growing season in the region, rather than measuring annual precipitation and temperature from the beginning of the year to the end, the season is measured starting in August and continues through

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July in this report. Therefore, the data reflect the weather during the entire growing season prior to the collection of monitoring data. This is important in order to correlate weather conditions with species presence and population size in any given year, which are largely affected by climatic conditions during the growing season.

During the 2005/6 period, the Long Beach weather station recorded a total of 8.21 inches of precipitation (CIMIS; accessed from http://wwwcimis.water.ca.gov/cimis/monthlyReport.do), which is 3.93 inches below the annual average. Further, the majority of precipitation received in the region came late in the growing season (*Chart 1*). March had average rainfall and April and May had above-average rainfall.

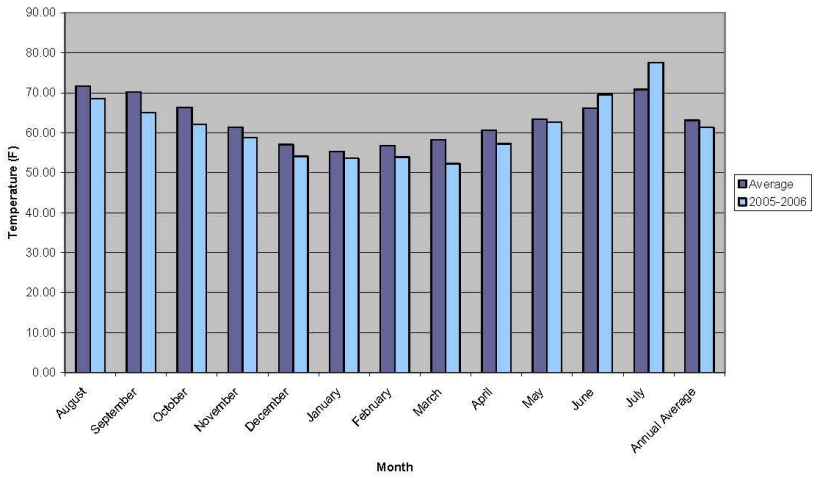
Chart 1
2005-2006 Average Monthly Precipitation for the Portuguese Bend Nature Preserve



The average monthly temperatures for the region from the Long Beach weather station (CIMIS; accessed from http://wwwcimis.water.ca.gov/cimis/monthlyReport.do) are included in *Chart 2*.

The average monthly temperatures in 2005/6 were lower than average through the growing season, higher than average in June, and substantially higher in July 2006 (a record or near-record month for high temperature) (*Chart 2*).

Chart 2
2005-2006 Average Monthly Temperatures for the Portuguese Bend Nature Preserve



Based on the temperature and precipitation data for the 2005/6 season compared to expected averages for the region, it is expected that the 2006 monitoring results for Draft NCCP/HCP-covered species are likely lower than average for species presence and population size, particularly with the annual plant species such as aphanisma. However, multiple years of both weather data and species monitoring results will be needed to establish reliable statistical relationships between weather and productivity to determine any population trends for Draft NCCP/HCP-covered plant and wildlife species within the PBNP.

5.2 Potential Threats/Disturbance Factors and Management Recommendations

Potential threats/disturbance factors described in this report were recorded during the focused botanical and wildlife surveys conducted in 2006. Data sheets included a line item to describe potential threats/disturbance factors for each Draft NCCP/HCP-covered species occurrence. General management recommendations were developed to address each of the potential threats/ disturbance factors and are described below.

5.2.1 Potential Threats/Disturbance Factors for Draft NCCP/HCP-Covered Species

Threats/disturbance factors for Draft NCCP/HCP-covered plant species that were identified within the PBNP include trails/trampling, invasive plants, erosion (coastal bluff and canyon), and herbivory.

Threats/disturbance factors for Draft NCCP/HCP-covered wildlife species that were identified within the PBNP include trails, invasive plants, proximity to houses, parks, or other developed areas, potential for predation from feral cats and red fox, potential nest parasitism from brown-headed cowbirds, and agricultural or disking activities. These threats/disturbance factors, along with management recommendations, are discussed below.

5.2.2 Management Recommendations

Trails: Trails occur throughout most areas of the PBNP. While walking/hiking/riding trails are a permitted use within the PBNP, excessive or unauthorized trails can result in habitat degradation or species disturbance. The development of the Public Use Master Plan for the PBNP will review existing trails to determine if they are appropriate preserve features. If it is determined that some trails are not appropriate for the preserve (e.g., redundant trails, unauthorized trails, etc.), it is recommended that they be blocked, appropriate signage installed, and trail restoration implemented.

Invasive Plants: Invasive plants are present throughout much of the PBNP. Invasive plants pose a substantial threat to the integrity of the vegetation communities within the PBNP. Included in this category is the presence of invasive ornamental species that are located along preserve boundaries in some areas. Of particular concern are some highly invasive non-native species, such as Geraldton carnation spurge (*Euphorbia terracina*), which was observed in Areas R, O, and A, castor bean (*Ricinus communis*), which was observed in several drainages in Areas R, O, A, and B, and Australian saltbush (*Atriplex semibaccata*), which was observed in all areas, particularly on the coastal bluffs.

In accordance with the Draft NCCP/HCP, a Targeted Exotic Plant Removal Program for Plants (TERPP) and a Habitat Restoration Plan (HRP) will be prepared and implemented to address and ameliorate the effects of invasive plant species in the areas with extensive vegetation disturbance and invasive plant problems within the PBNP. The TERPP will designate 5 acres or 20 small sites where invasive plants will be removed (Draft NCCP/HCP 2006). The HRP will identify potential habitat restoration locations within the PBNP and will be revised every 3 years (Draft

NCCP/HCP 2006). If designed and implemented appropriately, these two plans should be effective in reducing the prevalence, and thereby the threat, of invasive plants within the PBNP.

Erosion: Coastal bluff erosion was observed in all survey areas within the PBNP that occur on the coastline. Coastal bluff erosion is particularly severe in the Portuguese Bend area. In addition to coastal bluff erosion, canyon erosion was documented in lower Altamira canyon where the population of sea dahlia occurs. Canyon erosion also occurs in several other canyons on the Peninsula within the PBNP. Plant species that occur on the coastal bluffs (such as island green dudleya, aphanisma, woolly sea-blite, and Santa Catalina Island desert-thorn) or on the side slopes of eroding canyons are threatened by potential erosion. Additionally, wildlife species that rely on the habitat on the coastal bluffs and in eroding canyons are threatened by the loss or degradation of their habitat. The majority of coastal bluff erosion threatening coastal bluff plant and wildlife species is naturally occurring and little can be done to prevent it from happening. The soils on the peninsula are highly erosive and the area is highly geologically active. However, some erosion problems that were noted within the PBNP were a consequence of unauthorized, unstable coastal bluff trails. Established trails could be constructed as replacements to the unauthorized trails to facilitate recreational use, if allowed, and/or unauthorized trails could be closed and revegetated to minimize erosion. Some additional erosion problems on the coastal bluffs are related to disturbed vegetation and the presence of invasive annual species. Restoration of degraded coastal bluffs would help to minimize soil erosion and improve native coastal bluff scrub habitat. Restoration on the coastal bluffs would be complicated by the steep, rugged terrain, which limits access, but could be conducted in some areas with better access. In particular, portions of the coastal bluffs in Area B could be enhanced or restored, with a joint goal to improve habitat for the ESBB.

Canyon erosion can sometimes be mitigated by installing erosion control devices or mechanisms, such as check dams or weirs, and/or revegetating eroded side slopes. Severe canyon erosion problems should be monitored throughout the PBNP and an evaluation of the value of attempting canyon erosion repair to promote the preservation of species should be completed to determine if (and where) canyon erosion repairs should be implemented. It is recommended that the coastal bluffs and eroded canyon areas be considered as potential sites when decisions are made regarding the locations of sites for the TERPP and the HRP described above.

Herbivory: Herbivory of island green dudleya by rabbits was observed in some portions of the PBNP. However, the majority of individuals affected by herbivory are some that have been planted as part of restoration projects associated with the Trump National Golf Course mitigation. These occur in more open and flatter areas away from the coastal bluffs where rabbits have accessibility to the plants. Problems with herbivory were not observed where the majority

of island green dudleya occurs on the steep coastal bluffs. Therefore, herbivory of natural populations of island green dudleya by rabbits is not considered a threat that needs to be addressed at this time. However, continued monitoring of this potential threat is recommended.

Proximity to Houses, Parks, and other Developed Areas: Preserve areas that are in proximity to houses, parks, and other developed areas are potentially subject to adverse edge effects (e.g., invasive ornamental vegetation, noise, cat and dog predation, pioneer trails, etc.). If funding permits, it is recommended that edge effects be monitored over the long term to determine if they become problematic and, if so, to document where the problems are occurring.

Threats from invasive ornamental vegetation to native vegetation communities within the PBNP were discussed above in the section on Invasive Plants. With regard to specific problems with invasive ornamental plants invading into the PBNP from residential areas, parks, and other developed areas, it is recommended that owners or managers of adjacent parcels contributing to invasive ornamental problems in the PBNP be provided a notice which discusses the problems associated with invasive ornamental plants to native vegetation communities and wildlife habitat and recommends alternative, non-invasive ornamental plant options. Additionally, it is recommended that areas affected by invasive ornamental vegetation from adjacent sources to the PBNP be considered as potential sites when decisions are made regarding the locations of sites for the TERPP and the HRP described above.

High noise levels may affect the breeding success of some birds, including CAGN. Additionally, domestic cats and dogs may adversely affect native wildlife. These are potential threats, but determining significant effects from these threats would require specific studies. If adverse effects from these threats are documented within PBNP, management actions could include noise attenuation and public outreach to educate residents about the effects of these threats to native wildlife.

Pioneer trails can become problematic in residential areas adjacent to the preserve. The disturbed areas should be monitored over time to determine if the disturbance areas are growing. If disturbance areas are growing, barriers should be installed and signs should be posted to prevent additional disturbance. New disturbance areas should be restored.

Potential Predation from Feral Cats and Red Fox: In accordance with requirements of the Draft NCCP/HCP, a Predator Control Plan will be developed by PVPLC staff to address threats from non-native predators such as feral cats and red fox. One red fox was observed in Area A during the 2006 surveys within the PBNP (*Figure 6i*). It is recommended that a trapping program for red fox be considered for this area to reduce the threat of predation from this non-native

species. Other areas of the PBNP should also be monitored for additional occurrences of this species, and trapping programs implemented where appropriate.

Potential Nest Parasitism by Brown-Headed Cowbird: As stated in the previous section, a Predator Control Plan will be developed by PVPLC staff to address threats from non-native species, including brown-headed cowbird. Brown-headed cowbird is a nest parasite that lays its eggs in other bird species' nests, including the nests of CAGN. This behavior negatively affects native bird species, and can reduce reproductive success. Brown-headed cowbirds were observed in Areas C and O. It is recommended that a cowbird trapping program be implemented within Area C to reduce the potential for the cowbird to parasitize nests of native bird species. Two traps should adequately cover the area. Area O already has an ongoing cowbird trapping program associated with the Trump National Golf Course. Ongoing monitoring for cowbirds is recommended throughout the PBNP.

Agricultural Land and Disking: Agricultural use was identified in Area V and disking was identified in Area T (*Figure 6f*). These are permitted uses at approved areas within the Preserve. Although disking is required by the Fire Department in some areas, the Draft NCCP/HCP requires an annual meeting to make sure that the areas disked are adequate but not more than is required to produce the desired results. The limits of disturbance should be documented and mapped, and, if funding permits, these areas should be monitored over time to determine if they are increasing in size, and whether or not they are a source of non-native, invasive plant species spreading into the preserve.

5.3 Status of Draft NCCP/HCP-Covered Species

One of the primary purposes of the 2006 surveys is to provide initial survey data to help develop a baseline for future monitoring efforts. While botanical and wildlife species surveys have been conducted in portions of the PBNP in the past, a comprehensive survey to document Draft NCCP/HCP-covered species within the entire PBNP has not been completed. Consequently, comparisons to previous studies to assess population trend analyses are not possible. It is the intent of this initial survey to establish monitoring protocols for each of the Draft NCCP/HCP-covered species so that monitoring results can be compared over time to track population dynamics of the Draft NCCP/HCP-covered plant and wildlife species. Unfortunately, this initial survey was conducted in a year with below-average precipitation during the growing season, resulting in a likely conservative estimate of the populations of annual species such as south coast saltscale. Further, aphanisma was not observed in 2006, and several known locations exist for this species from surveys in previous years. Therefore, while this 2006 survey effort contributes to the baseline for the PBNP, additional survey efforts, particularly during years with

average and above-average precipitation, will help to provide additional population data to improve the baseline data for Draft NCCP/HCP-covered species within the preserve. Several years of data collection will be necessary to eventually establish a baseline due to population dynamics in relation to environmental conditions.

The goal of population monitoring is to implement a monitoring program sufficient to detect significant long-term declines in population levels of Draft NCCP/HCP-covered species within the PBNP (Draft NCCP/HCP 2006). Long-term monitoring within the preserve will focus on population parameters that indicate whether a population is expanding, stable, or declining. Population parameters measured include population size, population density, and population structure (i.e., age classes). Population parameters will be correlated with environmental and ecological data to determine possible causes for declining trends, if observed. Depending on the causes determined, significant declines in population size or density over time may warrant remedial measures to reverse declining trends. Such data analysis will be performed as part of a comprehensive report every 3 years. After multiple years of data are collected, a test for time series analysis may be used to identify significant trends (Draft NCCP/HCP 2006). Because this is the first monitoring period of the Draft NCCP/HCP for Draft NCCP/HCP-covered species in the PBNP, no trend analysis or time series analysis has been conducted.

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APPENDIX A

Vascular Plant Species Observed (2006)

APPENDIX A

Vascular Plant Species Observed (2006)

FILACEAE

DENNSTAEDTIACEAE – BRAKEN FAMILY

Pellaea andromedifolia – coffee fern

POLYPODIACEAE – POLYPODY FAMILY

Polypodium californicum – California polypody

CONIFERAE

PINACEAE – PINE FAMILY

* *Pinus canariensis* – Canary Island pine

* *Pinus halepensis* – Aleppo pine

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE – FIG-MARIGOLD FAMILY

* *Aptenia cordifolia* – baby sun-rose

* *Carpobrotus aequilaterus* – sea-fig

* *Carpobrotus edulis* – Hottentot fig

* *Malephora crocea* – coppery mesemb

* *Mesembryanthemum crystallinum* – crystalline iceplant

* *Mesembryanthemum nodiflorum* – slender-leaved iceplant

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – tumbleweed

ANACARDIACEAE – SUMAC FAMILY

Malosma laurina – laurel sumac

* *Pistacia atlantica* – pistachio

Rhus integrifolia – lemonade-berry

Rhus ovata – sugar-bush

* *Schinus molle* – Peruvian pepper tree

* *Schinus terebinthifolius* – Brazilian pepper tree

APPENDIX A (Continued)

APIACEAE – CARROT FAMILY

Apiastrum angustifolium – wild celery
* *Apium graveolens* – celery
* *Conium maculatum* – poison hemlock
* *Foeniculum vulgare* – fennel

ASCLEPIADACEAE – MILKWEED FAMILY

Asclepias fascicularis – narrow-leaf milkweed

ASTERACEAE – SUNFLOWER FAMILY

Acourtia microcephala – sacapellote, Perezia
* *Ageratina adenophora* – Ageratina
Amblyopappus pusillus – coast weed
Ambrosia psilostachya – western ragweed
Artemisia californica – coastal sagebrush
Artemisia douglasiana – California mugwort
Baccharis emoryi – Emory's baccharis
Baccharis pilularis – coyote brush
Baccharis salicifolia – mule fat
* *Bidens pilosa* – common beggar-ticks
Brickellia californica – California brickellbush
* *Carduus pycnocephalus* – Italian thistle
* *Centaurea melitensis* – star thistle
* *Chrysanthemum coronarium* – garland chrysanthemum
* *Conyza bonariensis* – horseweed
Conyza canadensis – horseweed
Coreopsis maritima – sea dahlia
Deinandra (= Hemizonia) fasciculata – tarweed
Encelia californica – California bush sunflower
x *Encelia farinosa* – brittlebush, incienso
Ericameria palmeri var. *pachylepis* – goldenbush
Eriophyllum confertiflorum – long-stem golden yarrow
Filago californica – California fluffweed
* *Filago gallica* – narrow-leaf filago
* *Gazania* sp. – gazania
Gnaphalium bicolor – bicolor cudweed
Gnaphalium californicum – California everlasting
Gnaphalium canescens – white everlasting
* *Gnaphalium luteo-album* – white cudweed

APPENDIX A (Continued)

x *Grindelia stricta* – gumweed
Gutierrezia californica – California matchweed
Hazardia squarrosa – saw-toothed goldenbush
Heterotheca grandiflora – telegraph weed
* *Hypochaeris glabra* – smooth cat's-ear
Isocoma menziesii ssp. *vernonioides* – coast goldenbush
* *Lactuca serriola* – prickly lettuce
Lasthenia californica – California goldfields
Lessingia filaginifolia – California aster
Malacothrix saxatilis var. *tenuifolia* – cliff malacothrix
* *Osteospermum fruticosum* – trailing African daisy
* *Picris echioides* – bristly ox-tongue
Rafinesquia californica – California chicory
* *Senecio vulgaris* – common groundsel
* *Silybum marianum* – milk thistle
* *Sonchus asper* – prickly sow-thistle
* *Sonchus oleraceus* – common sow-thistle
Stephanomeria virgata – twiggy wreathplant
Xanthium strumarium – cocklebur

BORAGINACEAE – BORAGE FAMILY

Amsinckia menziesii var. *intermedia* – yellow fiddleneck
Cryptantha sp. – cryptantha
* *Echium fastuosum* – pride of Madeira
Heliotropium curassavicum – wild heliotrope

BRASSICACEAE – MUSTARD FAMILY

* *Brassica nigra* – black mustard
* *Cakile maritima* – sea rocket
* *Capsella bursa-pastoris* – shepherd's purse
* *Coronopus didymus* – swine cress
* *Hirschfeldia incana* – short-podded mustard
* *Lobularia maritima* – sweet-alyssum
* *Matthiola incana* – common stock
* *Raphanus sativus* – wild radish
Rorippa nasturtium-aquaticum – water cress
* *Sisymbrium irio* – London rocket

APPENDIX A (Continued)

CACTACEAE – CACTUS FAMILY

Cylindropuntia (= Opuntia) prolifera – coast cholla
Opuntia littoralis – coastal prickly-pear
Opuntia oricola – prickly-pear cactus

CAPPARACEAE – CAPER FAMILY

Isomeris arborea – bladderpod

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

Sambucus mexicana – Mexican elderberry

CARYOPHYLLACEAE – PINK FAMILY

* *Silene gallica* – common catchfly

CHENOPODIACEAE – GOOSEFOOT FAMILY

Atriplex californica – California saltbush
* *Atriplex glauca* – saltbush
Atriplex lentiformis – big saltbush, quail brush
Atriplex pacifica – south coast saltscale
* *Atriplex semibaccata* – Australian saltbush
* *Bassia hyssopifolia* – five-hooked bassia
* *Chenopodium album* – lamb's-quarters
* *Chenopodium ambrosioides* – Mexican tea
* *Chenopodium murale* – nettle-leaved goosefoot
* *Salsola tragus* – Russian-thistle
Suaeda taxifolia – woolly sea-blite

CONVOLVULACEAE – MORNING-GLORY FAMILY

Calystegia macrostegia ssp. *cyclostegia* – morning-glory
Cressa truxillensis – alkali weed
* *Convolvulus arvensis* – bindweed
Convolvulus simulans – small-flowered morning-glory
Dichondra occidentalis – western dichondra

CRASSULACEAE – STONECROP FAMILY

Dudleya lanceolata – lanceleaf dudleya
Dudleya virens ssp. *insularis* – island green dudleya

APPENDIX A (Continued)

CROSSOSOMATACEAE – CROSSOSOMA FAMILY

Crossosoma californica – Catalina crossosoma

CUCURBITACEAE – GOURD FAMILY

Marah macrocarpus – wild cucumber

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce albomarginata – rattlesnake spurge
* *Chamaesyce maculata* – spotted spurge
* *Euphorbia lathyris* – gopher plant
* *Euphorbia peplus* – petty spurge
* *Euphorbia terracina* – Geraldton carnation spurge
* *Ricinus communis* – castor-bean

FABACEAE – PEA FAMILY

* *Acacia cyclops* – acacia
* *Acacia* sp. – acacia
Astragalus trichopodus var. *lonchus* – ocean locoweed
* *Caesalpinia spinosa* – spiny holdback
* *Ceratonia siliqua* – carob tree; locust bean tree
* *Coronilla valentina* – Mediterranean crownvetch
* *Lathyrus odoratus* – sweet pea
* *Lathyrus tingitanus* – Tangier pea
* *Lotus corniculatus* – bird's-foot lotus
Lotus salsuginosus – coastal lotus
Lotus scoparius – California broom; deerweed
Lupinus bicolor – Lindley's annual lupine
x *Lupinus longifolius* – bush lupine
Lupinus succulentus – arroyo lupine
* *Medicago polymorpha* – California burclover
* *Medicago sativa* – alfalfa
* *Melilotus alba* – white sweet-clover
* *Melilotus indica* – yellow sweet-clover
* *Spartium junceum* – Spanish broom
* *Trifolium hirtum* – rose clover
* *Vicia sativa* – spring vetch

APPENDIX A (Continued)

GERANIACEAE – GERANIUM FAMILY

* *Erodium botrys* – long-beaked filaree
* *Erodium cicutarium* – red-stemmed filaree
* *Geranium carolinianum* – Carolina geranium
* *Pelargonium zonale* – garden geranium

HYDROPHYLLACEAE – WATERLEAF FAMILY

Eucrypta chrysanthemifolia – common eucrypta
Phacelia cicutaria – caterpillar phacelia
Phacelia ramosissima – shrubby phacelia
Phacelia parryi – Parry's phacelia
Phacelia tanacetifolia – lacy scorpionweed
Phacelia viscida – sticky phacelia
Pholistoma racemosum– San Diego fiesta flower

LAMIACEAE – MINT FAMILY

* *Marrubium vulgare* – horehound
x *Salvia apiana* – white sage
Salvia columbariae – chia
Salvia leucophylla – purple sage
Salvia mellifera – black sage
Stachys ajugoides var. *rigida* – rigid hedge-nettle

MALVACEAE – MALLOW FAMILY

* *Malva nicaeensis* – bull mallow
* *Malva parviflora* – cheeseweed
* *Malva sylvestris* – mallow

MYOPORACEAE – MYOPORUM FAMILY

* *Myoporum laetum* – myoporum

MYRTACEAE – MYRTLE FAMILY

* *Callistemon viminalis* – weeping bottlebrush
* *Eucalyptus camaldulensis* – red gum
* *Eucalyptus globulus* – blue gum
* *Eucalyptus* sp. – eucalyptus
* *Melaleuca* sp. – NCN

APPENDIX A (Continued)

NYCTAGINACEAE – FOUR O'CLOCK FAMILY

Mirabilis californica – California wishbone-bush

OLEACEAE – OLIVE FAMILY

* *Fraxinus uhdei* – tropical ash

* *Olea europaea* – mission olive

ONAGRACEAE – EVENING-PRIMROSE FAMILY

Epilobium canum ssp. *canum* – California fuchsia

Epilobium ciliatum – California cottonweed

OXALIDACEAE – OXALIS FAMILY

* *Oxalis corniculata* – creeping woodsorrel

* *Oxalis pes-caprae* – Bermuda buttercup

PAPAVERACEAE – POPPY FAMILY

Eschscholzia californica – California poppy

PITTOSPORACEAE – PITTOSPORUM FAMILY

* *Pittosporum undulatum* – Australian cheesewood

PLANTAGINACEAE – PLANTAIN FAMILY

Plantago erecta – dotseed plantain

* *Plantago major* – common plantain

PLUMBAGINACEAE – LEADWORT FAMILY

* *Limonium perezii* – Perez's sea-lavender; statice

* *Limonium sinuatum* – statice

POLYGONACEAE – BUCKWHEAT FAMILY

Eriogonum cinereum – ashyleaf buckwheat

Eriogonum elongatum – long-stemmed buckwheat

Eriogonum fasciculatum ssp. *fasciculatum* – California buckwheat

Eriogonum fasciculatum ssp. *foliolosum* – California buckwheat

Eriogonum fasciculatum ssp. *polifolium* – California buckwheat

Eriogonum fasciculatum x *cinereum* – NCN (natural hybrid)

Eriogonum parvifolium – dune buckwheat

* *Polygonum arenastrum* – common knotweed

Polygonum hydropiperoides – waterpepper

APPENDIX A (Continued)

Pterostegia drymarioides – pterostegia
* *Rumex crispus* – curly dock

PRIMULACEAE – PRIMROSE FAMILY
* *Anagallis arvensis* – scarlet pimpernel

RHAMNACEAE – BUCKTHORN FAMILY
Ceanothus spinosus – greenbark ceanothus

ROSACEAE – ROSE FAMILY
Heteromeles arbutifolia – toyon
x *Horkelia cuneata* – wedgeleaf horkelia
Prunus ilicifolia ssp. *lyonii* – Catalina cherry
* *Pyracantha* sp. – firethorn

RUBIACEAE – MADDER FAMILY
Galium angustifolium – narrow-leaved bedstraw
Galium aparine – goose grass

SALICACEAE – WILLOW FAMILY
Salix lasiolepis – arroyo willow

SAPINDACEAE – SOAPBERRY FAMILY
* *Koelreuteria* sp. – golden rain tree

SCROPHULARIACEAE – FIGWORT FAMILY
Antirrhinum nuttallianum – purple snapdragon
Castilleja affinis – coast paintbrush
Keckiella cordifolia – heart-leaf penstemon
* *Veronica anagallis-aquatica* – water speedwell

SOLANACEAE – NIGHTSHADE FAMILY
Datura wrightii – western jimsonweed
Lycium californicum – California boxthorn
Lycium brevipes var. *hassei* – Santa Catalina Island desert-thorn
x *Lycium* sp. – unidentified Lycium
* *Lycopersicon esculentum* – garden tomato
* *Nicotiana glauca* – tree tobacco
Solanum douglasii – white nightshade

APPENDIX A (Continued)

TROPAEOLACEAE – NASTURTIUM FAMILY

* *Tropaeolum majus* – garden nasturtium

URTICACEAE – NETTLE FAMILY

Urtica dioica ssp. *holosericea* – stinging nettle

* *Urtica urens* – dwarf nettle

VALERIANACEAE – VALERIAN FAMILY

* *Centranthus ruber* – red valerian

VERBENACEAE – VERVAIN FAMILY

* *Lantana montevidensis* – purple trailing lantana

Verbena lasiostachys – western verbena

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE – PALM FAMILY

* *Phoenix canariensis* – Canary Island date palm

* *Washingtonia robusta* – Mexican fan palm

CYPERACEAE – SEDGE FAMILY

Carex sp. – sedge

Cyperus eragrostis – tall cyperus

Cyperus esculentus – yellow nut-grass

* *Cyperus involucratus* – umbrella sedge

IRIDACEAE – IRIS FAMILY

x *Sisyrinchium bellum* – blue-eyed-grass

LILIACEAE – LILY FAMILY

* *Asparagus asparagoides* – smilax

Bloomeria crocea – common goldenstar

Calochortus catalinae – Catalina mariposa lily

Dichelostemma capitatum – blue dicks

* *Yucca* sp. – Spanish bayonet

APPENDIX A (Continued)

POACEAE – GRASS FAMILY

* *Aegilops cylindrica* – jointed goat grass
* *Agrostis viridis* – water bent
* *Avena barbata* – slender oat
* *Avena fatua* – wild oat
* *Brachypodium distachyon* – false brome
Bromus carinatus – California brome
* *Bromus catharticus* – rescue grass
* *Bromus diandrus* – ripgut grass
* *Bromus hordeaceus (=mollis)* – soft chess
* *Bromus madritensis* ssp. *rubens* – foxtail chess
Bromus sp. – brome grass
* *Cortaderia selloana* – pampas grass
* *Cynodon dactylon* – Bermuda grass
* *Digitaria sanguinalis* – hairy crabgrass
Distichlis spicata – salt grass
* *Hordeum murinum* ssp. *leporinum* – foxtail barley
* *Hordeum vulgare* – barley
* *Lamarckia aurea* – goldentop
Leymus condensatus – giant ryegrass
* *Lolium multiflorum* – Italian ryegrass
* *Lolium perenne* – perennial ryegrass
Melica imperfecta – California melic
x *Muhlenbergia rigens* – deergrass
Nassella cernua – nodding needlegrass
Nassella lepida – foothill needlegrass
Nassella pulchra – purple needlegrass
* *Paspalum dilatatum* – dallis grass
* *Pennisetum clandestinum* – kikuyu grass
* *Pennisetum setaceum* – fountain grass
* *Piptatherum miliaceum* – smilo grass
* *Phalaris minor* – canary grass
* *Poa annua* – bluegrass
* *Polypogon monspeliensis* – rabbit's-foot grass
* *Triticum aestivum* – cultivated wheat
* *Vulpia myuros* var. *hirsuta* – annual fescue
* *Vulpia myuros* var. *myuros* – rattail fescue

APPENDIX A (Continued)

TYPHACEAE – CATTAIL FAMILY

Typha angustifolium – narrow-leafed cattail
Typha latifolia – broad-leaved cattail

* Signifies introduced (non-native) species
x Likely introduced from restoration projects; native to the region but not naturally occurring within the PBNP area
NCN Signifies no common name

APPENDIX B

Wildlife Species Observed (2006)

APPENDIX B

Wildlife Species Observed (2006)

REPTILES

IGUANIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard
Uta stansburiana – side-blotched lizard

ANGUIDAE – ALLIGATOR LIZARDS

Gerrhonotus multicarinatus – southern alligator lizard

COLUBRIDAE – COLUBRID SNAKES

Lampropeltis getulus – common kingsnake
Pituophis melanoleucus – gopher snake

VIPERIDAE – VIPERS

Crotalus viridis – western rattlesnake

BIRDS

PELECANIDAE – PELICANS

Pelecanus occidentalis – brown pelican

PHALACROCORACIDAE – CORMORANTS

Phalacrocorax auritus – double-crested cormorant

ANATIDAE – WATERFOWL

Anas platyrhynchos – mallard

ACCIPITRIDAE – HAWKS

Accipiter cooperii – Cooper's hawk
Buteo jamaicensis – red-tailed hawk

FALCONIDAE – FALCONS

Falco sparverius – American kestrel

APPENDIX B (Continued)

PHASIANIDAE – PHEASANTS and QUAILS

Callipepla californica – California quail
Pavo cristatus – Peafowl

RALLIDAE – RAILS and GALLINULES

Fulica americana – American coot

CHARADRIIDAE – PLOVERS

Charadrius vociferus – killdeer

LARIDAE – GULLS and TERNS

Larus sp. – gull
Sterna antillarum – least tern

COLUMBIDAE – PIGEONS and DOVES

* *Columba livia* – rock dove
Zenaida macroura – mourning dove

CUCULIDAE – CUCKOOS and ROADRUNNERS

Geococcyx californianus – greater roadrunner

TYTONIDAE – BARN OWLS

Tyto alba – barn owl

STRIGIDAE – TRUE OWLS

Bubo virginianus – great horned owl

APODIDAE – SWIFTS

Aeronautes saxatalis – white-throated swift

TROCHILIDAE – HUMMINGBIRDS

Calypte anna – Anna's hummingbird
Calypte costae – Costa's hummingbird
Selasphorus rufus – rufous hummingbird
Selasphorus sasin – Allen's hummingbird

APPENDIX B (Continued)

PICIDAE – WOODPECKERS

Colaptes auratus – northern flicker
Sphyrapicus ruber – red-breasted sapsucker (sign)

TYRANNIDAE – TYRANT FLYCATCHERS

Empidonax difficilis – Pacific-slope flycatcher
Myiarchus cinerascens – ash-throated flycatcher
Sayornis nigricans – black phoebe
Tyrannus vociferans – Cassin's kingbird
Tyrannus verticalis – western kingbird

HIRUNDINIDAE – SWALLOWS

Hirundo rustica – barn swallow
Petrochelidon pyrrhonota – cliff swallow
Stelgidopteryx serripennis – northern rough-winged swallow
Tachycineta bicolor – tree swallow

CORVIDAE – JAYS and CROWS

Aphelocoma californica – western scrub-jay
Corvus brachyrhynchos – American crow
Corvus corax – common raven

AEGITHALIDAE – BUSHTITS

Psaltriparus minimus – bushtit

TROGLODYTIDAE – WRENS

Campylorhynchus brunneicapillus – cactus wren
Thryomanes bewickii – Bewick's wren

SYLVIIDAE – GNATCATCHERS

Polioptila caerulea – blue-gray gnatcatcher
Polioptila californica californica – coastal California gnatcatcher

TIMALIIDAE – LAUGHINGTHRUSH and WRENTITS

Chamaea fasciata – wrentit

MIMIDAE – THRASHERS

Mimus polyglottos – northern mockingbird
Toxostoma redivivum – California thrasher

APPENDIX B (Continued)

PTILOGONATIDAE – SILKY-FLYCATCHERS

Phainopepla nitens – phainopepla

STURNIDAE – STARLINGS

* *Sturnus vulgaris* – European starling

PARULIDAE – WOOD WARBLERS

Geothlypis trichas – common yellowthroat
Vermivora celata – orange-crowned warbler

EMBERIZIDAE – BUNTINGS and SPARROWS

Aimophila ruficeps – rufous-crowned sparrow
Melospiza melodia – song sparrow
Molothrus ater – brown-headed cowbird
Pipilo crissalis – California towhee
Pipilo maculatus – spotted towhee
Zonotrichia leucophrys – white-crowned sparrow

CARDINALIDAE – CARDINALS and GROSBEAKS

Passerina caerulea – blue grosbeak
Pheucticus melanocephalus – black-headed grosbeak

ICTERIDAE – BLACKBIRDS and ORIOLES

Agelaius phoeniceus – red-winged blackbird
Icterus cucullatus – hooded oriole
Sturnella neglecta – western meadowlark

FRINGILLIDAE – FINCHES

Carpodacus mexicanus – house finch
Carduelis psaltria – lesser goldfinch

PASSERIDAE – OLD WORLD SPARROWS

* *Passer domesticus* – house sparrow

MAMMALS

DIDELPHIDAE – NEW WORLD OPOSSUMS

* *Didelphis virginiana* – Virginia opossum

APPENDIX B (Continued)

LEPORIDAE – HARES and RABBITS
Sylvilagus bachmani – brush rabbit

SCIURIDAE – SQUIRRELS
Spermophilus beecheyi – California ground squirrel

GEOMYIDAE – POCKET GOPHERS
Thomomys bottae – Botta's pocket gopher

MURIDAE – RATS and MICE
Neotoma sp. – woodrat (midden)

CANIDAE – WOLVES and FOXES
Canis latrans – coyote
* *Vulpes vulpes* – red fox

MUSTELIDAE – WEASELS, SKUNKS, and OTTERS
Mephitis mephitis – striped skunk

BUTTERFLIES AND MOTHS

PAPILIONIDAE – SWALLOWTAILS
Papilo zelicaon lucas – anise swallowtail

PIERIDAE – WHITES AND SULFURS
Pieris rapae rapae – cabbage butterfly
Pontia protodice – checkered white

LYCAENIDAE – BLUES, HAIRSTREAKS, and COPPERS
Euphilotes battoides allyni – El Segundo blue butterfly
Leptotes marina – marine blue
Strymon sp. – hairstreak

NYMPHALIDAE – BRUSH-FOOTED BUTTERFLIES
Nymphalis antiopa – mourning cloak
Vanessa atalanta – red admiral

* signifies introduced (non-native) species

APPENDIX C

Plant and Wildlife Survey Field Data Form Examples

Palos Verdes Peninsula Land Conservancy
California Gnatcatcher Monitoring Field Form

Date_____ (M/D/Y) Surveyor_____ Survey Area _____ Sheet ___ of ____

	START	END
Time (2400)		
Temperature (°Fahrenheit)		
Cloud Cover (%)		
Wind Speed (MPH)		

ID # = Alphanumeric identifier for point location Age/Sex = Pair, Male, Female, Juvenile Mapped = GPS or Photo Nest= Yes or No Para = Yes or No
Height = height of nest in shrub Dist = Distance of next below shrub canopy
Slope = note the average slope for the ID # Elev = note the elevation of the ID #
Veg = note the dominant vegetation classification for the ID# (Use Holland)
Habitat Dist. = trails, weeds, houses, noise, pets, etc.

ID #	AGE/SEX	MAPPED	NEST	% COMPL	# EG/NSTL /FLDG	PARASIT	HOST SHRUB	HEIGHT	DIST	SLOPE	ELEV	VEG	HABITAT DIST.

Palos Verdes Peninsula Land Conservancy
Sensitive Species Survey Form ___ _____ **2006**

Project site:

Species:

Surveyor(s):

GPS unit:	UTM Coordinates:
Survey area:	Polygon #: 2006 - _____ (5-digit code) (survey area-initials (2)-record number)

Location (*e.g.*, E side Long Cyn):

Population estimate:

Size of sample estimation area (*e.g.*, 10 x 20 cm, 1 x 1 m):

Number of sample estimation areas in polygon and estimate of number of individuals within each sample:

Estimated number of individuals in polygon:

(# indiv./est. area x # est. areas)

OR--Total number of individuals in this estimation area:

Population estimate notes:

Population Structure (Age class, etc.)	Polygon mapping schematic (if needed)
Natural recruitment? (y/n)	
Polygon data: Aspect:	
Slope (in degrees):	
Soils:	
Habitat (consistent with NCCP):	

Description of Vegetation (Estimate percent cover native vegetation, bare ground, non-native plants):

Associated Species:

Disturbance factors/immediate threats:

Additional Notes (*i.e.*, site conditions, dispersal vectors, herbivory):

Photo Documentation Point? (y/n)

APPENDIX D

Coastal California Gnatcatcher and Cactus Wren Species Accounts

APPENDIX D

Coastal California Gnatcatcher and Cactus Wren Species Accounts

Coastal California Gnatcatcher (*Polioptila californica californica*)

Habitat and Habitat Associations

The coastal California gnatcatcher (gnatcatcher), a subspecies of the California gnatcatcher, is a small member of the thrush family (Muscicapidae). The gnatcatcher typically occurs in or near sage scrub habitat, which is a broad category of vegetation that includes the following plant communities as classified by Holland (1986): Venturan coastal sage scrub, Diegan coastal sage scrub, maritime succulent scrub, Riversidean sage scrub, Riversidean alluvial fan sage scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub. Coastal sage scrub is composed of relatively low-growing, dry-season deciduous, and succulent plants. Characteristic plants of this community include California sagebrush (*Artemisia californica*), various species of sage (*Salvia* sp.), California buckwheat (*Eriogonum fasciculatum*), lemonadeberry (*Rhus integrifolia*), California encelia (*Encelia californica*), and *Opuntia* spp. Ninety-nine percent of all gnatcatcher locality records occur at or below an elevation of 984 feet (Atwood 1990).

Coastal sage scrub is patchily distributed throughout the range of the gnatcatcher, and the gnatcatcher is not uniformly distributed within the structurally and floristically variable coastal sage scrub community. Rather, the subspecies tends to occur most frequently within the California sagebrush-dominated stands on mesas, gently sloping areas, and along the lower slopes of the coast ranges (Atwood 1990). An analysis of the percent gap in shrub canopy supports the general impression that gnatcatchers prefer relatively open stands of coastal sage scrub (Bontrager 1991). The gnatcatcher occurs in high frequencies and densities in scrub with an open or broken canopy, while it is absent from scrub dominated by tall shrubs and occurs in low frequencies and densities in low scrub with a closed canopy (Weaver 1998). The territory size increases as vegetation density decreases and with distance from the coast, probably due to food resource availability. Thus, gnatcatchers will use even sparsely vegetated coastal sage scrub for shelter and to forage for insects as long as perennial shrubs are available (ERCE 1990).

Gnatcatchers also use chaparral, grassland, and riparian or alluvial habitats where they occur adjacent to sage scrub (Bontrager 1991). The use of these habitats appears to be most frequent during late summer, autumn, and winter, with smaller numbers of birds using such areas during the breeding season. These non-sage scrub habitats are used for dispersal, but data on dispersal use are largely anecdotal (Bowler 1995; Campbell et al. 1995). Although existing quantitative data may reveal relatively little about gnatcatcher use of these other habitats, these areas may be critical during certain times of the year for dispersal or as foraging areas during drought conditions (Campbell et al. 1998). Breeding territories have also been documented in non-sage scrub habitat. Campbell et al. (1998) discuss likely hypotheses explaining why non-CSS habitat

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is used by gnatcatchers including food source availability, dispersal areas for juveniles, temperature extremes, fire avoidance, and lowered predation rate for fledglings.

Environmental, vegetational, and food-abundance characteristics are important aspects of territory quality; however, they are related to the time of year when the evaluation is made (Redak et al. 1997). Based on the studies of Redak et al. (1997) during the breeding season, habitat use was negatively associated with distance to the coast and the elevation of the territory. The habitat use was positively associated with the abundance of adult stages of beetles, flies, spiders, and larval stages of all arthropods. Plots with high densities of California sagebrush, flat-topped buckwheat, and white sage were also used by birds. In contrast, during the non-breeding season, the correlation of habitat use with vegetation and location variables remained but the correlation was no longer present with the arthropod communities.

Biogeography

Historically, gnatcatchers occurred from southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties and into Baja California, Mexico to approximately 30 degrees north latitude, near El Rosario (Atwood 1990). A detailed analysis of elevational limits associated with gnatcatcher locality records reveals that a significant portion, 65 to 70 percent of the historic range, may have been located in Southern California rather than Baja California (USFWS 2000). The gnatcatcher was considered locally common in the mid-1940s, but by the 1960s this subspecies had declined substantially in the United States owing to widespread destruction of its habitat (Atwood 1990). Currently, the subspecies occurs on coastal slopes of Southern California, ranging from southern Ventura southward through Palos Verdes Peninsula in Los Angeles County through Orange, Riverside, San Bernardino, and San Diego Counties into Baja California to El Rosario, Mexico, at about 30 degrees north latitude (Atwood 1991). In 1993, the USFWS estimated that approximately 2,562 pairs of gnatcatchers remained in the United States. Of these, 30 pairs occurred in Los Angeles County, 757 pairs occurred in Orange County, 261 pairs occurred in Riverside County, and 1,514 pairs occurred in San Diego County.

Biology

Genetics

The coastal California gnatcatcher was originally described as a distinct species by Brewster (1881) based on specimens; however, Grinnell (1926) concluded that it is a subspecies of the black-tailed gnatcatcher (*Polioptila melanura*), which is widely distributed throughout the Sonoran and Chihuahuan deserts of the southwestern United States and Mexico. Atwood (1980, 1988) concluded that the species was specifically distinct from *P. melanura*, based on

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differences in ecology and behavior, which was adopted by the American Ornithologists' Union Committee on Classification and Nomenclature (American Ornithologists Union 1957, 1989). Recent mitochondrial DNA sequencing confirmed the species-level recognition of the coastal California gnatcatcher, which was calculated to differ from the black-tailed gnatcatcher (*P. melanura*) by 4.0 percent, similar to differences calculated in the black-capped gnatcatcher (*P. nigriceps*) and white-lored gnatcatcher (*P. albiloris*) (Zink and Blackwell 1998).

Diet and Foraging

The coastal California gnatcatcher is primarily insectivorous, non-migratory, and exhibits strong site tenacity (Atwood 1990). The diet, deduced from fecal samples, resulted in leaf- and plant-hoppers and spiders predominating the samples. True bugs, wasps, bees, and ants were only minor components of the diet (Burger et al. 1999). Gnatcatcher adults selected prey to feed their young that was larger than expected given the distribution of arthropod size available in their environment, and chicks were provisioned with larger prey items and significantly more grasshoppers, crickets, and spiders. Both adults and young consumed more sessile than active prey items (Burger et al. 1999).

The richness of the insect community within a habitat area may be a useful tool for describing the quality of the habitat (Burger et al. 1996). This is especially important for strictly insectivorous species such as the coastal California gnatcatcher. Gnatcatcher habitat use has been positively associated with total insect species richness and total individual insect abundance (Redak et al. 1996). Thus, overall food abundance and diversity plays an important role in territory selection and use for this species (Redak et al. 1996). Habitat use during the non-breeding season showed no clear relationship to any component of the arthropod community (Redak et al. 1997).

Daily Activity

Activity budget data indicate that gnatcatchers are most active and vocal during the morning. A lull in activity usually occurs during mid-day and activity increases again late in the day (Mock et al. 1990).

Reproduction

The breeding season of the gnatcatcher extends from mid February through mid-August, with the peak of nesting activity occurring from mid-March through mid-May. The gnatcatcher nest is a small, cup-shaped basket usually found 1 to 3 feet above the ground in a small shrub or cactus. Clutch sizes range between three and five eggs, with the average being four. Juvenile birds associate with their parents for several weeks (sometimes months) after fledging (Atwood 1990). The coastal California gnatcatcher is a year-round resident. Nest building begins during the mid part of March with the earliest recorded egg date approximately March 20 (Mock et al. 1990).

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Post-breeding dispersal of fledglings occurs between late May and late November. Predation may be a major source of nest failure (Bontrager 1991; Grishaver et al. 1998). In western Riverside County, 78.9 percent of the nesting attempts failed, with 52.9 percent suffering from nest predation (Braden 1999).

Nest site attendance by male gnatcatchers was determined to be equal to that of females for the first nest attempt and then decline to almost 1/3 of that of the female for later nesting attempts (Sockman 1998).

The frequency with which various plant species have been recorded as nesting substrata indicates the overall preference of the sage scrub community as the habitat type (Atwood 1980). California sagebrush was chosen 25 percent of the time, with other species, including white sage, black sage, chamise, cholla, buckthorn, orange, lemonadeberry, and others making up the balance of nest shrub selections (Atwood 1980).

Survival

Gnatcatchers are persistent nest builders and typically often attempt multiple broods upon nesting failure, which is suggestive of a high reproductive potential. This is, however, typically offset by high rates of nest predation and brood parasitism (Atwood 1990). High rates of nest failure may account for the high number of nesting attempts of the coastal California gnatcatcher (Grishaver et al. 1998). Gnatcatchers typically live for 2 to 3 years, although ages of up to 5 years have been recorded for some banded birds (Braden et al. 1995). Most of the juvenile birds usually die during the cold winter months, although the percentage was not quantified. Observations indicate that gnatcatchers are highly vulnerable to extremely cold, wet weather (Mock et al. 1990).

Dispersal

Dispersal is a means by which genetic and demographic exchange between subpopulations maintains the viability of the regional metapopulation (Bailey and Mock 1998). Details regarding the dispersal effect on genetic and demographic connectivity of subpopulations and the actual requirements for dispersal are largely unknown (Rotenberry and Scott 1998), but some information can be documented from anecdotal observations. The mean dispersal distance of gnatcatchers banded as nestlings for males was 2.85 km and for females was 3.33 km (Atwood et al. 1996). Mean dispersal of juveniles in Orange County was found to be 1.05 km with one individual dispersing a total of 7.55 km (Galvin 1998). Although the mean dispersal distances that have been documented above are relatively low, dispersal of juveniles is difficult to observe and to document without extensive banding studies. It is likely that the few current studies underestimate the gnatcatcher's typical dispersal capacity because of the difficulty of detection (Bailey and Mock 1998). Juvenile coastal California gnatcatchers are apparently able to traverse

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highly man-modified landscapes, including non-native landscaping vegetation, for at least short distances, and this underestimation of the species' dispersal capability can lead to an overestimation of the metapopulation's vulnerability to extinction (Bailey and Mock 1998). A few observations of gnatcatcher dispersal behavior indicate that a steppingstone linkage, that is, a series of small patches of suitable habitat interspersed with developed habitat, is deemed acceptable for situations where the habitat is otherwise fragmented and no contiguous linkage is available (Bailey and Mock 1998). Additionally, natural and restored coastal sage scrub habitat along highway corridors has been documented to be used for foraging and nesting by gnatcatchers and may serve important dispersal functions (Famolaro and Newman 1998). Typically, however, the dispersal of juveniles requires a corridor of native vegetation which provides foraging and cover opportunities to link larger patches of appropriate sage scrub vegetation (Soule 1991). These dispersal corridors may facilitate the exchange of genetic material and provide a path for recolonization of areas from which the species has been extirpated and increased mating opportunities for unpaired birds (Soule 1991; Galvin 1998).

The natal dispersal, for a non-migratory bird such as the coastal California gnatcatcher, is an important aspect of the biology of the species (Galvin 1998).

Socio-Spatial Behavior

The coastal California gnatcatcher seems to become highly territorial by late February or early March each year. Males seem to be very vocal during this time period (Mock et al. 1990). In San Diego County, the territory size for inland sites was calculated to range between 13 and 39 acres per pair, averaging 24 acres per pair (ERCE 1990). In Riverside County, it was estimated that about 24 acres of sage scrub habitat (three times the average territory size of 8 acres as measured within the HCP area) was required per pair of coastal California gnatcatchers (Braden 1998, personal communication). The distribution of the gnatcatcher is thought to be related to elevation, with most of the birds located below 250 m elevation within 35 km of the coast and 500 m elevation for inland regions (Atwood and Bolsinger 1992). During the non-breeding season, gnatcatchers have been observed to wander in adjacent territories and unoccupied habitat, increasing their home range size to approximately 78 percent larger than their breeding territory (Preston et al. 1998). Estimates of the territory size should be examined with caution, as the calculation may be influenced by differences in data collection and analysis (Atwood et al. 1998).

Coastal California gnatcatchers are most often observed in pairs even in the non-breeding season. They appear to maintain their territories and are relatively sedentary throughout the year (Dunn and Garrett 1987). In fact, vocalization rates, which may provide communication within the pair, were highest from August through March (Preston et al. 1998).

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Community Relationships

Predation occurs in greater proportion in the upper and lower one third of the nest shrub. Predation was lower in nests with full clutch sizes, which may indicate the parents are more attentive to the nest after the clutch is complete (Sockman 1997). Potential predators include scrub jays, greater roadrunners, and cactus wrens, which have been observed to be actively mobbed by the gnatcatcher (Bontrager 1991). The coastal California gnatcatcher also is known to be affected by nest parasitism of the brown-headed cowbird. However, the gains in nest success from decreased nest parasitism appear to be negated by increased nest abandonment due to predation before cowbirds have migrated into an area (Braden et al. 1997). Thus, although a cowbird trapping program may reduce parasitism significantly and lower abandonment due to parasitism, nest predation then increases and negates the benefit of the trapping program (Braden et al. 1997). Nest parasitism apparently has resulted in earlier nesting dates of the gnatcatcher, which may help compensate for the negative effect of parasitism (Patten and Campbell 1998).

Although the coastal California gnatcatcher may serve as an adequate "umbrella species" for other species that occur in similar habitats and that require a similar territory size or smaller (Fleury et al. 1998), it is not a particularly good indicator of bird-species richness in coastal sage scrub habitat (Chase et al. 1998).

Threats to Species

In 1997, the total number of gnatcatchers in the United States was estimated at 2,899 pairs, after subtracting out all gnatcatcher pairs authorized for Take under Habitat Loss Permits, approved Natural Community Conservation Plans, Habitat Conservation Plans, and section 7 consultations ("Reinitiation of formal consultation on implementation of the special rule for the coastal California gnatcatcher [1-6-93-FW-37R1]"). This apparent increase in abundance since 1993 is likely the result of additional surveys occurring within previously unsurveyed areas, as well as increased productivity in response to favorable climatic conditions (USFWS 2000).

Although observed declines in numbers and distribution of the gnatcatcher resulted from numerous factors, habitat destruction, fragmentation, and adverse modification are the principal reasons for the gnatcatcher's current threatened status (USFWS 1993). The amount of coastal sage scrub available to gnatcatchers has continued to decrease during the period after the listing of the species. It is estimated that up to 90 percent of coastal sage scrub vegetation has been lost as a result of development and land conversion (Westman 1981a, 1981b; Barbour and Major 1977), and coastal sage scrub is considered to be one of the most depleted habitat types in the United States (Kirkpatrick and Hutchinson 1977; Axelrod 1978; Klopatek et al. 1979; Westman 1987; O'Leary 1990). The fragmentation of habitat may artificially increase populations in adjacent preserved habitat; however, these population surpluses may be lost in subsequent years

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due to crowding and lack of resources (Scott 1993). In addition, agricultural uses, such as grazing and field crops, urbanization, air pollution, increases in fire frequency, and the introduction of exotics, have all had an adverse impact on extant sage scrub habitat. A consequence of urbanization that is contributing to the loss, degradation, and fragmentation of coastal sage scrub is an increase in wildfires due to anthropogenic ignitions (human-caused fires). High fire frequencies and the lag period associated with recovery of the vegetation may significantly reduce the viability of affected subpopulations of the gnatcatcher (USFWS 1991).

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APPENDIX D (Continued)

Cactus Wren (*Campylorhynchus brunneicapillus*)

Habitat and Habitat Associations

The cactus wren is an obligate, non-migratory resident of the coastal sage scrub plant community (as defined by Westman 1983 and O'Leary 1990). It frequents deserts and other arid terrain with thickets, patches, or tracts of larger, branching cacti, stiff-twigged, thorny shrubs, and small trees (Grinnell and Miller 1944). In other areas, it is considered an inhabitant of the Chihuahuan, Mojave, and Sonoran deserts and Tamalpais thorn-shrub communities. It may also be considered a resident of scrubby flats, cactus and mesquite lowland areas, brushy mesas, gulches, hills, and canyons in Texas, desert riparian, creosote bush, and large arroyos in Nevada (Proudfoot et al. 2000). It is closely associated with three species of cacti and occurs almost exclusively in thickets of cholla (*Opuntia prolifera*) and prickly pear (*Opuntia littoralis* and *Opuntia oricola*) dominated stands of coastal sage scrub below 457 meters in elevation on mesas and lower slopes of the coast ranges (Proudfoot et al. 2000). Although it lives over a wide range from Texas to the Pacific Ocean, it is limited to regions with thorny shrubs and trees that offer nesting sites (Terres 1980).

Characteristic shrubs associated with habitat occupied by the cactus wren and within the coastal sage scrub community include California buckwheat (*Eriogonum fasciculatum*), coastal sagebrush (*Artemisia californica*), several sages (*Salvia* spp.), and scattered shrubs approaching tree size, such as laurel sumac (*Malosma laurina*) and lemonadeberry (*Rhus integrifolia*) (Garrett and Dunn 1981, Unitt 1984, Rea and Weaver 1990). Thickets of xeric vegetation may provide cover and thermal relief. The nest is also used as a roost site (Anderson and Anderson 1957).

Biogeography

The cactus wren is a resident species from Southern California south to southern Baja California, southern Nevada, southwestern Utah, western and south central Arizona, southern New Mexico, and central Texas south to Mexico (Terres 1980).

Zeiner et al. (1990) summarize the distribution, abundance, and seasonality of the cactus wren in California as follows. It is a locally common resident in the Mojave and Colorado deserts, north from the Mexican boundary to Inyo and Kern counties. The coastal race is found in arid parts of westward-draining slopes from San Diego County northwest to Ventura County. It frequents desert succulent shrub, Joshua tree, and desert wash habitats. Historically, cactus wrens within coastal areas were found on the coastal slopes and lowlands of Southern California in arid and semiarid regions with abundant cacti (Grinnell 1898, Grinnell and Miller 1944, Unitt 1984). As

APPENDIX D (Continued)

early as 1944, authorities noted that loss of habitat had greatly reduced the historic range of this species (Grinnell and Miller 1944).

Biology

Genetics

The variation in plumage patterns and characters are used to distinguish the subspecies of the cactus wren. Eight subspecies are recognized, with the subspecies falling into roughly two groups: the *affinis* group (peninsular forms) and the *brunneicapillus* group (continental forms) (Proudfoot et al. 2000). The range of *C. b. couesi* is now geographically disjunct from interior desert populations as a result of urbanization of the corridor along the San Gorgonio Pass in Riverside County (Rea and Weaver 1990).

Diet and Foraging

The cactus wren forages on the ground and in low vegetation for insects and other small invertebrates, cactus fruits and other fruits, seeds, and nectar (Bent 1968; Anderson and Anderson 1973). Fruits make up 15–20 percent of the annual diet, which is more than most North American wrens (Ehrlich, et al. 1988). Foraging behavior is often regulated by heat stress (Ricklefs and Hainsworth 1968), necessitating retreat from exposed sites into shade of shrubs and trees. The cactus wren generally forages on the ground, turning over fallen leaves and other debris in search of insects. It also searches bushes and probes tree bark housing insects. Foliage-gleaning may increase with insect abundance and habitat complexity (Proudfoot et al. 2000).

Daily Activity

The cactus wren exhibits year-long, diurnal activity. The species is not migratory (Zeiner et al. 1990).

Reproduction

For the cactus wren, thickets of vegetation provide cover and shelter, and the nest, which is usually located in cactus, is used as a roost site as well as for breeding. The nest is usually built in cholla or other large, branching cactus, in yucca, or in a stiff-twigged, thorny shrub or small tree. The nest is an intricate, woven cylinder, usually placed horizontally 1.2 to 1.5 meters (4–5 feet) above the ground (Anderson and Anderson 1957). The large, globular chamber of the nest is about 18 centimeters in diameter with a tunnel-shaped passageway about 9 centimeters in diameter with as much as 30 centimeters between the back wall of the nest chamber and the entrance opening. The mouth of the entrance is usually about 7 centimeters above the base of the chamber. Because the passageway is too small to admit a flying bird, a doorstep or perch is required near the entranceway (Proudfoot et al. 2000). It breeds from March into June. The clutch size is 4–5 eggs, with a range of 3–7 eggs (Harrison 1978). Two broods per season is

APPENDIX D (Continued)

common. Incubation is 15–18 days, by the female only (Anderson and Anderson 1960). The altricial nestlings fledge at 17–23 days, with an average of 21 (Hensley 1959, Anderson and Anderson 1960). The young may return to roost in the nest after fledging. The young become independent at about 1 month after leaving the nest; sometimes the young help feed the young of later broods (Harrison 1978).

Survival

Anderson and Anderson (1973) report an overall adult survival rate of 50.6 percent during a 6-year study. One banded adult was re-trapped when it was 4 years old (Terres 1980).

Dispersal

The species is generally considered to have low dispersal capabilities but there is little information available (Ogden Environmental and Energy Services 1993). In Arizona, of 55 nestlings banded, 41 dispersed from the natal site by 45 days post-fledging. Males remain near the natal site, usually dispersing only as far as parental territorial behavior dictates (Proudfoot et al. 2000).

Socio-Spatial Behavior

The home range may be the same as the territory (Anderson and Anderson 1963). The average territory was 1.9 hectares (4.8 acres), varying from 1.2–2.8 hectares (2.9–6.9 acres) in Arizona (Anderson and Anderson 1973). The cactus wren may maintain its territory year round (Anderson and Anderson 1963).

Community Relationships

Domestic cats, roadrunners, snakes, and loggerhead shrikes prey on adults and nestlings (Anderson and Anderson 1973). Austin et al. (1972) observed nestling predation by gopher snakes and whipsnakes. Frequent interactions with curve-billed thrashers have been reported by Anderson and Anderson (1963), including destruction of cactus wren roosting nests by thrashers.

Threats to Species

Continued threats to the cactus wren include habitat loss and fragmentation from urbanization and agricultural development. Domestic cats, roadrunners, snakes, and loggerhead shrikes prey on adults and nestlings (Anderson and Anderson 1973). Cactus wrens that are confined to isolated patches of habitat in urbanizing areas are subject to increased levels of predation pressures as larger predators are replaced by greater population levels of smaller predators and domestic animals. This species is especially vulnerable to stochastic events, especially wildland fires. Because of its narrow habitat requirements, sedentary behavior, and low dispersal characteristics, cactus wrens are subject to loss by fires and, if they disperse, may not find

APPENDIX D (Continued)

suitable habitat to survive. Intense fires may actually kill cactus plants and eliminate habitat for the cactus wren. As a result of competition from invasive plant competition, grazing, weather patterns, and other natural and human-influenced disturbances, the reestablishment of cactus patches essential to this species may take many years. An increasing pattern of habitat fragmentation and isolated populations also diminishes the dispersal ability and inter-population connections of the cactus wren and reduces the overall genetic viability of the species (Ogden Environmental and Energy Services 1993).

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2007 Predator Control Plan

2007 PREDATOR CONTROL PLAN FOR THE PORTUGUESE BEND NATURE PRESERVE FOR THE RANCHO PALOS VERDES DRAFT NATURAL COMMUNITY CONSERVATION PLAN AND HABITAT CONSERVATION PLAN

Prepared for:

THE CITY OF RANCHO PALOS VERDES
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APRIL 2007

2007 Predator Control Plan for the Portuguese Bend Nature Preserve

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2007 Predator Control Plan for the Portuguese Bend Nature Preserve

EXECUTIVE SUMMARY

This 2007 Predator Control Plan for the Portuguese Bend Nature Preserve (PCP) outlines appropriate provisions and measures to adequately comply with the Preserve Management requirements of the Rancho Palos Verdes Draft Natural Community Conservation Plan and Habitat Conservation Plan (Draft NCCP/HCP). The Draft NCCP/HCP Section 6.3.4 requires a Predator Control Plan to be drafted and revised every three years after the results from the comprehensive surveys. This PCP has been written based on the results of the Initial Management and Monitoring Report and recommends specific actions to be taken to reduce predation of covered species within the PBNP for the following 3 years.

This PCP provides the framework for the pet/feral animal education program and the native predator education program, and establishes the need for monitoring for feral or domestic animals, native large predators, and mesopredators.

2007 Predator Control Plan for the Portuguese Bend Nature Preserve

1.0 INTRODUCTION

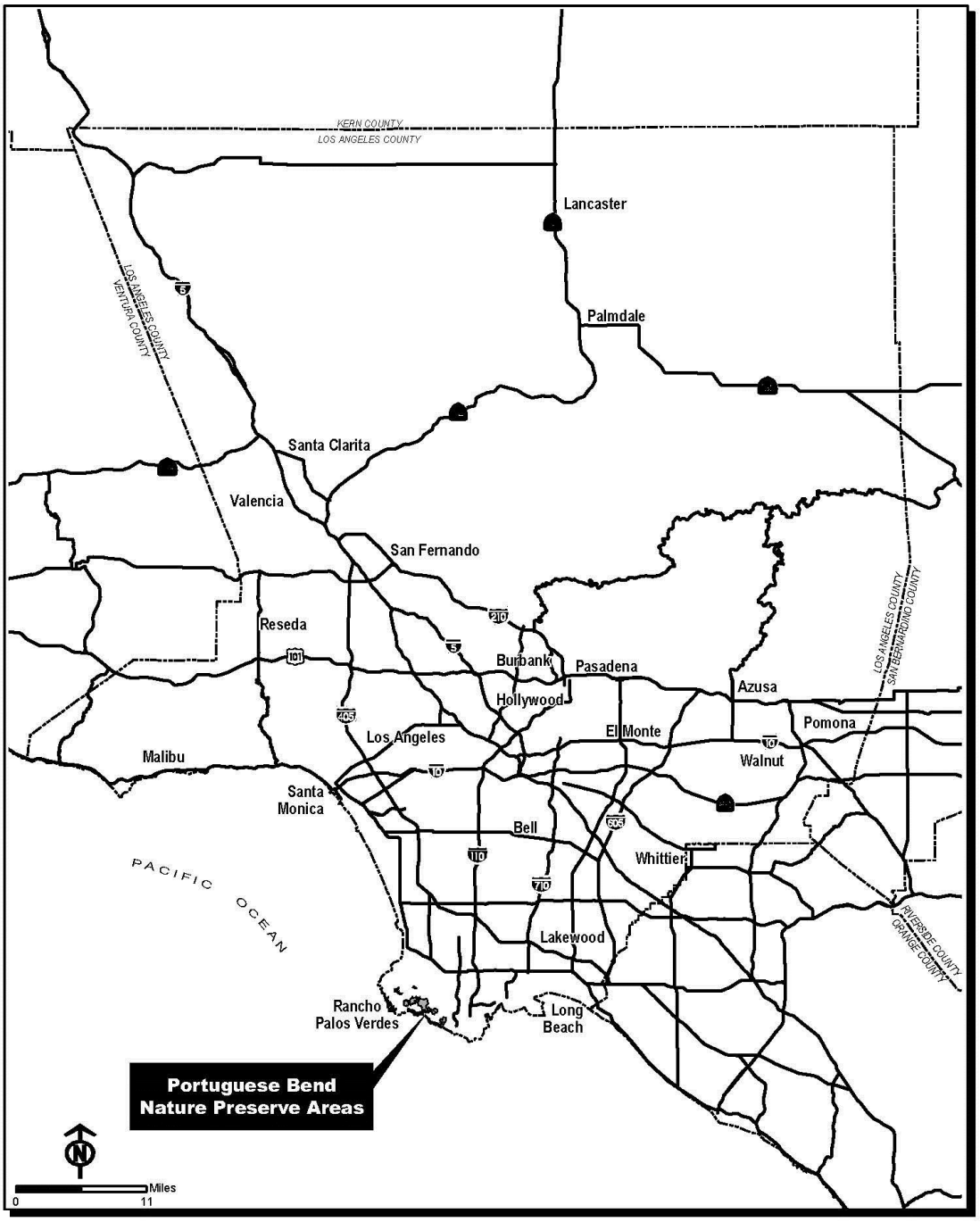
The Natural Communities Conservation Planning Subarea Plan and Habitat Conservation Plan (Draft NCCP/HCP) was prepared to "maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the City of Rancho Palos Verdes and region pursuant to the requirements of the NCCP Act and Section 10(a) of the ESA (URS 2004a)." As a primary component of the Plan, a preserve design was proposed to conserve regionally important habitat areas and provide habitat linkages in order to benefit sensitive plants and wildlife. The result of the preserve design as designated in the Rancho Palos Verdes Draft NCCP/HCP is the 1,200- acre Portuguese Bend Nature Preserve (PBNP) in the City of Rancho Palos Verdes, California *(Figure 1* and *2)*.

This 2007 Predator Control Plan for the PBNP (PCP) was prepared in accordance with the requirements of the Draft NCCP/HCP (2006) by the Palos Verdes Peninsula Land Conservancy (Land Conservancy). This PCP was written after the results of the initial focused surveys for Draft NCCP/HCP-covered plant and wildlife species within the PBNP (See Initial Management and Monitoring Report 2006). It recommends specific actions to be taken to better understand presence of predators within the Preserve and to reduce predation within the Preserve over a 3-year time frame. This PCP will be reviewed and approved by the City of Rancho Palos Verdes and the California Department of Fish and Game and the U.S. Fish and Wildlife Service (Wildlife Agencies) prior to implementation. The Land Conservancy will revise this plan every 3 years based on the results of the comprehensive survey also done every three years. If additional controls are needed, the plan may be revised more frequently.

As of the writing of this report, the Draft NCCP/HCP Implementing Agreement has not been signed by the Wildlife agencies, and therefore the Draft NCCP/HCP is technically not officially executed. However, the City of Rancho Palos Verdes and the Land Conservancy are continuing to coordinate with the resource agencies to complete this plan.

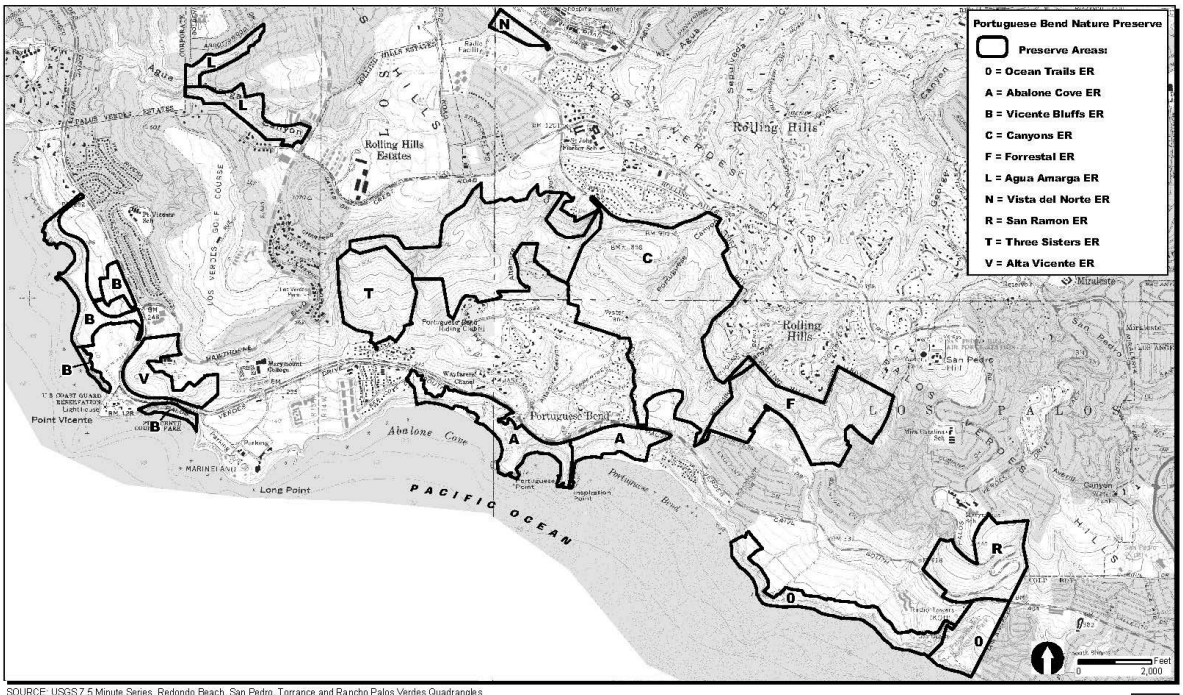
2.0 NEED FOR PREDATOR CONTROL

Native species are often at a disadvantage after exotic species or non-native predators are introduced, so special management measures may be needed to control these invading species. Non-native plant and animal species have few natural predators or other ecological controls on their population sizes, and they thrive under conditions created by humans. These species may aggressively out-compete native species or otherwise harm sensitive species. When top predators are absent, intermediate or mesopredators can multiply and increase predation on native wildlife species and their nests. Feral and domestic animals, particularly cats, also prey on small native wildlife species. Horse stables may provide resources for increased populations of parasitic cowbirds, which adversely affect native songbird breeding populations.



2007 Predator Control Plan
Regional Map

FIGURE 1



SOURCE: USGS 7.5 Minute Series, Redondo Beach, San Pedro, Torrance and Rancho Palos Verdes Quadrangles

2007 Predator Control Plan
Vicinity Map

FIGURE 2

2007 Predator Control Plan for the Portuguese Bend Nature Preserve

3.0 FERAL AND DOMESTIC ANIMALS

3.1 Monitoring

Through its Stewardship Program, the Land Conservancy conducts monthly monitoring walks of all properties under management and completes a "Property Review Form." A sample of this form is provided as Appendix A. This form will be modified to include an area to document evidence of feral or domestic animal use in the PBNP. Feral cats are defined as cats that have reverted to a wild state and avoid human beings. The conditions of domestication, including contact with human beings, must be duplicated in each generation for domestic behavior to occur.

Observations of a feral or domestic animal or scat from such an animal will be recorded. This monitoring will allow the Land Conservancy to document evidence of use and become more informed about which areas have the highest occurrences of feral and/or domestic animal use. Areas determined to be the highest in use will be targeted for specific control measures in the future.

The monthly monitoring program will also focus on areas in the PBNP that are in proximity to houses, parks and other developed areas. These areas are potentially subject to adverse edge effects (e.g., cat and dog predation, etc.). It is recommended that edge effects be monitored over the long term to determine if they become problematic and if so, to document where the problems are occurring.

3.2 Pet / Feral Animal Education Program

The Land Conservancy will establish an education program for homeowners regarding responsible pet ownership. This program could consist of information distributed via the Land Conservancy's webpage, signage on the PBNP, informational handouts, and information disseminated during monthly public nature walks. This program will encourage

1. Keeping pets indoors, especially at night
2. Having pets neutered or spayed to reduce unwanted reproduction and long-range wanderings
3. Belling of cats to reduce their effectiveness as predators
4. Keeping dogs on leashes when walking them on trails in PBNP
5. Discouraging release of unwanted pets into the wild
6. Preventing the feeding of feral animals

3.3 Feral Animal Control Program

After the first three years of data collection, a determination will be made about the severity of feral animal usage and impacts. If a significant adverse impact is determined, then a feral animal removal program will be established. This program could consist of trapping and removal at regular intervals throughout the year, but should be based on good scientific data to be successful.

4.0 BROWN-HEADED COWBIRD

Brown-headed cowbird *(Molothrus ater)* is a nest parasite that lays its eggs in other bird species' nests, including the nests of California gnatcatcher *(Polioptila californica californica)*, an NCCP covered bird species. This behavior negatively affects native bird species, and can reduce reproductive success. It is recommended that if funding becomes available, that ongoing monitoring for cowbirds be conducted throughout the Preserve. This monitoring should include documentation of the extent of cowbird parasitism on target bird species nesting in the Preserve.

4.1 Cowbird Trapping Program

Brown-headed cowbirds were observed in Areas C and O *(Figure 2)*. It is recommended that a cowbird trapping program be implemented within Area C during the second year of the plan to reduce the potential for cowbirds to parasitize nests of native birds. One trap should adequately cover the area. Area O already has an on-going cowbird trapping program associated with the Trump National Golf Course.

5.0 NATIVE LARGE PREDATORS

5.1 Monitor population levels of large predators

As discussed in Section 2.1, the monthly monitoring of the Stewardship Program offers a mechanism to monitor various attributes of the Preserve. The "Property Review Form" includes a section for fauna, in which observations of large predators such as coyotes will be recorded. It is recommended that if funding becomes available, that more focused monitoring for large predators be conducted throughout the Preserve.

As a part of RECIPE (Research, Education and Community Involvement Program for the Environment), funded by the Alcoa Foundation at least through spring 2008, research is being done by a high school student on the distribution and impacts of coyotes on the Peninsula.

Information from this study, and any future similar investigations by RECIPE participants from the university or high school level, will be incorporated into the monitoring report on large predators.

5.2 Native Predator Education Program

The Land Conservancy will establish an education program for the general public regarding the role of native predators. This program could consist of information via the Land Conservancy's webpage, signage on the Preserves, informational handouts, and information disseminated during monthly public nature walks. This program will explain the role and necessity of large native predators within the ecosystem, such as coyotes, and the need to protect them from disturbance.

6.0 MESOPREDATORS MONITORING AND CONTROL

Mesopredators are smaller carnivores that are principle predators of birds and other small vertebrates. Declines in larger mammalian carnivores due to habitat fragmentation often leads to an increase in mesopredators. This increase in mesopredators has been implicated in the decline and extinction of prey species.

6.1 Monitoring

As discussed in Section 2.1, the monthly monitoring of the Stewardship Program offers a mechanism to monitor various attributes of the Preserve. The "Property Review Form" includes a section for fauna, in which observations of mesopredators will be recorded. For example, one red fox was observed in Area A during the 2006 surveys within the PBNP *(Figure 2)*. It is recommended that if funding becomes available, that more focused monitoring for mesopredators and their impacts is conducted throughout the Preserve. This monitoring should include documentation of the extent of mesopredator impacts on target species in the Preserve.

6.2 Control

If studies or monitoring results indicate that specific mesopredators are adversely affecting sensitive native wildlife, then a program to control mesopredators will be initiated.

2007 Predator Control Plan for the Portuguese Bend Nature Preserve

7.0 CONCLUSION

The Land Conservancy will plan for predator control as follows:

- Note observations and impacts of potential predators within the PBNP as a part of its regular monitoring schedule;
- Provide education programs regarding the impacts of predators on natural open spaces and habitat;
- Establish one trap for brown-headed cowbird during year 2 of this plan;
- Control predators such as feral cats and mesopredators as warranted.

Management of the PBNP for predator control would benefit from rigorous scientific study of the presence or absence of predators and the impacts they generate. As funding through the RECIPE program or other sources permits, the Land Conservancy will endeavor to provide more focused monitoring of predators and to make available the data from their impacts.

APPENDIX A

Sample Property Review Form

PALOS VERDES PENINSULA LAND CONSERVANCY

Draft

STEWARDSHIP REVIEW SHEET
CHANDLER PRESERVE

Date:		**Start time:**	
KEEPER Name:		**End time:**	
Property Condition		**Location** (list trail and/or specific location if possible)	**Comments** (explain observed conditions, note location)
Drainage or Erosion	☐ No significant change ☐ Limited sheet runoff ☐ Moderate gully erosion ☐ Heavy stream erosion		
Encroachments	☐ No change ☐ Limited (1-10 ft) ☐ Moderate (10-20 ft) ☐ Heavy (>20 ft)		
Hazards	☐ None ☐ Eroded trail ☐ Other ☐ Obstruction ☐ Fire ☐		
Signage	☐ No change ☐ Damaged, # ___ ☐ Missing, # missing____ ☐ Unauthorized signage		
Authorized Trails	☐ No change ☐ Condition 1 ☐ Condition 2 ☐ etc		
Unauthorized Trails	☐ None ☐ New, # _____		
Unauthorized Construction	☐ None ☐ New, # _____		
Trash or Dumping	☐ None ☐ Limited (<10) ☐ Moderate (10-20) ☐ Heavy (>20)		
Vandalism	☐ None ☐ Fence ☐ Facilities ☐ Cutting/Clearing of Vegetation ☐ Other		
Other			
Habitat			
Native vegetation	☐ Veg condition 1 ☐ Veg condition 2 ☐ Veg condition 3 ☐ Veg condition 3		
Exotic vegetation	☐ No change ☐ Veg cond 1 ☐ Veg cond 2 ☐ etc		
Irrigation	☐ No change ☐ Damaged PVC ☐ Damaged sprinkler head ☐ Other		
Seasonality	☐ Bloom ☐ Dormant ☐ etc ☐ etc		
Seed availability	Yes and No		
Fauna	☐ Mammals, #_____ ☐ Birds, #_____ ☐ Reptiles, #_____ ☐ Insects, #_____		
Predators	☐ Coyotes, # ____ ☐ Fox, #____ ☐ Cowbird, # ____		
Other			
Community			
Dogs	☐ Present on leash, #_____ ☐ Present off leash, #_____		
Bicycles	☐ # present on authorized trails _____ ☐ # present off trails _____		
Hikers	☐ # present on authorized trails _____ ☐ # present off trails _____		
Equestrian	☐ # present on authorized trails _____ ☐ # present off trails _____		
Community comments			

Explanation of Themes:

Drainage or Erosion:

- No significant change – erosion not observed
- Limited sheet runoff - result of heavy rain, generally on bare soil where water flows as a sheet down any gradient, carrying soil particles. Runoff occurs where water is unable to infiltrate the soil surface.
- Gully erosion - occurs where water flows along a depression, eroding a trench or gully. This type of erosion, left unchecked, eventually develops deeper ditches or incised channels.
- Stream erosion – caused by continued water flow in a channel that may increase or worsen erosion concerns. In early stages, the gradient of the flowing water is generally steep, then becoming level and widening as sediments begin to accumulate in flatter areas. Fast moving water may move large soil particles and rocks as well as damage nearby conservation values.

Encroachments – Unauthorized cconstruction or private development, which intrudes on the Preserve that can include, but not limited to: fences, structures, and exotic vegetation.
Hazards – Anything that may endanger users of the Preserve that may include, but not limited to: erosion, obstructions, falling trees, excessive buildup of dead vegetation that may cause fire, occurrence of poisonous plants and worksite safety issues.
Signage – At times, official signage in the Preserves may be damaged or removed by users and vandals. Additionally, people may post unauthorized signs in the Preserve. All signage in the Preserves must be approved by the City or PVPLC.
Authorized Trails – Explanation of trail condition is as follows:

- No change?
- Condition 1 – Trail is passable and in good shape, shows little to no erosion.
- Condition 2 – Trail is passable, but shows some signs of disrepair or hazard for users.
- Condition 3 – Trail has been neglected, shows signs of bad tread, obstructions and other hazards exist.

Unauthorized Trails – In some Preserves, trails may become permanent through clearing and subsequent use by others

- None – no sign of new unauthorized trails
- New – recent sign of brush clearance and public use, please note number of trails observed

Trash or Dumping – All refuse should be removed by users or disposed of in the appropriate waste containers. Please rate the level of trash or dumping activity as follows:

- None - clean
- Limited – refers to general litter left behind
- Moderate – indicates disposal of debris, more than random waste left behind by the public
- Heavy – denotes illegal access, usually vehicular, to abandon large amount of unwanted material within and/or adjacent to Preserve boundaries

Vandalism – Any damage to the vegetation and/or infrastructure of the Preserve.

Habitat
Native Vegetation
Non-native Vegetation

- Type of change
  - native vegetation changed to non-native vegetation;
  - non-native vegetation to native vegetation;
  - change from one type of native vegetation to another; or
  - no change
- Cause of change

- clearing for agriculture;
- conversion for agriculture;
- plantation establishment;
- revegetation;
- land abandonment;
- pest or disease invasion;
- farm tree planting;
- urban and/or infrastructure development;

Irrigation
Seasonality
Seed availability
Wild Fauna
Feral and Domestic Fauna – Presence (ie. sighting or evidence, such as scat) of feral and domesticated animals, which may disturb wild animal populations.
Large Predators
Meso-predators
Document evidence of large predators, such as coyotes.

Community
Dogs
Bicycles
Hikers
Equestrian
Community Comments

2007 Habitat Restoration Plan

2007 HABITAT RESTORATION PLAN for the ALTA VICENTE ECOLOGICAL RESERVE IN THE PORTUGUESE BEND NATURE PRESERVE FOR THE RANCHO PALOS VERDES DRAFT NATURAL COMMUNITY CONSERVATION PLAN AND HABITAT CONSERVATION PLAN

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APRIL 2007

2007 Habitat Restoration Plan for the Alta Vicente Ecological Reserve

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2007 Habitat Restoration Plan for the Alta Vicente Ecological Reserve

EXECUTIVE SUMMARY

This 2007 Habitat Restoration Plan for the Alta Vicente Ecological Reserve (HRP) in the Portuguese Bend Nature Preserve outlines appropriate revegetation locations and methodology to adequately comply with the Preserve Management requirements of the Rancho Palos Verdes Natural Community Conservation Plan and Habitat Conservation Plan (Draft NCCP/HCP). The Draft NCCP/HCP Section 6.3.5 requires a 3-year Habitat Restoration Plan. This plan provides guidelines for the restoration of 5 acres per year for a total of 15 acres over a 3-year period. The recommended project site, Alta Vicente Ecological Reserve, is located in the southwestern portion of the City of Rancho Palos Verdes, California adjacent to the Rancho Palos Verdes City Hall.

This HRP includes the restoration implementation strategy and provides guidelines for the establishment of coastal sage scrub (CSS), coastal cactus scrub (CCS), and butterfly habitat on a total of 15 acres over 3 consecutive years at the Alta Vicente Ecological Reserve. The primary functional goal of the restored coastal sage scrub, cactus scrub, and butterfly habitats is to restore vegetation that contains a diversity of native coastal sage scrub and cactus scrub plant species that provide habitat value for sensitive wildlife species.

This HRP presents information on project location and work descriptions, planting recommendations, maintenance requirements, monitoring methodology and revegetation success criteria.

2007 Habitat Restoration Plan for the Alta Vicente Ecological Reserve

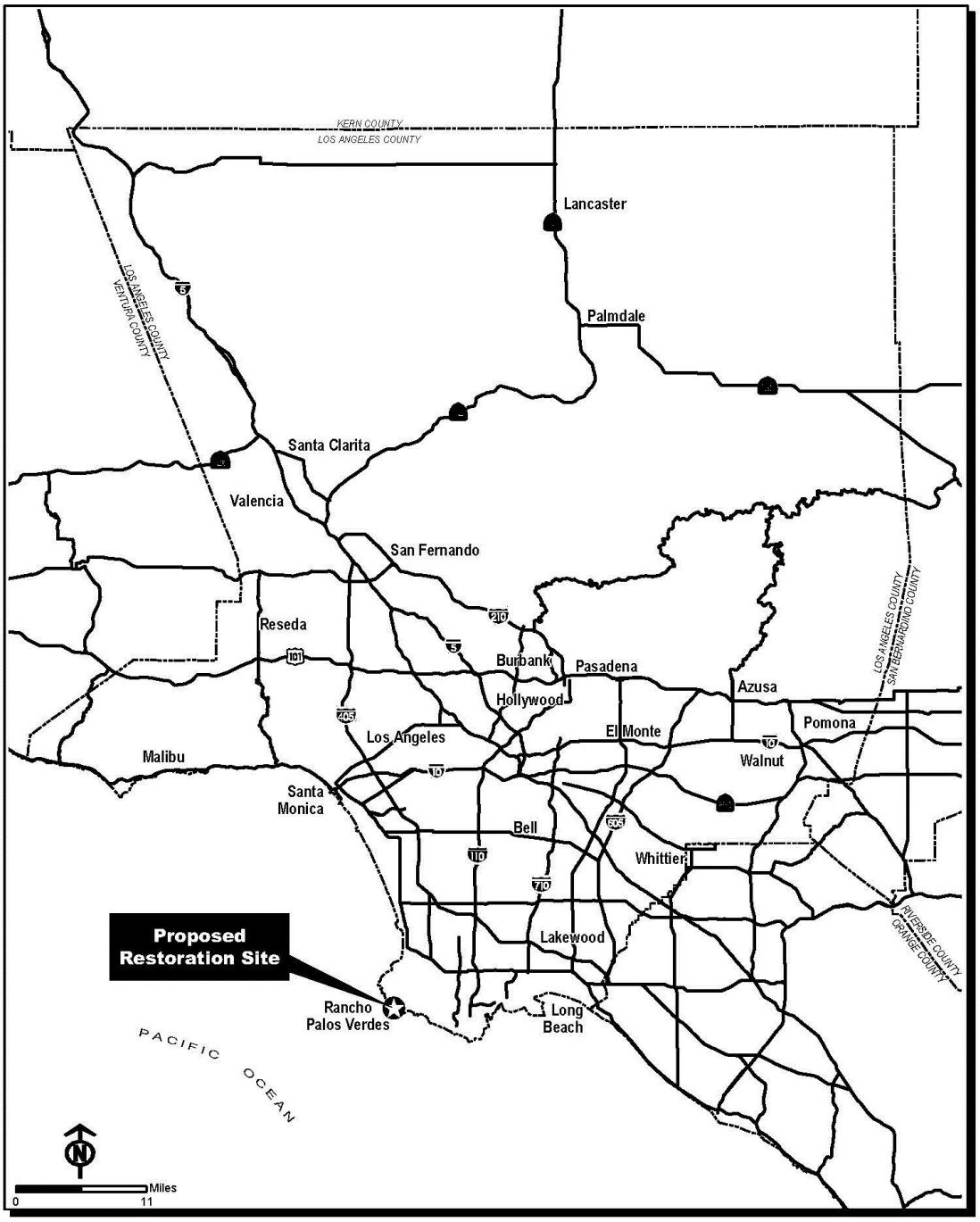
1.0 INTRODUCTION

The Rancho Palos Verdes Draft Natural Communities Conservation Plan and Habitat Conservation Plan (Draft NCCP/HCP) was prepared to "maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the City of Rancho Palos Verdes (City) 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 Draft NCCP/HCP, a preserve design was proposed to conserve regionally important habitat areas and provide habitat linkages in order to benefit sensitive plants and wildlife. The result of the preserve design as designated in the Rancho Palos Verdes Draft NCCP/HCP is the 1,200 acre Portuguese Bend Nature Preserve (PBNP) in the City of Rancho Palos Verdes, California (*Figure 1* and 2).

This Habitat Restoration Plan for the Alta Vicente Ecological Reserve (HRP) in the PBNP was prepared in accordance with the requirements of the Draft NCCP/HCP (2006) by the Palos Verdes Peninsula Land Conservancy (Land Conservancy) with assistance from Dudek, an environmental services consultant. This HRP discusses sites and methodology for 15 acres of habitat restoration over a 3-year time frame as well as provides general recommendations for the restoration of sites beyond the 3-year period. This HRP has been reviewed and approved by the City and the California Department of Fish and Game and the U.S. Fish and Wildlife Service (Wildlife Agencies) prior to implementation. The Land Conservancy will review this plan every 3 years, and recommend 15 additional acres for habitat restoration for the next 3-year cycle, incorporating changes in priorities, conditions or unique situations while maintaining long-range planning perspective. The plan addresses restoration design, installation procedures, maintenance and monitoring program, and performance criteria. This plan also incorporates the results from the Alta Vicente portions of the initial focused surveys for Draft NCCP/HCP-covered plant and wildlife species within the Portuguese Bend Nature Preserve (PBNP), (Appendices A and B).

Every effort will be made to obtain funding for additional restoration within the Preserve. In situations where supplemental sites are added to those included in the Restoration Plan, a site-specific HRP will be developed with monitoring requirements appropriate to the situation.

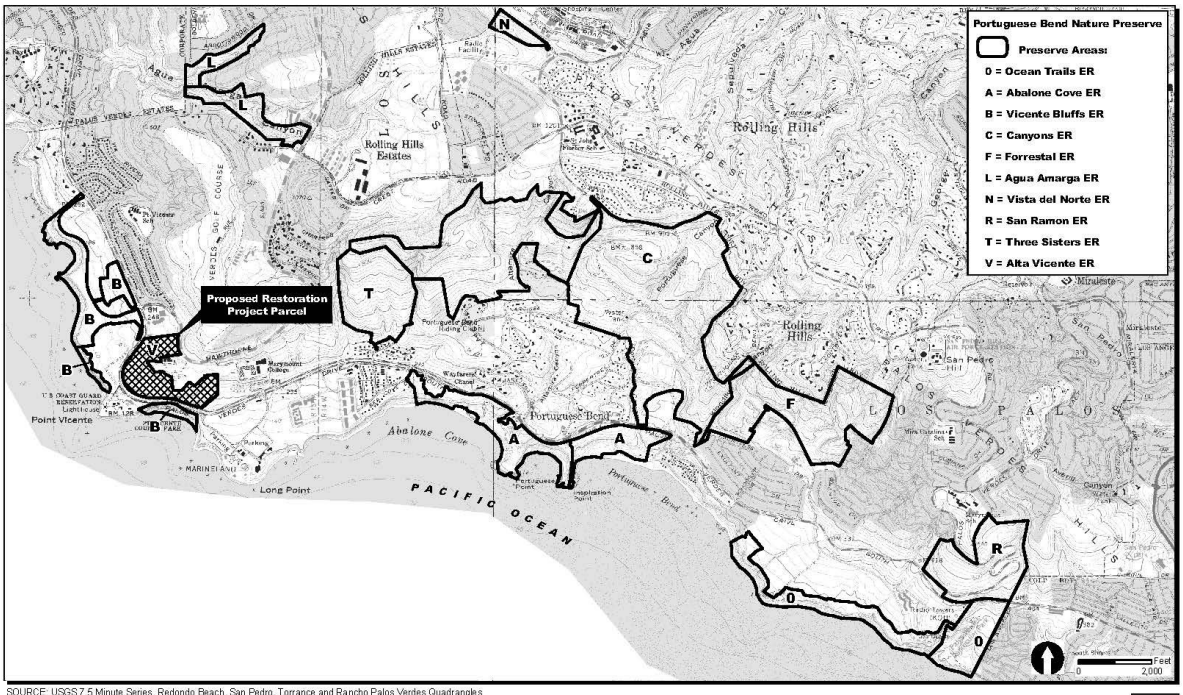
As of the writing of this report, the Draft NCCP/HCP Implementing Agreement has not been signed by the Wildlife agencies, and therefore the Draft NCCP/HCP is technically not officially executed. However, the City of Rancho Palos Verdes and the Land Conservancy are continuing to coordinate with the resource agencies to complete this plan.



2007 Habitat Restoration Plan for Alta Vicente Ecological Reserve

Regional Map

FIGURE 1



SOURCE: USGS 7.5 Minute Series, Redondo Beach, San Pedro, Torrance and Rancho Palos Verdes Quadrangles

2007 Habitat Restoration Plan for Alta Vicente Ecological Reserve
Vicinity Map

FIGURE 2

2.0 SITE SUITABILITY ANALYSIS

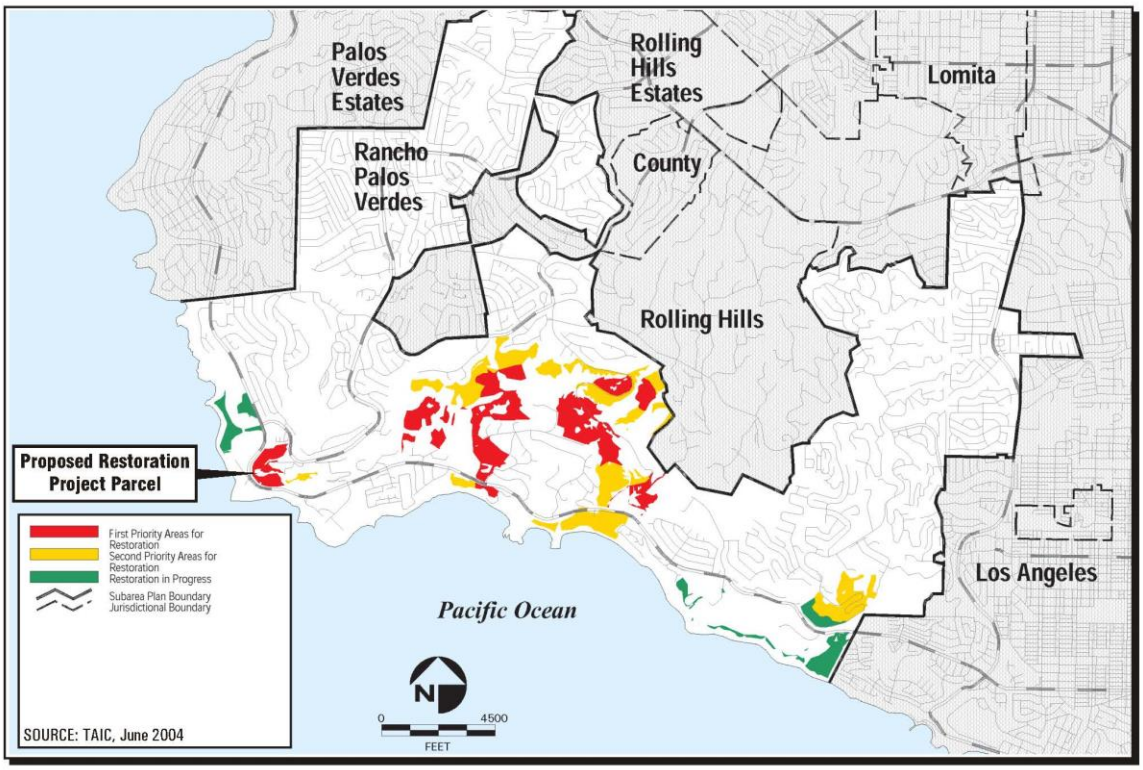
2.1 Portuguese Bend Nature Preserve Ecological Reserves

The PBNP has been divided into ten Ecological Reserve (ER) areas, including Agua Amarga (Area L), Vicente Bluffs (Area B), Alta Vicente (Area V), Three Sisters (Area T), Abalone Cove (Area A), Canyons (Area C), Forrestal (Area F), Ocean Trails (Area O), San Ramon (Area R) and Vista del Norte (Area N) (*Figure 2*). Topography 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 Areas B, A, and O to approximately 1,300 feet above mean sea level at the northernmost parcel, Area N. Adjacent land uses include single-family residences on most sides, open space associated with neutral lands on the Peninsula that are included in the plan for possible inclusion in the Preserve at some future time, 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 study area.

2.2 Evaluation Criteria

A site suitability analysis was conducted by the Land Conservancy and habitat restoration specialists from Dudek to best determine the most appropriate locations for habitat-specific restoration. Initially considered were the high priority sites from the Draft NCCP/HCP "Priority Habitat Restoration Areas within the Preserve" (*Figure 3*). These NCC/HCP identified priority habitat restoration areas included Area V, Area T, and the majority of Area C. In addition to these preliminary prioritized areas, the Land Conservancy and Dudek also considered Area R and Area A for suitability of habitat restoration. Areas excluded from analysis include Area B, Area L, Area F, Area O, and Area N.

The Ecological Reserves that were excluded from the site suitability analysis remain eligible for consideration in future restoration planning. Current habitat restoration programs within the Preserve include 30 acres of CSS revegetation on the Oceanfront Estates property (Area B) and 125 acres of CSS revegetation associated with the Trump National/Ocean Trails development (Area O). Since these are pre-existing restoration programs, these areas were excluded from this current potential site analysis. Area L was excluded from this analysis because the majority of Aqua Amarga Canyon has fairly intact habitat that is difficult to access and the adjacent Lunada Canyon has recently undergone habitat restoration projects in some portions by the Land Conservancy. Area F was excluded from analysis because the majority of



2007 Habitat Restoration Plan for Alta Vicente Ecological Reserve

FIGURE 3

Priority Habitat Restoration Areas

the land is relatively high quality habitat. Area N was excluded from the analysis because this parcel is rather isolated and currently requires large portions of brush clearance due to the existing utility easement.

Each area analyzed for restoration potential (Area V, Area T, Area C, Area R and Area A) was visited based on a variety of factors critical to the success of restoration efforts including: adjacency to existing habitat or development, access to the site, water availability, presence of target wildlife species on adjacent land, density and species of exotic weeds present onsite or in adjacent areas and level of prior soil disturbance. Other factors that were assessed for each potential site were the availability of volunteer access and parking, how visible the restoration site will be to the public, the amount of contiguous acreage, and the potential to provide quality habitat for target species. These factors were placed into a matrix and given a value for each site of 1-3, with 3 ranking the highest. *Table 1* shows the breakdown of rankings for each site.

TABLE 1
Restoration Site Suitability Analysis

	Alta Vicente (Area A)	Fennel Flats (Area C)	Peacock Flats (Area C)	Three Sisters (Area T)	Switchbacks (Area R)	Abalone Cove (Area A)
Access	3	2	3	1	3	3
Irrigation	3	1	1	2	2	1
Weeds	2	2	2	2	1	2
Adjacency	3	3	2	1	2	3
Soil Disturbance	2	2	2	2	2	2
Volunteer Access	3	2	2	2	1	2
Public visibility	3	3	3	2	2	2
wildlife	3	3	3	3	3	3
Acreage (15 acres min for restoration)	3	3	3	3	3	1
Total Score	25	21	21	18	19	19
Ranking	**1**	**2**	**2**	**4**	**3**	**3**

2.2 Site Selection

From the site suitability analysis, the Alta Vicente site was ranked the highest. This is due to the availability of at least 15 contiguous acres available for habitat restoration, good site access via an existing utility road, adjacency to intact habitat with high numbers of sensitive wildlife, and the opportunity to irrigate the site. The option to utilize irrigation for restoration of Alta Vicente greatly assists in the success of both the site preparation and habitat restoration efforts.

In addition, the Alta Vicente site provides public visibility which allows for a successful volunteer component for this project.

It is recommended that the other sites in this analysis be considered for habitat restoration during future year's planning efforts.

3.0 EXISTING CONDITIONS- PROPOSED RESTORATION SITE

3.1 Site Description

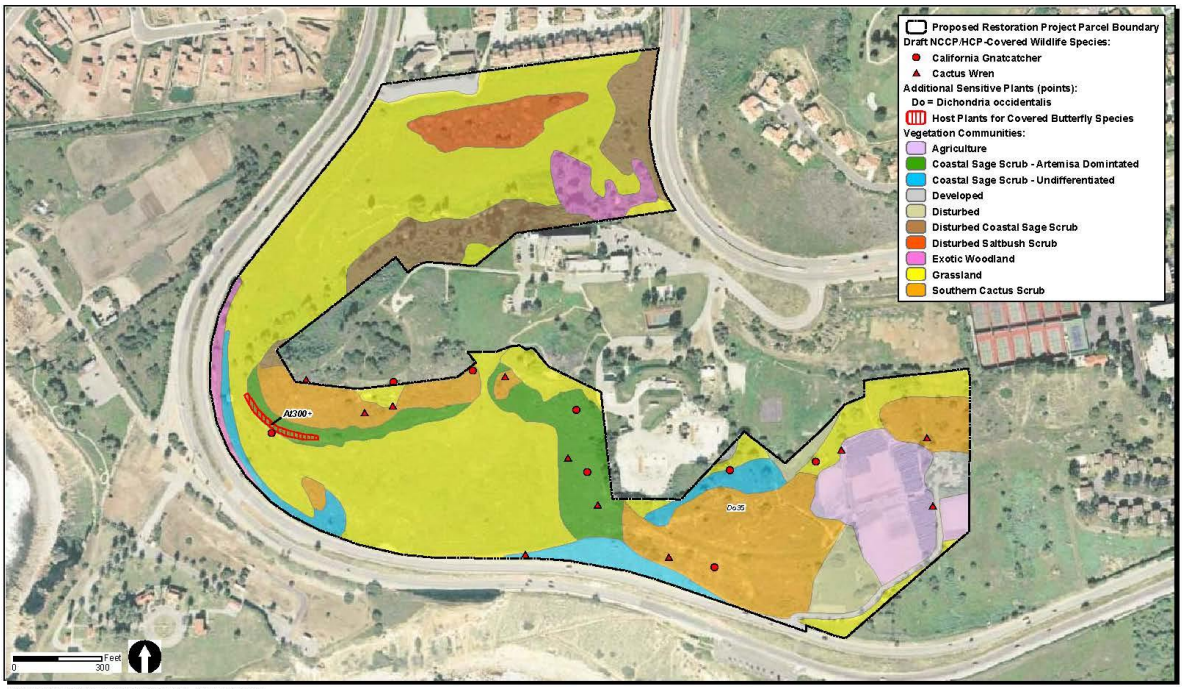
The Alta Vicente ER is located on the southwestern portion of the Palos Verdes Peninsula, north of the Pacific Ocean in the City of Rancho Palos Verdes, California (*Figure 1*). The 55.4-acre survey area lies in unsectioned lands in the following U.S. Geological Survey (USGS) 7.5 minute topographic map Redondo Beach; Township 5 South, Range 15 West.

3.2 Vegetation Communities

Plant communities and land covers within the Alta Vicente parcel are representative of some of the plant communities found in this region. Vegetation mapping of the Peninsula used in the Draft NCCP/HCP was prepared by Atwood et al. (1994) and updated and verified by Ogden (1999). For the Alta Vicente site, this vegetation mapping was further updated by Angelika Brinkmann-Busi and Andrea Vona in 2007. Plant community classification in the Draft NCCP/HCP generally follows Holland (1986), with some minor adaptations following Sawyer and Keeler-Wolf (1995). Plant communities and land covers within the Alta Vicente site include coastal sage scrub (and coastal sage scrub sub-associations), disturbed coastal sage scrub, southern cactus scrub, disturbed saltbush scrub, grassland, exotic woodland, agriculture and developed areas (*Figure 4*). These habitats/land covers are briefly described below in terms of constituent species.

3.2.1 Southern Cactus Scrub

Southern cactus scrub is a low, dense scrub (less than 2 meters [6.6 feet]) with succulent shrubs consisting primarily of prickly pear species (*Opuntia littoralis, O. oricola*) and coastal cholla (*O. prolifera*) as dominant constituents (Magney, 1992; Sawyer and Keeler-Wolf, 1995). Although the dominant species are succulent, woody species can also be present as co-dominants with the succulents. Typical woody species in this association at the Alta Vicente site include California sagebrush (*Artemisia californica*), Ashy leaved buckwheat (*Eriogonum cinereum*) and California sunflower (*Encelia californica*), bladderpod (*Isomeris arborea*), and wishbone bush (*Mirabilis californica*). Southern cactus scrub ranges from coastal southern Santa



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

2007 Habitat Restoration Plan for Alta Vicente Ecological Reserve
Biological Resources Map

FIGURE 4

Barbara County southward to northern San Diego County and inland to the cismontane valley areas of San Bernardino and Riverside Counties (Magney, 1992). Southern cactus scrub occurs mostly on steep, south facing slopes in sandy soils or rocky areas below 1,200 meters (3,397 feet) elevation (Magney, 1992; Sawyer and Keeler-Wolf, 1995).

3.2.2 Coastal Sage Scrub including Disturbed Coastal Sage Scrub

Coastal sage scrub is composed of low, soft-woody subshrubs approximately 1 meter (3 feet) high, many of which are facultatively drought-deciduous (Holland, 1986). This association is typically found on dry sites, such as steep, south-facing slopes or clay-rich soils slow to release stored water. Dominant shrub species in this vegetation type may vary, depending on local site factors and levels of disturbance.

Dominants within the project area include California sagebrush and California sunflower. One CSS sub-association has been identified in the Alta Vicente site: Artemisia-dominated scrub; it is classified according to the dominant species. This sub-association corresponds to the California sagebrush series, as described in Sawyer and Keeler-Wolf (1995).

The shrub layer in general for this community primarily forms a continuous canopy with little understory, but has some areas with a more open canopy with widely spaced shrubs and a fairly well-developed understory. Native understory species present in this association include coast range melic (*Melica imperfecta*), ocean locoweed (*Astragalus trichopodus* var. *lonchus)*, cliff aster (*Malacothrix saxatilis*), and blue dicks (*Dichelostemma capitatum*).

Disturbed coastal sage scrub consists of approximately 20 percent native cover with the remaining vegetation dominated by exotic species including non-native tress.

3.2.3 Disturbed Saltbush Scrub

Saltbush scrub is dominated by quailbush (*Atriplex lentiformis*). Shrubs are less than 3 meters (10 feet) with closed to open canopies (Sawyer and Keeler-Wolf, 1995). Saltbush scrub corresponds to the mixed saltbush series, as described in Sawyer and Keeler-Wolf (1995). The understory at the Alta Vicente site consists of ruderal species, such as black mustard (*Brassica nigra*), a variety of non native annual grasses, sea lavendar (*Limonium perezii*) and an occasional acacia (*Acacia Cyclops)*.

3.2.4 Grassland

Non-native annual grasses and other annual species dominate grasslands portions of the Alta Vicente site. Annual or non-native grassland generally occurs on fine-textured loam or clay soils that are moist or even waterlogged during the winter rainy season and very dry during the summer and fall. This association is characterized by a dense to sparse cover of annual grasses, often with native and non-native annual forbs (Holland, 1986). The number of natives versus non-natives is site-specific, and varies according to rainfall and other factors (Heady, 1995). Estimates for the proportion of non-native species in this association range from 29 to 80 percent (White, 1967; Bentley and Talbot, 1948; Heady, 1995; Holland and Keil, 1990). Talbot et al. (1939) report that annuals comprise approximately 94 percent of the herbaceous cover in annual grassland; Ewing and Menke (1983) state that annuals comprise 50 to more than 90 percent of the vegetative cover in annual grassland, and that most of the annuals are non-native species. Species composition varies within annual grassland and is a function of climatic conditions, soils, and allelopathic effects of above-ground plant residue (e.g., mulch) (Evans and Young, 1989; Heady, 1995; Bartolome et al., 1980).

Annual grassland is a disturbance-related community most often found in old fields or openings in native scrub habitats. This association may have replaced native grassland and CSS at many localities. Typical grasses within the site include slender oat *(Avena barbata),* wild oat *(Avena fatua),* false brome *(Brachypodium distachyon),* soft brome *(Bromus hordaceus [mollis]),* rescue grass *(Bromus catharticus),* ripgut brome *(Bromus diandrus),*red brome *(Bromus madritensis ssp. Rubens),* Bermuda grass *(Cynodon dactylon),* foxtail barley *(Hordeum murinum ssp. leporinum),* common barley *(Hordeum vulgare),* Kikuyu grass *(Pennisetum clandestinum),* and fountain grass *(Pennisetum setaceum).* Characteristic forbs include red-stem filaree (*Erodium cicutarium*), black mustard, and garland daisy (*Chrysanthemum coronarium*).

Within annual grassland, grasses are less than 1 meter (3 feet) high and form a continuous or open cover. Emergent shrubs and trees may be present as well (Sawyer and Keeler-Wolf, 1995).

3.2.5 Exotic Woodland

Exotic woodland includes non-native trees and shrubs planted in Rancho Palos Verdes in the past. Some of these introduced species are invasive and have dispersed into the adjacent grassland and native habitats. Exotic species include acacia, Brazilian pepper (*Schinus terebinthifolius*), myoporum (*Myoporum laetum*), gum tree (*Eucalyptus* spp.), Phoenix palm (*Phoenix canariensis*) and Chinese Elm (*Ulmus parvifoli.*).

3.2.6 Agriculture

Agriculture includes actively cultivated lands and lands that support nursery operations. One area in the Alta Vicente site is actively farmed. This area is southeast of City Hall in the western portion of the City of Rancho Palos Verdes.

3.2.7 Developed Areas

Developed areas in the Alta Vicente site are lands that have been permanently altered by human activities and that support no native vegetation. These areas include roads, buildings, ornamental landscapes, and other areas where the land has been altered to such an extent that natural vegetation cannot become reestablished.

3.3 Geology and Soils

The area is an old marine terrace with relatively steep eroded canyons which drain southwesterly into the Pacific Ocean. According to the Report and General Soil Map for Los Angeles County (USDA 1967), two soil types occur within the study area; the Diablo-Altamont association (2 percent-9 percent slopes), and the Altamont-Diablo association (30 percent-50 percent slopes). Soils of the Diablo-Altamont association occur on gently sloping to rolling foothills throughout the Los Angeles basin as far north as Point Dume. Diablo soils are 22 to 52 inches deep, are well drained, and have slow subsoil permeability. Altamont soils are 24 to 36 inches deep, are well drained, and have slow subsoil permeability. They have dark brown, neutral, clay surface layers about 12 inches thick underlain by a brown, calcareous clay subsoil. The Diablo-Altamont association is comprised of approximately 60 percent Diablo soils, 30 percent Altamont soils, and 5 percent each of Cropley and San Benito soils. Cropley soils are over 60 inches deep, are well-drained, and have slow subsoil permeability. San Benito soils are 36 to 48 inches deep, are well drained, and have moderately slow subsoil permeability. The Altamont-Diablo association is comprised of approximately 60 percent Altamont soils, 30 percent Diablo soils, and 10 percent San Benito soils.

3.4 Zoology and Botany-Species Diversity

From June 16, 2006 – July 27, 2006 four focused surveys for coastal California gnatcatcher (*Polioptila californica californica*) and cactus wren (*Campylorhynchus brunneicapillus*) (CAWR) were conducted by wildlife biologists from Dudek and Associates: Jennifer Turnbull and Paul Lemons along with biologists from the Land Conservancy: Andrea Vona and Becky Harper. From these

surveys it was determined that a total of 38 species of wildlife were detected onsite including: three reptiles, 25 bird species, six mammal, and four butterfly and moth species (*Appendix A*).

Most of the species observed are active during the daytime hours; nocturnal species were not recorded. In addition, due to the time of year of the survey, winter visitors were not observed which could include additional bird species.

A total of 93 plant species was identified within the Alta Vicente property in 2006 (*Appendix B*). Of these, 40 species (43 percent) are native to the region and 53 species (57 percent) are non-native.

3.5 Sensitive Biological Resources

The following resources are discussed in this section: (1) plant and animal species present on the project site that are Draft NCCP/HCP-covered (which includes all species listed as endangered or threatened by the State and/or Federal Endangered Species Act (ESA), as well as selected species that are currently not listed, but could be listed during the permit period) (2) host plants for the Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis),* a federally endangered species and (3) sensitive species that aren't covered under the NCCP but through the circumstance of natural distribution or habitat destruction, have declined in population to a level so low that professional biologists are concerned about he longevity of vitality of the species. These sensitive species include species listed by the State or Federal Wildlife Agencies under the ESA, listed by California Department of Fish and Game as a Species of Special Concern (SSC), or listed on the California Native Plant Society's inventory or rare or endangered plants (CNPS 2001).

3.5.1 Draft NCCP/HCP-Covered Plant and Wildlife Species

During 2006, focused surveys were conducted for the six covered plant species under the Draft NCCP/HCP. No occurrences of Draft NCCP/HCP-covered plant species were observed at the Alta Vicente site during these surveys.

In 2006, two Draft NCCP/HCP-covered wildlife species were identified within the Alta Vicente site of PBNP, including CAGN and CAWR. Twenty individual CAGN were observed including seven pairs, one lone adult, and five juveniles. Fifteen individual CAWR were observed including four pairs and seven lone adults.

3.5.2 Host Plants for the Palos Verdes Blue Butterfly

Ocean locoweed was documented during the initial surveys because it is one of two primary host plants for the NCCP-covered Palos Verdes blue butterfly. Ocean locoweed is typically found in coastal bluffs at elevations between sea level and 300 meters (0 – 846 feet) AMSL. It is a perennial herb that blooms between April and July. One population of this species was observed, with a population size of approximately 300 individuals.

3.5.3 Sensitive Species

Observations of Western dichondra (*Dichondra occidentalis*), a CNPS List 4.2 plant species was identified at the site, with a population size approximating 35 individuals. According to CNPS (2006), it is typically found in chaparral, cismontane woodland, coastal scrub or valley and foothill grassland at elevations between 50 and 500 meters. It is a rhizomatous herb that typically blooms between March and July.

4.0 RESTORATION PROGRAM

Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed in order to re-establish or enhance historical biological functions and values. This HRP outlines the restoration implementation strategy for upland habitat on the Alta Vicente property and proposes to provide for the creation of approximately 13.5 acres of coastal sage scrub, 0.5 acre of southern cactus scrub, and 1 acre of butterfly habitat.

4.1 Restoration Site Goals and Objectives

The fragmented habitat existing in these areas limits wildlife use and provides opportunity for the further establishment of invasive weed species. The planting of native coastal sage scrub, cactus scrub, and butterfly habitat via container plants and seed mix will provide contiguous native habitat that includes a mosaic of shrub cover that is resistant to the invasion of invasive weed species and provides increased nesting, cover and foraging opportunities for wildlife.

The habitat restoration program will focus on the creation of habitat for covered species with the objective of increasing the overall habitat carrying capacity for the target species populations. Key habitats for restoration are coastal sage scrub, cactus scrub, and Palos Verdes blue butterfly habitat. Coastal sage scrub restoration is intended to provide improved foraging habitat for resident and migrating wildlife species, and potential nesting and foraging habitat for

target species such as the coastal California gnatcatcher, southern California rufous-crowned sparrow, Pacific pocket mouse, and other sensitive wildlife species. Cactus scrub restoration is intended to provide potential nesting and foraging habitat for the coastal cactus wren. Palos Verdes Blue Butterfly habitat restoration is intended to provide improved habitat and increased numbers of larval host plants for the Palos Verdes Blue Butterfly. Achievement of the performance criteria described herein would create suitable habitat for these species. However, occupation of the site by these species is not a requirement for successful project completion.

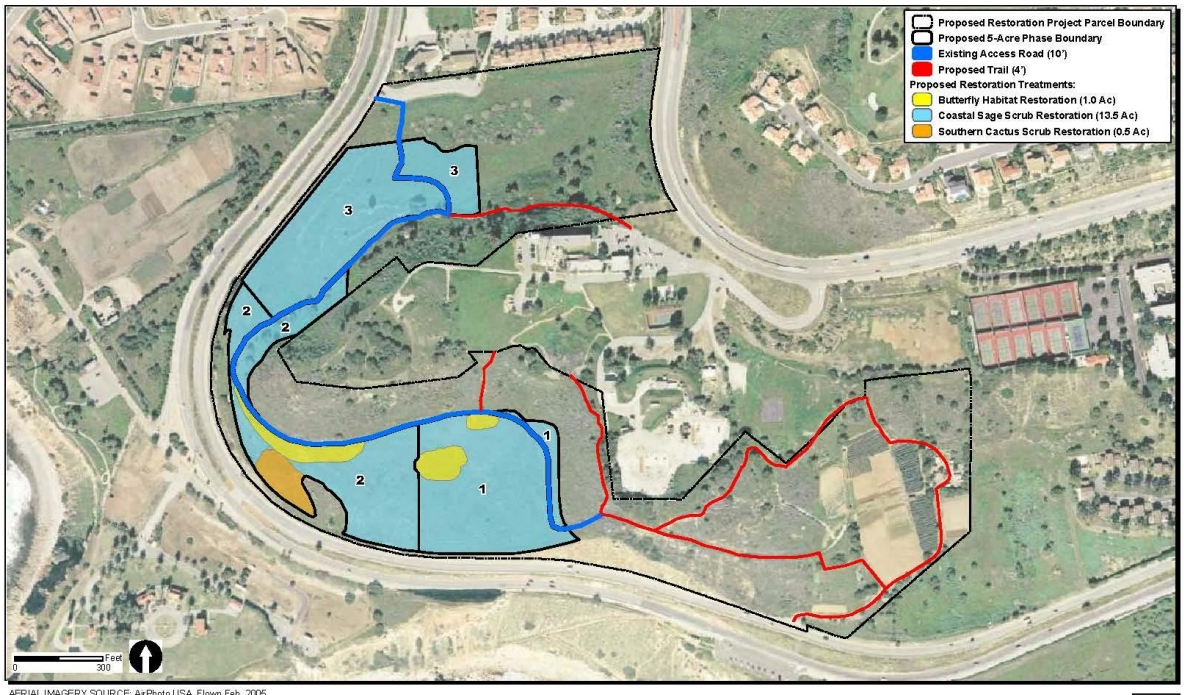
In addition to these broad goals, the following site-specific objectives for the Alta Vicente restoration site have been incorporated into this HRP in the interest of minimizing adverse impacts to biological resources:

- Avoid additional or unplanned disturbance to existing habitats during implementation of the project construction and long-term maintenance activities.
- Prevent any impacts to sensitive wildlife species during implementation of the project construction and long-term maintenance activities.
- Control all non-native, exotic/invasive weed species considered to be highly invasive on the Cal-IPC invasive plant inventory (2006).
- Utilize erosion control measures in the form of "Best Management Practices" (BMPs) on the site as conditions necessitate.

4.2 Habitats to be Established

Habitat revegetation consists of exotic vegetation and weed removal, installation of a temporary irrigation system and native planting/seeding. Proposed planting for the coastal sage scrub, cactus scrub, and Palos Verdes blue butterfly habitat restoration areas will include a plant palette consisting of native container plants and a seed mix.

Areas proposed for restoration are currently classified as grassland. In these non-native annual grasslands there is an herbaceous cover of at least 80 percent, with about 10 percent tree cover from Phoenix palm, Brazilian pepper, and acacia. This area currently has less than 5 percent native cover. There is a high presence of non-native exotic and invasive species. Non-native cover in these areas consists of invasive perennial species including fennel (*Foeniculum vulgare*), hotentot fig (*Carpobrotus edulis*), as well as annual black mustard, wild oat grasses, and Russian thistle (*Salsola tragus*). These areas include 13.5 acres (net) proposed for native coastal sage scrub restoration, 0.5 acre proposed for cactus scrub restoration, and 1 acre proposed for butterfly habitat restoration over a 3-year time frame (*Figure 5*).



AERIAL IMAGERY SOURCE: AirPhoto USA, Flown Feb. 2005

2007 Habitat Restoration Plan for Alta Vicente Ecological Reserve
Conceptual Restoration Plan

FIGURE 5

2007 Habitat Restoration Plan for the Alta Vicente Ecological Reserve

Each specific habitat type to be restored is described below. For the restoration areas in general, it is expected that in addition to the planting and seeding of appropriate native plant species, the exchange of existing native seed onsite will contribute to the development of a healthy native plant community. It is expected that all planting shall be installed to mimic the natural distribution and vegetation mosaic of adjacent healthy habitats.

4.2.1 Coastal Sage Scrub

The restoration strategy for coastal sage scrub habitat on the Alta Vicente site includes reintroducing regionally appropriate native coastal sage scrub species that are currently present in adjacent native habitats. The plant palette includes a container plant and seed mix composition (*Table* 2) that has been designed to mimic the native composition of a healthy coastal sage scrub plant community similar to target coastal sage scrub habitat present on the Alta Vicente site.

TABLE 2
Proposed Coastal Sage Scrub Planting Palette (13.5 Acres)

Botanical Name	Common Name	Container Size	Spacing (on center)	Group Size	Quantity (per acre)
Container Plants					
Artemisia californica	California sagebrush	1 gallon	6	5	240
Astragalus trichopodus var. *lonchus*	Ocean locoweed	Rose pot	3	7	98
Bloomeria crocea	Common goldenstar	Bulb	TBD	TBD	As-available
Calochortus catalinae	Mariposa lily	Bulb	TBD	TBD	As-available
Dichelostemma capitatum	Blue dicks	Bulb	TBD	TBD	As-available
Dudleya lanceolata	dudleya	4-inch	3	3	48
Epilobium canum	California fuchsia	1 gallon	3	5	100
Eriogonum cinereum	Ashy-leaf buckwheat	1 gallon	5	5	175
Eriogonum elongatum	Wand buckwheat	1 gallon	5	5	70
Eriogonum parvifolium	Coast buckwheat	1 gallon	5	5	85
Heteromeles arbutifolia	Toyon	1 gallon	10	1	13
Horkelia cuneata	Horkelia	1 gallon	3	5	50
Isomeris arborea	Bladderpod	1 gallon	6	5	120
Leymus condensatus	California-aster	1 gallon	3	3	99
Malosma laurina	Laurel sumac	1 gallon	12	1	9
Mirabilis californica	Wishbone bush	1 gallon	3	5	250
Opuntia littoralis	Prickly-pear	pads	4	3	135
Opuntia prolifera	Coast cholla	1 gallon	4	3	135
Rhus integrifolia	Lemonadeberry	1 gallon	12	1	30
Salvia leucophylla	Purple sage	1 gallon	5	5	85
Salvia mellifera	Black sage	1 gallon	6	3	60
Stachys rigens	Hedge nettle	1 gallon	3	3	96
Total Container Plants					**1,898**

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TABLE 2
Proposed Coastal Sage Scrub Planting Palette (13.5 Acres)

Seed Mix				
Botanical Name	**Common Name**	**Pure Live Seed**	**Lbs. Per Acre**	**Collected Locally***
Artemisia californica	California sagebrush	10	4	✓
Encelia californica	California sunflower	25	2	✓
Eriogonum cinereum	Ashy-leaf buckwheat	8	3	✓
Eriogonum parvifolium	Coast buckwheat	20	5	✓
Eriophyllum confertiflorum	Golden-yarrow	25	1	✓
Gnaphalium bicolor	Everlasting	2	0.5	✓
Gnapalium californicum	California cudweed	2	0.5	✓
Gnapalium canescens	Everlasting	1	1	✓
Isocoma menziesii	Goldenbush	15	1	✓
Lessingia filaginifolia	California-Aster	3	1	✓
Lotus scoparius	Deerweed	85	4	✓
Lupinus succulentus	Arroyo lupine	90	3	✓
Malacothrix saxatilis	Cliff aster	10	0.5	✓
Melica imperfecta	California melic	70	1	✓
Nassella lepida	Foothill needle-grass	65	1	
Nassella pulchra	Purple needle-grass	75	3	
Total Lbs. Per Acre			**31.5**	

TBD = To be determined
N/A = Not applicable
*Seed from these species will be collected locally, and will be included in the seed mix if available.

4.2.2 Coastal Cactus Scrub

The restoration strategy for coastal cactus scrub habitat on the Alta Vicente site includes reintroducing regionally appropriate native coastal cactus scrub species that are currently present in adjacent native habitats. The plant palette includes a container plant and seed mix composition (*Table 3*) that has been designed to mimic the native composition of a healthy coastal cactus scrub plant community similar to target coastal cactus scrub habitat present on the Alta Vicente site.

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TABLE 3
Proposed Coastal Cactus Scrub Planting Palette (0.5 Acre)

Botanical Name	Common Name	Container Size	Spacing (on center)	Group Size	Quantity (per acre)
Container Plants					
Artemisia californica	California sagebrush	1 gallon	6	5	300
Eriogonum cinereum	Ashy-leaf buckwheat	1 gallon	5	5	350
Isomeris arborea	Bladderpod	1 gallon	6	5	120
Mirabilis californica	Wishbone bush	1 gallon	4	5	135
Opuntia littoralis	Prickly-pear	pads	4	5	545
Opuntia prolifera	Coast cholla	1 gallon	6	5	120
Opuntia oricola	Big prickly-pear	pads	6	5	120
Total Container Plants					**1,690**
Seed Mix					
Botanical Name	**Common Name**	**Pure Live Seed**	**Lbs. Per Acre**		**Collected Locally***
Artemisia californica	California sagebrush	10	3		✓
Encelia californica	California sunflower	25	3		✓
Eriogonum cinereum	Ashy-leaf buckwheat	8	15		✓
Eriophyllum confertiflorum	Golden-yarrow	25	1		✓
Lupinus succulentus	Arroyo lupine	90	10		✓
Melica imperfecta	California melic	70	3		✓
Nassella lepida	Foothill needle-grass	65	2		
Total Lbs. Per Acre			**37**		

TBD = To be determined
N/A = Not applicable
*Seed from these species will be collected locally, and will be included in the seed mix if available.

4.2.3 Butterfly Habitat

The restoration strategy for the Palos Verdes blue butterfly habitat on the Alta Vicente site includes reintroducing regionally appropriate native coastal species that are currently present in adjacent native habitats and known to be present on the Peninsula, while focusing on the host plants for the Palos Verdes blue butterfly. Host plants for the Palos Verdes blue butterfly are Ocean locoweed and deerweed (*Lotus scoparius*). Both of these plant species are early successional, exploiting areas of disturbance, and are normally found in the gaps and open areas within the coastal sage scrub community. The plant palette includes a container plant and seed mix composition (*Table 4*).

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TABLE 4
Proposed Butterfly Habitat Planting Palette (1.0 Acre)

Botanical Name	Common Name	Container Size	Spacing (on center)	Group Size	Quantity (per acre)
Container Plants					
Artemisia californica	California sagebrush	1 gallon	6	5	60
Astragalus trichopodus var. *lonchus*	Ocean locoweed	1 gallon	3	12	540
Bloomeria crocea	Common goldenstar	bulb	TBD	TBD	As-available
Calochortus catalinae	Mariposa lily	bulb	TBD	TBD	As-available
Dichelostemma capitatum	Blue dicks	bulb	TBD	TBD	As-available
Eriogonum elongatum	Wand buckwheat	1 gallon	6	5	85
Eriogonum parvifolium	Coast buckwheat	1 gallon	5	5	36
Fritillaria biflora	Chocolate lily	bulb	TBD	TBD	As-available
Mirabilis californica	Wishbone bush	1 gallon	4	5	80
Verbena lasiostachys	verbena	1 gallon	4	3	108
Total Container Plants					**909**

Seed Mix				
Botanical Name	**Common Name**	**Pure Live Seed**	**Lbs. Per Acre**	**Collected Locally***
Amsinckia menziesii	Rancher's fireweed	25	5.0	✓
Asclepias fascicularis	Narrow-leaf milkweed	50	As-Available	✓
A. eriocarpa	Indian milkweed	---	As-Available	✓
Astragalus trichopodus var. *lonchus*	Ocean locoweed	---	As-Available	✓
Caladrinia ciliata	Red maids	60	0.5	
Camissonia bistorta	California suncup	60	4.0	✓
Castilleja exserta	Purple owl's clover	25	0.5	✓
Chaenactis glabriuscula	Yellow pincushion	---	As-Available	
Clarkia purpurea	Clarkia	80	0.5	✓
Deinandra (Hemizonia) fasciculata	Tarplant	20	1.0	✓
Descurainia pinnata	Tansy mustard	---	As-Available	✓
Dichelostemma capitatum	Blue dicks	80	0.5	✓
Eriophyllum confertiflorum	Golden-yarrow	25	1.0	✓
Eschscholzia californica var. *maritima*	California poppy	85	2.0	
Gilia capitata	Globe gilia	80	1.0	
Gnaphalium bicolor	Bicolor everlasting	2	1.0	✓
G. californicum	California everlasting	1	3.0	✓
Grindelia camporum	Gumplant	70	2.0	
Gutierrezia californica	California matchweed	2	2.0	✓
Lasthenia californica	Common goldfields	50	0.5	
Layia platyglossa	Tidy tips	60	1.0	

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TABLE 4 (Cont.)

Seed Mix				
Botanical Name	**Common Name**	**Pure Live Seed**	**Lbs. Per Acre**	**Collected Locally***
Lessingia filaginifolia	California-aster	3	2.0	✓
Lotus scoparius	Deerweed	85	4.0	✓
Lupinus bicolor	Miniature lupine	90	3.0	✓
L. succulentus	Arroyo lupine	90	2.0	✓
Melica imperfecta	Coast melic grass	70	1.0	
Nassella lepida	Foothill needlegrass	65	1.0	
N. pulchra	Purple needlegrass	75	3.0	
Nemophila menziesii	Baby blue-eyes	75	2.0	
Platystemon californicus	Cream cups	20	2.0	
Sisyrinchium bellum	Blue-eyed grass	80	1.0	
Trichostema lanceolatum	Vinegar weed	40	As-Available	✓
Trifolium willdenovii	Clover	85	1.0	✓
Total Lbs. Per Acre			**48.5**	

TBD = To be determined
N/A = Not applicable
*Seed from these species will be collected locally, and will be included in the seed mix if available.

Historically these host plant species were associated with natural occurrences such as fire, landslides and animal burrowing. With the introduction of human intervention, this natural cycle of disturbance and growth has changed. Humans have introduced many highly adaptable annual exotic grasses that flourish in these same open areas inhabited by both ocean locoweed and deerweed and out-compete the native species for both water and nutrients. In addition, fire suppression has resulted in the establishment of continuous bands of mature coastal sage scrub communities, whereby not only is species diversity decreased, but open areas required for the establishment and development of species such as ocean locoweed and deerweed are decreased as well.

To maximize the potential for the continued presence of the two Palos Verdes blue butterfly host plant species, restoration efforts must follow a two-fold approach. First, is the establishment of additional Palos Verdes Blue butterfly habitat to provide the necessary resources to support the blue butterfly. In addition, newly established habitat must be maintained on a continuous basis to ensure the continued existence of gaps within which provide the open areas necessary for both ocean locoweed and deerweed species to persist. Since fire, in the form of controlled burns, is not an option at the Alta Vicente site, open areas require regular on-going maintenance through mechanical means.

4.3 Revegetation Materials

Plant materials for the restoration planting areas will include container stock of coastal sage scrub species and seed mixes of coastal sage scrub and native grassland species, as indicated in the plant palettes provided in *Tables 2-4*. It is preferred that container plant materials are grown from native seed at the Palos Verdes Peninsula Land Conservancy's nursery or alternative source approved by the project's restoration ecologist.

Standard planting procedures will be employed for installing container stock. Planting holes shall be approximately twice the width of the rootball and as deep. If dry soil conditions exist at the time of plant installation, planting holes will be filled with water and allowed to drain immediately prior to planting. Backfill soil will contain no amendments and fertilizers unless recommended by soil test results and/or by the recommendation of the project's restoration ecologist.

Seed for inclusion in the hydroseed mixtures may be obtained from locally collected sources. Seed shall be broadcast throughout the restoration site using hydroseed equipment or other method as recommended by the restoration ecologist.

Seed for hydroseeding will be mixed uniformly in a slurry composed of water, fertilizer (if determined to be necessary after soil tests) and virgin wood fiber mulch at the following rates:

- Seed mixture at indicated lbs. per acre.
- 100 percent Virgin wood cellulose fiber mulch at 2,500 Lbs. per acre.
- Fertilizer (11-52-0) Mono Ammonium Phosphate, plus 19 percent soil sulphur at 150lbs./acre.

Appropriate timing of planting (and application of the hydroseed) will limit the need for supplemental watering and will increase the survival of the plants. The best survival rates are achieved when container plants and seed are installed between 15 November and 15 April. Planting and seeding at the site should be timed to take advantage of seasonal rainfall patterns and most appropriate growing season temperatures (*Chart 1-2*) and should be accomplished no later than early spring of the implementation year.

2007 Habitat Restoration Plan for the Alta Vicente Ecological Reserve

Chart 1
2005-2006 Average Monthly Precipitation for the Portuguese Bend Nature Preserve

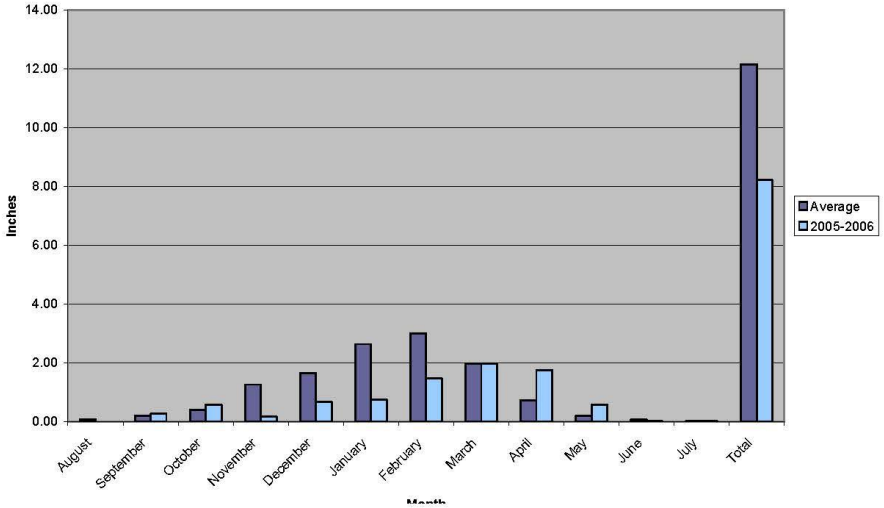
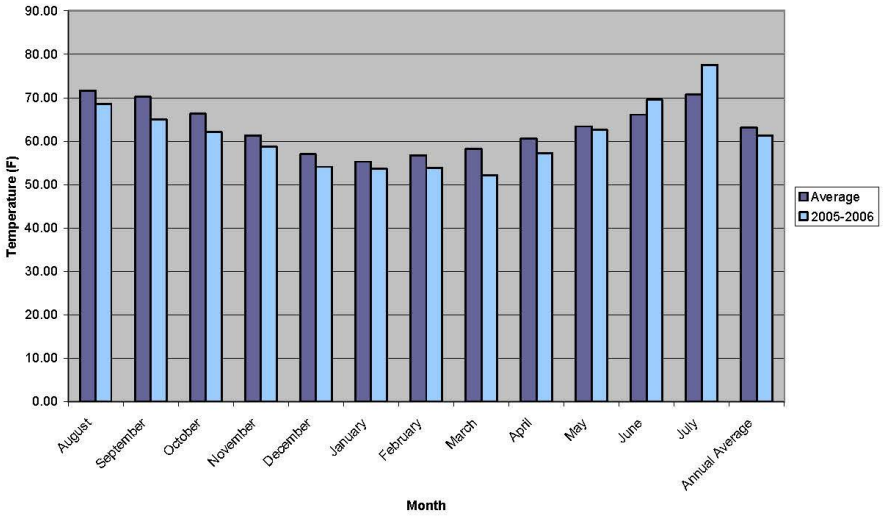


Chart 2
2005-2006 Average Monthly Temperatures for the Portuguese Bend Nature Preserve



4.4 Target Functions and Values

The primary functional goal of the restored coastal sage scrub, cactus scrub, and butterfly habitats is to restore vegetation that contains a diversity of native coastal sage scrub and cactus scrub plant species and that provides habitat value for sensitive wildlife species. A secondary consideration is to create contiguous and intact habitat which resists the establishment of invasive plant species.

4.5 Time Lapse

Under optimal conditions, coastal sage scrub may take approximately 3 years from the installation of seed and container plants to develop the appropriate structure to provide the functions and values needed for habitation of wildlife, including suitable nesting habitat for California gnatcatcher and other coastal other sage scrub species. Due to the slower growth of cactus, coastal cactus scrub may take approximately 4 years or more from the installation of seed and container plants to develop the appropriate structure and to provide the functions and values needed for habitation of wildlife, including suitable nesting habitat for cactus wren and other cactus scrub species. The butterfly habitat may take approximately 3 years from the installation of seed and container plants to develop the appropriate structure to provide the functions and values needed for habitation of wildlife, including suitable habitat for the Palos Verdes Blue Butterfly. As all of the habitats mature, they will become increasingly suitable for a greater diversity of plant and wildlife species.

The length of time to develop high quality habitat depends on a variety of factors including weather, soil conditions, herbivory, and weed competition. As a hedge against drought, the addition of a temporary irrigation system will ensure timely seedling germination and seedling survival until seedlings have become established and are capable of surviving without supplemental water. The anticipated increase in the survival rate will help the vegetation develop more quickly than would be expected from a non-irrigated revegetation effort.

5.0 IMPLEMENTATION PLAN

5.1 Rationale for Expecting Success

Locations for restoration on the Alta Vicente Ecological Reserve are directly adjacent to viable and self-sustaining target habitats, indicating appropriate environmental conditions to support the intended upland habitat. This plan provides for the installation of temporary irrigation to promote establishment and survival of native species included in the plant palette, as well as

naturally recruiting species from existing onsite native seed sources. Invasive non-native weeds that currently displace desirable species within the restoration site will be removed and controlled as part of this plan. Native plant materials will be grown or collected from sources from the Palos Verdes Peninsula, thus preserving genetic integrity and increasing the potential for long-term success.

5.2 Preliminary Schedule

The proposed 15 acres of habitat restoration at the Alta Vicente ER will be completed in three phases consisting of five acres per phase. One phase will be initiated each year. The first 5 acres of restoration (Phase 1) will begin with site preparation and is anticipated to commence as early as Fall 2007. Phase 2 and Phase 3 will also begin with site preparation in Fall 2008 and Fall 2009 respectively. Updates to this schedule will be provided to all parties involved in the restoration program, as necessary (*Table 5*). For Phases 2 and 3, the tasks will commence 1 and 2 years later respectively, than the Phase 1 tasks.

TABLE 5
Preliminary Restoration Project Schedule for Phase 1

Task	Date
Site clearing and soil preparation	Fall 2007 or per Migratory Bird Treaty Act restrictions
Installation of temporary irrigation system	Fall 2007 (following site clearing and soil preparation)
Weed/exotic removal and grow-kill cycles	Fall 2007 (following site preparation)- Spring 2008, Fall 2008-Spring 2009
Planting container stock	Early Winter 2009
Hydroseed application	Winter 2009-2010 (following planting)
Completion of installation/assessment of site installation	Following completion of installation and seeding and 120 day maintenance period
5-year biological monitoring and maintenance	To begin upon successful installation of restoration work
Phase one completion	2014, end of Year 5

5.3 Site Preparation

The Land Conservancy will be responsible for site and soil preparation which includes invasive weed species removal and soil preparation in the restoration areas. Clearing of weeds and site preparation shall be performed outside of the migratory bird nesting season (Feb 15 to Sept 15), where feasible. However, if vegetation removal needs to occur during this time period, a

focused nesting bird survey shall be performed by a qualified wildlife biologist within 72 hours prior to vegetation removal in accordance with the Migratory Bird Treaty Act (16 U.S.G. 703-712).

During site preparation, all invasive weed species, particularly non-native annual grasses, fennel, black mustard, limonium, hottentot fig, and Russian thistle shall be removed or treated within the restoration areas. This should also include exotic trees such as acacia, palm, and castor bean (*Ricinus communis*). The initial weed control effort will involve chemical and/or mechanical treatment. Prior to the installation of native seed and container plants, at least three "grow and kill" weed removal treatments will be conducted by activating the irrigation system during select periods of time over an approximate four-week period to encourage non-native seedling emergence. The irrigation would be applied for short period of time, a few times a week to stimulate germination. When weeds have begun to grow, a foliar application of an appropriate systemic herbicide will be applied to kill target weeds. The cycle shall be repeated. Additional cycles may be required as recommended by the project's restoration ecologist. The restoration ecologist shall oversee any use of herbicide in accordance with label instructions, following the recommendations of a licensed Pest Control Advisor, and any application shall be applied under the direction of a state-certified Qualified Applicator.

5.4 Temporary Irrigation System

A temporary above-grade irrigation system is proposed to provide supplemental irrigation to the coastal age scrub, cactus scrub, and butterfly habitat creation areas to ensure native container plants and seed installed at the site become adequately established. Irrigation is allowable on the Alta Vicente site since it is located outside of the City's Landslide Moratorium Area and the City's coastal setback zone. The irrigation system will only be used until the plants are established such that they can survive on their own from seasonal rainfall. It is expected that the irrigation system will be shut-off/abandoned at the end of Year 3 or four of the 5-year maintenance and monitoring period, depending upon the level of plant establishment achieved by that time. Watering onsite will gradually be decreased prior to the irrigation system being abandoned in order to allow the plants to become acclimated to the site's natural conditions.

The irrigation system will be installed as an above-ground system, so that irrigation equipment may be removed once the system has been decommissioned, and the site has reached the final year of monitoring. The irrigation system will utilize a water source located as close to the site as possible. All onsite irrigation will consist of PVC pipe staked on grade at approximately ten feet on-center and at all corners, providing 100 percent coverage of the revegetation areas

using spray and/or rotor heads where appropriate. The irrigation system will be designed and installed by a landscape contractor in coordination with the Land Conservancy.

5.5 Erosion Control

Where needed, erosion control measures, such as the installation of hay bales, sandbags, fiber rolls, silt fencing, and/or erosion-control matting may be required until target vegetation establishes. No erosion control devices shall be used that contain seed from non-native plants. The need and location of erosion control shall be determined in the field by the project's restoration ecologist. The City shall also have the right to require additional erosion control.

5.6 120-Day Establishment Period

During the initial 120-day plant establishment period, following the container plant installation and seeding, the project's restoration ecologist will monitor site conditions, including irrigation timing and efficiency, seedling germination, container plant survival, soil erosion, and weed and exotic species control to determine if the plants are becoming adequately established and to verify that the seed application has been successful. If the seed application has been successful and adequate germination occurs, then rapid seedling emergence should limit the need for erosion control devices. If germination is not sufficient potential remedial actions include reseeding, installation of additional erosion control devices, and follow-up weed control.

6.0 5-YEAR MAINTENANCE PLAN

The purpose of the maintenance plan is to provide guidelines for long-term maintenance of the restoration site during the 5-year establishment period. Maintenance activities shall occur at the direction of the project's restoration ecologist on an as-needed basis. The maintenance period shall begin after the installation of the container plants and the application of the hydroseed mix. The maintenance for each phase is scheduled to last for 5 years.

Because the goal of this project is to establish a natural system that can support itself with little or no maintenance, the primary focus of the maintenance plan is concentrated in the first few seasons of plant growth following the revegetation effort, when weeds can easily out-compete native plants. The intensity of the maintenance activity is expected to subside each year as the native plant materials become more established and local competition from non-native plants for resources on the site is minimized through direct removal and treatment of non-natives. However, long-term maintenance concerns for the site will include non-native, exotic and invasive plant species adjacent to the site and potential establishment from wind-borne seed.

The risk of large-scale reinvasion of non-native plants onto the site can be adequately minimized during the first 5 years by adhering to these specific maintenance and management guidelines.

- Remove or control invasive exotic species. Weed control will require constant diligence by the maintenance personnel. Invasive exotic species, such as pepper trees (*Schinus* spp.), gum tree, castor bean, tree tobacco (*Nicotiana glauca*), and fennel, will be removed wherever possible within the restoration area. Annual weeds such as black mustard, and annual grasses will also need to be controlled. The project's restoration ecologist will determine what annual weeds need to be controlled to ensure restoration success.
- Access to the restoration site should be on foot or via the existing dirt road maintained for the Sanitation Department. Other than maintenance vehicles along the dirt access road, all vehicles should remain outside the restoration areas. If off-road vehicle or human activities become a problem in the restoration area, the project's restoration ecologist may recommend the installation of fencing.

6.1 Maintenance Activities

- Areas of container stock and applied seed will be irrigated when natural rainfall is not adequate to sustain container plants and seeds. The project's restoration ecologist shall be responsible for scheduling the irrigation to promote plant and seed growth, and establishment. The irrigation system shall be maintained in proper working order.
- Native understory species will not be cleared in the revegetation areas.
- Generally, the sites will not be fertilized during the maintenance period unless determined necessary by the project's restoration ecologist as a remedial measure to correct soil nutrient deficiencies.
- Non-native species may invade the revegetation areas and become a problem before or during the establishment of native plant associations. Weedy, invasive, non native species, such as fennel, castor bean, pampas grass (*Cortaderia* sp.), tree tobacco, tocalote (*Centaurea melitensis*), geraldton carnation spurge (*Euphorbia terracina*) and others, as indicated by the project's restoration ecologist, shall be hand removed or treated with the appropriate systemic herbicide as soon as they begin to invade.
- Deadwood and leaf litter of native vegetation shall not be removed (see 6.2.3, Clearing and Trash Removal). Deadwood and leaf litter provide valuable microhabitats for invertebrates, reptiles, small mammals and birds. Non-organic trash and debris will be removed from the revegetation areas by hand on a regular basis, at no less than one month intervals. Trash consists of all man made non organic materials, equipment, or debris thrown, dumped, or washed down within the revegetation areas.

- Repair any erosion on the site and maintain any temporary BMP's within the revegetation areas until they are deemed no longer necessary by the project's restoration ecologist. Potential erosion-control measures include hay bales, sandbags, silt fencing, and/or erosion-control matting. The project's restoration ecologist will identify the need for erosion control during regular site visits.

6.2 General Habitat Maintenance Guidelines

6.2.1 Pest Management/Weed Control

Weeds and non-native/exotic plant species are expected to be the primary pest problem in the restoration area during the first several years of the maintenance period. Weeds shall be controlled so they do not prevent the establishment of the native species or invade adjacent areas. Weeds shall be controlled prior to setting seed and removed from the site. The Land Conservancy shall control weeds and invasive exotic species within the restoration site. A combination of physical removal, mechanical treatments (weed whipping) and appropriate herbicide treatments shall be used to control the non-native/invasive plant species.

Removal of weeds by hand where possible is the most desirable method of control and shall be used around individual plantings and native seedlings. The project's restoration ecologist shall oversee any use of herbicide in accordance with label instructions, following the recommendations of a licensed Pest Control Advisor, and any application shall be applied under the direction of a state-certified Qualified Applicator.

6.2.2 Irrigation System

The irrigation system shall be checked regularly to ensure proper operation and adequate coverage of the revegetated areas. Problems with the irrigation system shall be repaired immediately to reduce potential plant mortality. The frequency and duration of irrigation applications shall be adjusted seasonally in coordination with the project's restoration ecologist to meet habitat needs. The irrigation system will be terminated when deemed appropriate by the project's restoration ecologist. If there are any concerns as presented by the City Manager that cannot be rectified by repairs, adjustments, and/or troubleshooting then the irrigation system may be terminated at the request of the City Manager. Plants growing near the sprinkler heads may be pruned to maintain adequate sprinkler coverage. Irrigation heads may need to be raised up on staked risers to reach above developing plants to avoid head blockage. The irrigation system may be (but is not required to be) completely removed from the site at the successful completion of the project. The determination regarding the removal of the irrigation system will be made by

the City Manager in consultation with the Land Conservancy. Cessation and removal of the irrigation system shall be determined by the project's restoration ecologist.

6.2.3 Clearing and Trash Removal

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

6.3 Schedule of Maintenance Inspections

The project's restoration ecologist will perform quarterly maintenance inspections during the 5-year maintenance and monitoring period. Recommendations for maintenance efforts will be based upon these site observation visits. Weed control by the Land Conservancy shall be conducted monthly during Years 1 and 2 of the maintenance and monitoring period, and then quarterly during Years 3 through 5 of the maintenance and monitoring period, as directed by the project's restoration ecologist.

7.0 MONITORING PLAN

Monitoring of the restoration site has a two-fold purpose: **(1)** To monitor the progress of the Alta Vicente restoration area by assessing native habitat establishment, (percent native and non-native coverage via quantitative and qualitative methods) based on the established performance criteria; **(2)** To direct and monitor the maintenance activities and determine remedial actions in a manner that ensures that appropriate maintenance occurs in a timely manner. The monitoring shall be performed by the project's restoration ecologist.

The project's restoration ecologist shall be responsible for monitoring activities of all the work crews and contractors during preparation of the restoration area including site clearing and soil preparation, irrigation installation, container plant and seed application, monthly monitoring during the 120-day plant establishment/maintenance period and quarterly monitoring for the 5-year maintenance and monitoring period.

2007 Habitat Restoration Plan for the Alta Vicente Ecological Reserve

7.1 Performance Standards

Performance standards have been established for the habitat restoration area based on expected vegetative development within a properly functioning habitat of the same type. Specific performance criteria should be attained by 3 years after the installation. Established success criteria are listed in *Table 6*.

TABLE 6
Performance Standards

Year	Percent Cover of Native Species (%)		
	CSS	Cactus Scrub[1]	PVB Habitat[2]
Year 1*	10%	10%	10%
Year 2*	20%	20%	20%
Year 3	>40%	>30%	30%-60% max.
Year 5*	>50%	>40%	30%-60% max.

* Percentage based upon visual estimates
[1] Percent coverage of cactus species should be at least 1% for Year 1, 3% for Year 2, 5% for Year 3, and 10% for Year 5.
[2] From Year 3 on, there should be at least 10% coverage from *L. scoparius* and/or *A. trichopodus* and the woody shrubs should be maintained at 10-20%

These performance criteria shall be utilized to assess the annual progress of the restoration areas, and are regarded as interim project objectives designed to reach the final goals. Fulfillment of these criteria will indicate that the restoration areas on the project site are progressing toward the habitat types and functions that constitute the long-term goals of the plan. If the restoration efforts fail to meet the performance standards in any 1 year, the project's restoration ecologist may recommend remedial action to be implemented the following year which will enhance the vegetation to a level of conformance with the original standard. These remedial actions may include re-seeding, applying soil amendments, additional weed control measures, erosion control, or adjustments to the irrigation and maintenance practices.

7.2 Monitoring Methods and Schedule

The Land Conservancy will monitor and report on the restoration work underway at the Alta Vicente. Each 5-acre site will be monitored for 5 years, with reports prepared in Years 1 through 3, and 5.

The project's restoration ecologist will conduct annual qualitative monitoring visits for Years 1, 2 and 5, of the 5-year monitoring period. Permanent vegetation transect points will be established within the coastal sage scrub, the coastal cactus scrub, and the butterfly habitat restoration areas at appropriate representative locations. Transect data shall be collected during the 3rd year in the spring and shall be used to determine compliance and achievement of the restoration success standards; there will be a minimum of one 50 meter transect installed within each habitat restoration vegetation type per five acre area. Qualitative assessment through visual analysis of the restoration area will be used during the first 2 years to assess percent cover of target vegetation and weed cover, and plant composition. In the spring of Year 3, a point intercept method will be used to determine percent target vegetation cover and weed cover. This will follow the California Native Plant Society field sampling protocol (CNPS 1995). If the restoration project is in compliance with the criteria established for Year 3, then qualitative assessment will continue during Year 5. If the restoration site is performing below the criteria established for Year 3, the project's restoration ecologist will determine if remedial measures are necessary and if point intercept transects will be continued in Year 5.

Qualitative monitoring will include reviewing the health and vigor of container plants and seed plantings, checking for the presence of pests and disease, soil moisture content and the effectiveness of the irrigation system, erosion problems, invasion of weeds/exotics, and the occurrence of trash and/or vandalism. Photographs of the restoration site, viewing the site from different locations will be taken annually. Photographs will be taken at the same locations each year. Each monitoring visit will be followed by a summary of observations, recommendations, and conclusions.

Quantitative evaluation of container plant survival shall be determined through counts of dead container plants. Site visits shall assess plant mortality and recommend container plant replacement, if needed. Cover of invasive exotics shall be determined by visual inspections of the restoration site. Removal of invasive exotics shall be recommended if detected.

7.3 Monitoring Reports

The PVPLC will monitor and report on the restoration work underway in the Preserve. Each site will be monitored for 5 years, with reports prepared in Years 1 through 3, and 5. Monitoring should document restoration progress and provide direction and maintenance recommendations. Monitoring will include both horticultural and botanical components as described in (Section 7.2).

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APPENDIX A

Wildlife Species Observed at Alta Vicente (2006)

APPENDIX A

Wildlife Species Observed at Alta Vicente (2006)

REPTILES

IGUANIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard
Uta stansburiana – side-blotched lizard

COLUBRIDAE – COLUBRID SNAKES

Pituophis melanoleucus – gopher snake

BIRDS

ACCIPITRIDAE – HAWKS

Buteo jamaicensis – red-tailed hawk

FALCONIDAE – FALCONS

Falco sparverius – American kestrel

CHARADRIIDAE – PLOVERS

Charadrius vociferus – killdeer

LARIDAE – GULLS and TERNS

Larus sp. – gull

COLUMBIDAE – PIGEONS and DOVES

* *Columba livia* – rock dove
Zenaida macroura – mourning dove

TYTONIDAE – BARN OWLS

Tyto alba – barn owl

TROCHILIDAE – HUMMINGBIRDS

Calypte anna – Anna's hummingbird

HIRUNDINIDAE – SWALLOWS

Petrochelidon pyrrhonota – cliff swallow

APPENDIX A (Continued)

CORVIDAE – JAYS and CROWS

Aphelocoma californica – western scrub-jay
Corvus brachyrhynchos – American crow
Corvus corax – common raven

AEGITHALIDAE – BUSHTITS

Psaltriparus minimus – bushtit

TROGLODYTIDAE – WRENS

Campylorhynchus brunneicapillus – cactus wren

SYLVIIDAE – GNATCATCHERS

Polioptila californica californica – coastal California gnatcatcher

TIMALIIDAE – LAUGHINGTHRUSH and WRENTITS

Chamaea fasciata – wrentit

MIMIDAE – THRASHERS

Mimus polyglottos – northern mockingbird
Toxostoma redivivum – California thrasher

STURNIDAE – STARLINGS

* *Sturnus vulgaris* – European starling

EMBERIZIDAE – BUNTINGS and SPARROWS

Melospiza melodia – song sparrow
Pipilo crissalis – California towhee
Pipilo maculatus – spotted towhee

FRINGILLIDAE – FINCHES

Carpodacus mexicanus – house finch
Carduelis psaltria – lesser goldfinch

PASSERIDAE – OLD WORLD SPARROWS

* *Passer domesticus* – house sparrow

APPENDIX A (Continued)

MAMMALS

DIDELPHIDAE – NEW WORLD OPOSSUMS

* *Didelphis virginiana* – Virginia opossum

LEPORIDAE – HARES and RABBITS

Sylvilagus bachmani – brush rabbit

SCIURIDAE – SQUIRRELS

Spermophilus beecheyi – California ground squirrel

GEOMYIDAE – POCKET GOPHERS

Thomomys bottae – Botta's pocket gopher

CANIDAE – WOLVES and FOXES

Canis latrans – coyote

MUSTELIDAE – WEASELS, SKUNKS, and OTTERS

Mephitis mephitis – striped skunk

BUTTERFLIES AND MOTHS

PAPILIONIDAE – SWALLOWTAILS

Papilo zelicaon lucas – anise swallowtail

PIERIDAE – WHITES AND SULFURS

Pieris rapae rapae – cabbage butterfly

Pontia protodice – checkered white

LYCAENIDAE – BLUES, HAIRSTREAKS, and COPPERS

Leptotes marina – marine blue

* signifies introduced (non-native) species

APPENDIX B

Vascular Plant Species Observed at Alta Vicente

APPENDIX B

Vascular Plant Species Observed at Alta Vicente

FILACEAE

POLYPODIACEAE – POLYPODY FAMILY

Polypodium californicum – California polypody

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE – FIG-MARIGOLD FAMILY

* *Carpobrotus edulis* – *Hottentot fig*

* *Mesembryanthemum crystallinum* – crystalline iceplant

ANACARDIACEAE – SUMAC FAMILY

Malosma laurina – laurel sumac

Rhus integrifolia – lemonade-berry

* *Schinus molle* – Peruvian pepper tree

* *Schinus terebinthifolius* – Brazilian pepper tree

APIACEAE – CARROT FAMILY

* *Foeniculum vulgare* - fennel

ASCLEPIADACEAE – MILKWEED FAMILY

Asclepias fascicularis – narrow-leaf milkweed

ASTERACEAE – SUNFLOWER FAMILY

Artemisia californica – coastal sagebrush

Baccharis pilularis ssp. *consanguineae* – coyote brush

Centaurea melitensistocolote

* *Chrysanthemum coronarium* – garland chrysanthemum

Encelia californica – California bush sunflower

Filago californica – California fluffweed

* *Gazania* sp. – gazania

Gnaphalium bicolor – bicolor cudweed

Gnaphalium californicum – California everlasting

Gutierrezia californica – California matchweed

Hazardia squarrosa Sawtooth Goldenbush

APPENDIX B (Continued)

Heterotheca grandiflora – telegraph weed
Isocoma menziesii ssp. *vernonioides* – coast goldenbush
Malacothrix saxatilis var. *tenuifolia* – cliff malacothrix
* *Picris echioides* – bristly ox-tongue
* *Silybum marianum* – milk thistle
Stephanomeria virgata – twiggy wreathplant

BORAGINACEAE – BORAGE FAMILY
* *Echium fastuosum* – pride of Madeira

BRASSICACEAE – MUSTARD FAMILY
* *Brassica nigra* – black mustard
* *Hirschfeldia incana* – short-podded mustard
* *Lobularia maritima* – sweet-alyssum

CACTACEAE – CACTUS FAMILY
Cylindropuntia (= Opuntia) prolifera – coast cholla
Opuntia littoralis – coastal prickly-pear
Opuntia oricola – prickly-pear cactus

CAPPARACEAE – CAPER FAMILY
Isomeris arborea – bladderpod

CHENOPODIACEAE – GOOSEFOOT FAMILY
Atriplex lentiformis ssp. *breweri* – big saltbush, quail brush
* *Atriplex semibaccata* – Australian saltbush
* *Chenopodium murale* – nettle-leaved goosefoot
* *Salsola tragus* – Russian-thistle

CONVOLVULACEAE – MORNING-GLORY FAMILY
* *Convolvulus arvensis* – bindweed
Dichondra occidentalis – western dichondra

CRASSULACEAE – STONECROP FAMILY
Dudleya lanceolata – lanceleaf dudleya

CUCURBITACEAE – GOURD FAMILY
Marah macrocarpus – wild cucumber

APPENDIX B (Continued)

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce albomarginata – rattlesnake spurge

* *Ricinus communis* – castor-bean

FABACEAE – PEA FAMILY

* *Acacia cyclops* – acacia

Astragalus trichopodus var. *lonchus* – ocean locoweed

* *Medicago polymorpha* – California burclover

* *Melilotus alba* – white sweet-clover

* *Melilotus indica* – yellow sweet-clover

* *Vicia sativa* – spring vetch

GERANIACEAE – GERANIUM FAMILY

* *Erodium cicutarium* – red-stemmed filaree

* *Geranium carolinianum* – Carolina geranium

HYDROPHYLLACEAE – WATERLEAF FAMILY

MALVACEAE – MALLOW FAMILY

* *Malva sylvestris* – mallow

MYOPORACEAE – MYOPORUM FAMILY

* *Myoporum laetum* – myoporum

MYRTACEAE – MYRTLE FAMILY

* *Eucalyptus* sp. – eucalyptus

NYCTAGINACEAE – FOUR O'CLOCK FAMILY

Mirabilis californica – California wishbone-bush

OLEACEAE – OLIVE FAMILY

* *Olea europaea* – mission olive

OXALIDACEAE – OXALIS FAMILY

* *Oxalis pes-caprae* – Bermuda buttercup

APPENDIX B (Continued)

PLANTAGINACEAE – PLANTAIN FAMILY

* *Plantago lanceolta* – English plantain

PLUMBAGINACEAE – LEADWORT FAMILY

* *Limonium perezii* – Perez's sea-lavender; statice

POLYGONACEAE – BUCKWHEAT FAMILY

Eriogonum cinereum – ashyleaf buckwheat

Eriogonum fasciculatum – California buckwheat

* *Rumex crispus* – curly dock

ROSACEAE – ROSE FAMILY

Heteromeles arbutifolia – toyon

SCROPHULARIACEAE – FIGWORT FAMILY

Castilleja exserta – owls clover

SOLANACEAE – NIGHTSHADE FAMILY

Lycium californicum – California boxthorn

Nicotiana glauca – tree tobacco

ULMACEAE ELM FAMILY

*Ulmus parvifolia*Chinese elm

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE – PALM FAMILY

* *Phoenix canariensis* - Canary Island date palm

LILIACEAE – LILY FAMILY

Calochortus catalinae – Catalina mariposa lily

Dichelostemma capitatum – blue dicks

POACEAE – GRASS FAMILY

* *Avena barbata* – slender oat

* *Avena fatua* – wild oat

* *Brachypodium distachyon* – false brome

APPENDIX B (Continued)

* *Bromus catharticus* – rescue grass
* *Bromus diandrus* – ripgut grass
* *Bromus hordeaceus* (mollis) – soft chess
* *Bromus madritensis* ssp. *rubens* – foxtail chess
* *Cortaderia selloana* – pampas grass
* *Cynodon dactylon* – Bermuda grass
* *Hordeum murinum* ssp. *leporinum* – foxtail barley
* *Hordeum vulgare* - barley
* *Lamarckia aurea* – goldentop
* *Lolium multiflorum* – Italian ryegrass
Melica imperfecta – California melic
Nassella cernua – nodding needlegrass
Nassella lepida – foothill needlegrass
Nassella pulchra – purple needlegrass
* *Pennisetum clandestinum* – kikuyu grass
* *Pennisetum setaceum* – fountain grass
* *Piptatherum miliaceum* – smilo grass
* *Phalaris minor* – canary grass

* signifies introduced (non-native) species

2007 Targeted Exotic Removal Plan for Plants

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

Prepared for:

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APRIL 2007

2007 Targeted Exotic Removal Plan for Plants for the Portuguese Bend Nature Preserve

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2007 Targeted Exotic Removal Plan for Plants for the Portuguese Bend Nature Preserve

1.0 INTRODUCTION

The Rancho Palos Verdes Draft Natural Communities Conservation Plan and Habitat Conservation Plan (Draft NCCP/HCP) requires that as managers of the Portuguese Bend Nature Preserve (PBNP) the Palos Verdes Peninsula Land Conservancy (Land Conservancy) implement a Targeted Exotic Plant Removal Plan for Plants (TERPP), as specified in Section 6.3.2.5 of the Plan. As of the writing of this plan, the Draft NCCP/HCP Implementing Agreement has not been signed by the regulatory agencies, and therefore, the Draft NCCP/HCP is technically not officially executed. However, the City of Rancho Palos Verdes and the Land Conservancy are continuing to coordinate with the resource agencies to complete this plan.

This report describes the methodology of the proposed TERPP. Within the framework described in this report, each year, five acres or 20 TERPP sites are to be identified as locations where the removal of exotic plants would have a beneficial effect on the habitat in the area. All removals will be evaluated for erosion concerns. These concerns will be addressed as necessary.

An integrated management approach (i.e., the least biologically intrusive control methods) at the most appropriate period of the growth cycle will be used to achieve the desired goals. Both mechanical and chemical methods of control may be used. Only herbicides compatible with biological goals are permitted, and all work is to be supervised by a licensed Qualified Applicator. Plant material removed from PBNP lands will be disposed of in offsite facilities. However, for small or isolated populations and for annual species that had not yet produced seeds and pose no threat of regrowth, the plant material may be left at the site to decompose naturally.

The California gnatcatcher (*Polioptila californica californica*) breeding season is from February 15th to August 31st. During this time period, TERPP locations and project extent will be selected to avoid or minimize impacts to potential gnatcatcher habitat. TERPP sites with homogonous cover of invasive plant species, absent of any coastal sage scrub habitat, will be exempt from gnatcatcher surveying where access to the removal site is possible without entering potential nesting habitat.

In rare instances, when removal projects are selected in coastal sage scrub habitat and there is no direct access via a trail to the removal site, minimization measures will be employed. These measures will consist of a biological survey for nesting sites of the gnatcatcher and cactus wren

(*Campylorhynchus brunneicapillus*). If any nesting sites are detected, all work will remain as least 100 feet away from the nesting locations.

2.0 ASSESSMENT OF EXOTIC PLANTS IN PORTUGUESE BEND NATURE PRESERVE

This assessment includes an inventory of exotic species present and an evaluation of the priority of selected species for control efforts. The inventory lists exotics currently known to exist in the Preserve. However, new species may be added if they are identified, and species that are no longer seen as a threat may be deleted from the list.

Prioritization will be based on the following criteria (see attached flow charts):

1. Degree of threat to native vegetation
2. Feasibility of eradication
3. Invasiveness of exotic species

2.1 Degree of Threat to Native Vegetation

Degree of threat is based on proximity to native vegetation. In some cases, the exotic species may be located adjacent to the PBNP, but is considered a threat due to the ease of seed mobility.

High priority

The exotic species is categorized as high priority if it poses an immediate threat to:

- rare or endangered native plants or biological communities
- undisturbed examples of natural communities
- areas supporting species of animals known to depend upon native vegetation that is threatened by exotic species

Medium priority

The exotic species is categorized as medium priority if it will threaten an area as described above within 1-2 years

Low priority

The exotic species is categorized as low priority if it will be more than two years before it poses a threat to an area as described above.

2.2 Feasibility of Eradication

Each infestation of exotic plants will be evaluated to determine the feasibility of eradication.

Localized exotic plants are the most amenable to control efforts. It may even be possible to completely eradicate these species if management is initiated quickly.

Some exotic plant species that have become established in the PBNP may not be controllable throughout their entire range, but their impacts can be decreased by controlling these species in selected areas, particularly high priority natural areas.

It may be possible to confine some widespread exotic species to certain portions of the PBNP.

High priority

The exotic species is present in localized populations with a good possibility for eradication. This may include isolated stands of the species that are easily eradicated or that pose an immediate threat to native habitat due to their aggressive nature.

Medium priority

The exotic species is controllable but only in selected areas, or the species is confinable to certain areas of the PBNP. This category also includes species that are controllable Preserve-wide, even though this effort may require removal from one area at a time.

Low priority

The exotic species is present in large contiguous stands with little possibility of eradication, or the seed bank of the exotic is considered well established.

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

2.3 Invasiveness of Species

Lists of exotic species found within the PBNP are located at the end of this report (*Table 1-3*). Exotic species are ranked as highly invasive (*Table 1*), moderately invasive (*Table 2*), or non-invasive (*Table 3*) based on state wide rating systems provided by the California Invasive Plant Council (Cal-IPC) and California Department of Food and Agriculture (CDFA). These recommendations by Cal-IPC and CDFA have been modified slightly to reflect the observed impact of invasiveness seen within the PBNP by Land Conservancy biologists. Exotic species found in the PBNP, but not found on either State list are categorized based on local knowledge of their invasiveness in this area. Non-native species that are not considered to be invasive are included in the exotic species lists (*Table 3*), but have been omitted from the priority ranking flowcharts (*Figures 1-3*).

TABLE 1
Highly Invasive Species

Scientific Name	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

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

TABLE 1
Highly Invasive Species

Scientific Name	Common name
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

TABLE 2
Moderately Invasive Species

Scientific Name	Common Name
Acacia cyclops	Acacia
Acacia species	Acacia
Aegilops cylindrica	Jointed goat grass
Ageratina adenophorum	Eupatory
Atriplex semibaccata	Australian saltbush
Bassia hyssopifolia	Five-Hook bassia
Bromus hordeaceus (mollis)	Soft brome
Bromus catharticus	Rescue grass
Cakiel maritime	Sea rocket
Carduus pycnocephalus	Italian thistle
Carpobrotus aequilaterus	Sea Fig
Carpobrotus chilensis	Fig-Marigold iceplant
Conium maculatum	Poison hemlock
Convolvulus arvensis	Bindweed
Erodium cicutarium	Red stem filaree
Eucalyptus camaldulensis	Red gum tree
Eucalyptus globulus	Blue gum tree
Eucalyptus species	Gum tree
Hirschfeldia incana	Annual mustard
Hordeum murinum leporinum	Foxtail barley
Hordeum vulgare	Common barley
Lactuca serriola	Compass plant
Lathyrus tangianus	Tangier pea
Limonium perezii	Sea lavender
Limonium sinuatum	Sea lavender

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

TABLE 2
Moderately Invasive Species

Scientific Name	Common Name
Lobularia maritima	Sweet alyssum
Lolium multiflorum	Italian rye
Lolium perenne	Perennial ryegrass
Marrubium vulgare	Horehound
Medicago polymorpha	Bur clover
Medicago sativa	Alfalfa
Melilotus albus	White sweet clover
Melilotus indicus	Yellow sweet clover
Myoporum laetum	Myoporum
Olea europea	Olive
Oxalis pes-caprae	Bermuda buttercup
Pelargonium zonale	Zonal geranium
Phalaris minor	Phalaris
Phoenix canariensis	Phoenix palm
Piptatherum miliacea	Smilo grass
Pittosporum undulatum	Pittosporum
Plantago lanceolata	English plantain
Polygonum aviculare	Knotweed
Polypogon monspessulensis	Rabbitsfoot
Pyracantha sp.	Firethorn
Rumex crispus	Curly dock
Schinus molle	Mexican pepper
Schinus terebinthifolius	Brasilian pepper
Sisymbrium irio	London rocket
Trifolium hirtum	Rose clover
Washington robusta	Mexican fan palm
Vicia sativa	Spring vetch
Vulpia myuros varhirsuta	Annual fescue
Vulpia myuros var myuros	Rattail fescue

TABLE 3
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

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

TABLE 3
Exotic, Non-invasive Species

Scientific Name	Common Name
Capsella bursa-pastoris	Shepherd's purse
Centranthus rubber	Red valerian
Ceratonia siliqua	Carob tree; 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	Carolina geranium
Gnaphalium luteo-album	White cudweed
Koehlreuteria species	Koehlreuteria
Lamarckia aurea	Goldentop
Lantana montevidensis	Purple trailing lantana
Lathyrus odoratus	Sweet pea
Lycium species	Ornamental lycium
Lycopersicon esculentum	Garden tomato
Malephora crocea	Coppery mesemb
Melaleuca species	Melaleuca
Mesembryanthemum nodiflorum	Slender-leaved iceplant
Osteoapermu fruticosum	Trailing african daisy
Oxalis corniculata	Creeping woodsorrel
Paspalum dilatatum	Dallis grass
Pinus halepensis	Alepppo pine
Plantago major	Common plantain
Poa annua	Bluegrass
Polygonum arenastrum	Common knotweed
Senecio vulgaris	Common groundsel
Silenle gallica	Common catchfly
Triticum aestivum	Cultivated wheat
Urtica urens	Dwarf nettle
Veronica anagallis-aquatica	Water speedwell
Yucca species	Spanish bayonet

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

High priority

These species are highly invasive. They tend to form monotypic stands and have biological attributes that contribute to moderate to high rates of dispersal and establishment. They have severe negative impacts on physical processes, plant and animal communities, and vegetation structure.

Medium priority

These species are moderately invasive. They may have biological attributes that are conducive to high dispersal and establishment rates, but have less severe negative impacts on physical processes, plant and animal communities, and vegetation structure. Distribution may be limited to areas subject to continuing human disturbance or dependent on ecological disturbance. Medium priority is also given to invasive exotics known to spread slowly and stay in localized patches.

Low priority

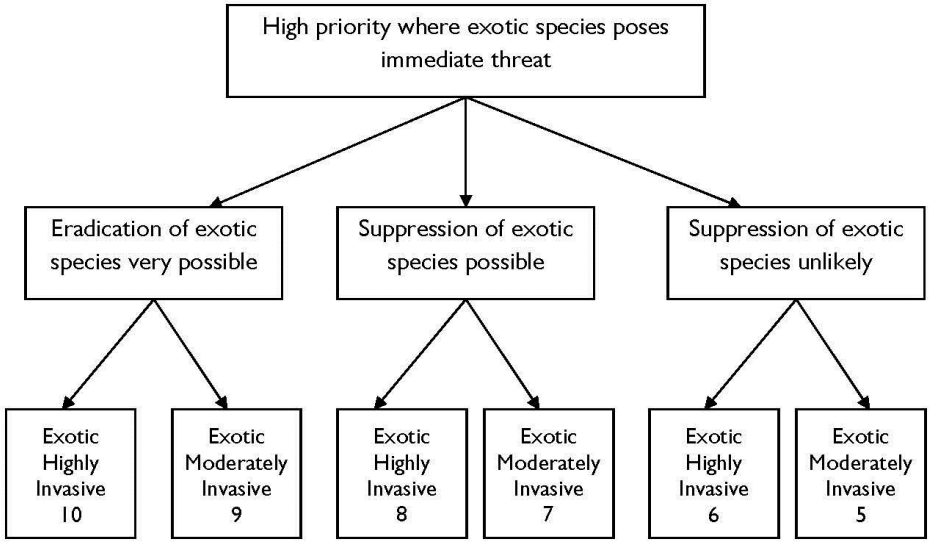
These species are exotic, but not considered invasive. Their distribution is extremely localized and spread is slow or rare. Species in this category are not included in the priority ranking flowcharts (*Figures 1-3*).

Flow Charts

The three priority criteria are combined into a series of flow charts in *Figures 1-3*. These flow charts and corresponding scores of 1-10 are designed to provide management with guidance on when an exotic plant is an overall high, medium, or low priority for control. An overall score of 8-10, 4-7, and 1-3 indicates a high, medium, and low priority for control, respectively. Since these scores are meant as guidance, they should not replace best professional judgment.

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

Figure 1. Flowchart for High Priority Degree of Threat to Native Vegetation



Priority Ranking for Control of Exotic Species:

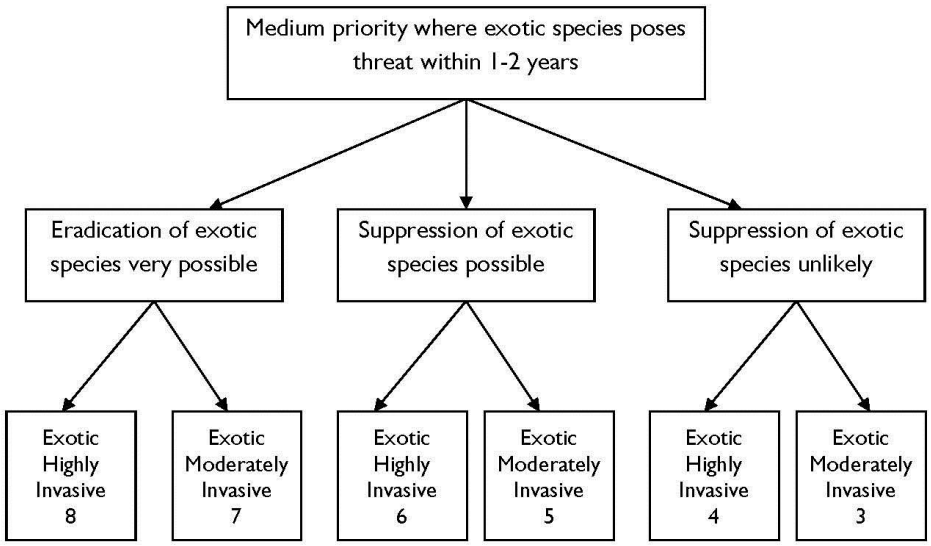
1-3 = Low priority

4-7 = Medium priority

8-10 = High priority

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

Figure 2. Flowchart for Medium Priority Degree of Threat to Native Vegetation



Priority Ranking For Control of Exotic Species:

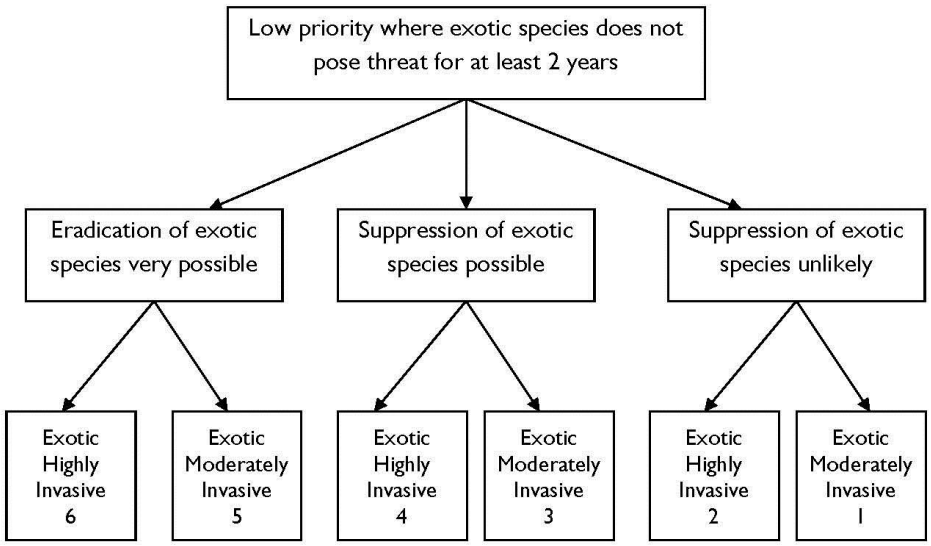
1-3 = Low priority

4-7 = Medium priority

8-10 = High priority

2007 Targeted Exotic Removal Plan for Plants for the Rancho Palos Verdes Draft NCCP/HCP

Figure 3. Flowchart for Low Priority Degree of Threat to Native Vegetation



Priority Ranking For Control of Exotic Species:

1-3 = Low priority

4-7 = Medium priority

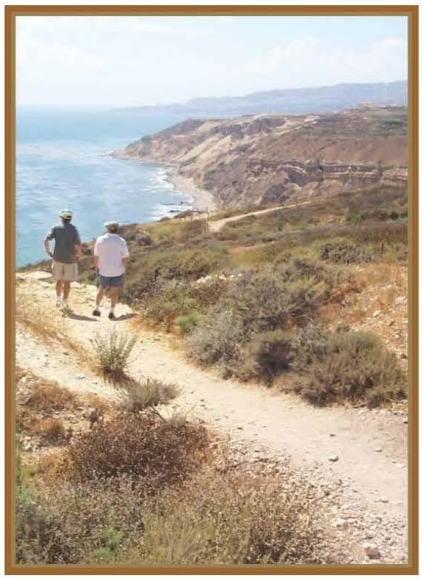
8-10 = High priority

APPENDIX I

Public Use Master Plan

PALOS VERDES NATURE PRESERVE







PUBLIC USE MASTER PLAN (PUMP)







Rancho Palos Verdes

Palos Verdes Peninsula Land Conservancy

Adopted: April 2, 2013

PARTICIPANTS PAGE

This Palos Verdes Nature Preserve Public Use Master Plan was created with the involvement of many different individuals and organizations, including the following:

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Brian Campbell
Jim Knight
Anthony Misetich

City Council 2009

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1. INTRODUCTION

The City's Natural Communities Conservation Plan

The State's Natural Communities Conservation Planning (NCCP) Act of 1991 provides for the preparation and implementation of large-scale natural conservation plans. The purpose of these plans is to identify and provide for the area-wide protection of natural wildlife diversity, while allowing for compatible and appropriate development and growth. Because of the relatively high concentration of coastal sage scrub habitat in the City of Rancho Palos Verdes (RPV), and the growing intensity of development pressures on these areas, in 1996, the City of RPV entered into a Planning Agreement with the California Department of Fish and Game and the U.S. Fish and Wildlife Service to develop an NCCP subarea plan that will encompass the entire City of RPV.

Between 1996 and 2004, the City of RPV worked with stakeholders, such as major landowners of open space, state and Federal agency representatives, and environmental organization representatives to create a subarea NCCP for the City of RPV. The City of RPV has also prepared a habitat conservation plan (HCP) and is pursuing an incidental take permit from the U.S. Fish and Wildlife Service. Together, the NCCP and HCP are referred to as the City of Rancho Palos Verdes NCCP-HCP (herein referenced as the "NCCP").

On August 31, 2004, the City Council approved the City's NCCP Subarea Plan. The City is currently seeking state and federal permits for the NCCP. In summary, the City's NCCP Subarea Plan will identify the creation of a proposed nature Preserve, how the Preserve will be assembled, how the Preserve will be managed and how much implementation of the Plan is going to cost and identifies a list of activities and projects that will be covered under the Plan. More specifically, the City's NCCP proposes the creation of an open space habitat Preserve made up of existing City-owned properties, properties acquired by the City for inclusion into the Preserve, and any private properties whose owners give their consent to be included in the Preserve. To provide ample opportunity for the development of active recreational uses in the City, all of the developed City parks and the developable portions of the undeveloped City parks were excluded from the Preserve.

NCCP Requirement for Development of a Public Use Master Plan (PUMP)

The primary purpose of the Preserve is to provide comprehensive management and conservation of multiple species, including but not limited to species listed under the California Endangered Species Act (CESA) or federal Endangered Species Act (ESA) of 1973, amended (16 U.S.C. 1531 et seq.). In addition to protecting biological resources, the NCCP allows, the Preserve to be open to the public for compatible passive recreational uses (as an "NCCP-HCP covered activity") that follow certain requirements outlined in the NCCP and habitat conservation plan (HCP). In order to balance the public's passive recreational needs with the protection of natural resources within the Preserve, the NCCP requires that the City and the PVPLC prepare a Public Use Master Plan (PUMP) for the

Preserve. The PUMP is intended to be a covered activity under the NCCP and address issues germane to the Preserve such as public access, trail and trailhead locations, parking, trail use, fencing, signage, lighting to name a few. In addition, the NCCP (section XXX) calls out a number of "Management Recommendations" that will likely be incorporated as part of development of the PUMP to obtain coverage for these activities, including the development of a comprehensive Preserve Trails Plan (PTP).

Pursuant to the City's NCCP, preparation of the PUMP should be based on public input and must be completed within 2 years of the signing of the NCCP Implementation Agreement and be approved by the City Council and the Resource Agencies to be a covered activity. The City's NCCP Implementing Agreement has not been signed yet; however, the PUMP preparation is currently underway and well ahead of the schedule anticipated by the Resource Agencies. The basis of the Resource Agency review will be to ensure that the PUMP meets the "covered activity" requirements and is consistent with the biological conservation goals of and of the NCCP.

Upon the City Council's adoption of the PUMP document, the Forrestal Management Plan will no longer be the governing document for the Forrestal Reserve. The PUMP document will replace the Forrestal Management Plan since the Forrestal Reserve is a part of the greater NCCP Preserve.

Preparation of the PUMP

In March 2006, the City Council endorsed creating a steering committee to assist City and PVPLC Staff with the development of the PUMP document. On June 6, 2006, the City Council appointed 15 individuals to a PUMP Committee based on their geographic relationship with the Preserve, their trail use experience and their special interest or group affiliation. Listed below (in alphabetical order) are the 15 members of the PUMP Committee:

- Donald Bell
- Arlene Block
- Barry Bonnickson
- Troy Braswell
- Eva Cicoria
- Al Edgerton
- Marc Jacobowitz
- Bill James
- Cassie Jones
- Gordon Leon
- Vic Quirarte
- Ann Shaw
- John Stevens
- Paul Tetreault
- John Wessel

The City Council also appointed Kurt Loheit as an Ex Officio member of the PUMP Committee because of Mr. Loheit's extensive professional background in trail design, construction and maintenance.

The PUMP Committee (Committee) began its tenure on July 12, 2006. The Committee met 32 times and spent countless hours familiarizing itself with background information on the NCCP Preserve, the existing conditions of the Preserve, and the historic public use of the Preserve. The Preserve, both in regards to trail routes and trail uses, was the subject of several discussions during the PUMP Committee's review because of the heavy use of the certain Reserves and habitat degradation. The Committee developed a trails plan for the Reserve that represents a balance between public access with habitat preservation and the interest of various trail user groups to provide compatible access and enjoy the Preserve. A factor considered by the Committee in its recommendation to the City Council was the historic use of the properties that now make up the Preserve by various user groups without any official trails plan or management. The incredible work effort of the PUMP Committee culminated in the formulation of a Preserve Trails Plan which was adopted by the City Council on April 29, 2008.

Preserve Map

At this time, the Preserve is approximately 1,367 acres in area, consisting of several parcels owned (or to be owned) by the City and one parcel owned by the PVPLC. For management purposes, the Preserve is broken down into the following 11 sub-areas referred to as "Reserves":

- **Vista del Norte Reserve**
  - The 16.7 acre Crestridge property
- **Agua Amarga Reserve**
  - The 20 acre Lunada Canyon property owned by the PVPLC
  - The 38.9 acre Agua Amarga Canyon property
- **Alta Vicente Reserve**
  - A 51.3 acre portion of the 73.3 acre Upper Point Vicente property
- **Vicente Bluffs Reserve**
  - A 52.6 acre portion of the 71.5 acre Ocean Front Estates property
  - A 4.5 acre portion of the 27.4 acre Lower Point Vicente property
  - A 7.5 acre portion of the 10.5 acre Pelican Cove property
- **Abalone Cove Reserve**
  - A 63.2 acre portion of the 80.0 acre Abalone Cove property
  - The 39.9 acre portion of the 45.1 coastal property formally owned by the RDA
- **Ocean Trails Reserve**
  - A 66.3 acre portion of the 78.8 acre Trump National property (eventually to be owned by the City)
  - A 47.4 acre portion of the 52.8 acre Shoreline Park property
- **San Ramon Reserve**
  - The 94.5 acre Switchback property

- **Forrestal Reserve**
  - The 154.9 acre Forrestal property
- **Portuguese Bend Reserve**
  - A 398.7 acre portion of the 423.9 acre Portuguese Bend property
  - The 17.4 acre Del Cerro buffer property
- **Filiorum Reserve**
  - The 190 acre Filiorum property
- **Three Sisters Reserve**
  - The 98.5 acre Barkentine property

2. PRESERVE TRAILS PLAN

The NCCP requires that the City and the PVPLC develop a Preserve Trails Plan (PTP) that is consistent with the City's Conceptual Trails Plan (CTP) and places an emphasis on avoiding or minimizing impacts to coastal sage scrub habitat (CSS) and covered species in such a way that the identified trails are compatible with the Preserve and avoid direct access to sensitive resource areas and major biological features. Furthermore, the NCCP states that all the trails designated as unauthorized should be closed to minimize biological impacts.



After obtaining feedback from the PUMP Committee, City Staff and the PVPLC, on a proposed Preserve Trails Plan (PTP), in April 2008, the City Council adopted a PTP that identifies the trail routes, trail names and trail uses for the Preserve. The 2008 PTP was further amended by the City Council in October 2012. The approved PTP supersedes the trail routes and uses identified in the City's Conceptual Trails Plan (CTP), as described herein,

Trail Implementation, Maintenance and Repair

The City and the PVPLC have no obligation with respect to trail maintenance and trail repair. However, at the PVPLC's discretion and when funding is available, the PVPLC may perform trail maintenance or trail repair on existing unimproved trails identified in the approved PTP. At the City's sole discretion when funding is available, the City is responsible for constructing new trails identified in the PTP which currently do not exist. Improved trails in the Preserve are maintained by the City. As a proposed covered activity (See Section XXX and Table XX of the NCCP), all of the monitoring, new construction and maintenance identified in the PUMP and PTP will be consistent with the requirements of the NCCP, including the Habitat Impact Avoidance and Minimization Measures for Covered Activities and compatible public uses in the Preserve (See Sections XXX and XXX of the NCCP).

Ongoing monitoring of the trails and an ongoing educational effort are important aspects of trails management and may consist, but not be limited, to the following:

1. Signs at the main entry points to the Preserve showing the respective PTP and the approved uses for each trail.

2. Trail maps and informational brochures available at the main entry points.

3. Information on the Preserve, including the PTP on the City's website

Trail Routes

The trails identified in the PTP are located mostly within the City's Preserve and are for the most part existing paths that have been used in the past. Where possible, the trails within the Preserve connect to the trails adjacent to the Preserve. Trails within the Preserve are not intended to connect to trails that are located on private property unless appropriate public access easements are in place.

The trail alignments identified for the PTP will be covered under the NCCP and are partly based on the City's Conceptual Trails Plan, including trails that are part of, or connect to, the Palos Verdes Loop Trail. These trails are retained as the basis for the PTP. Other trails currently in use by the public were added in order to identify a functional trail system for the Preserve.

Trail Guidelines

For the most part, the trails identified in the PTP are existing trail routes that have been identified based primarily on historical usage and current popularity. Generally, impact to the environment is to be minimized by using existing trails. Consideration was also given to line-of-sight, slope, and safety factors, as well as minimal potential for erosion. Furthermore, the approved trail routes take into consideration the natural topography, and the intent to provide access to open areas and vistas while avoiding impacts to sensitive natural areas. Generally, trails are to be maintained or designed for minimum impact on existing and potential habitat. Finally, the public uses and trail routes/configurations are situated to be compatible with the Preserve, avoid disruption of any native vegetation (including an emphasis on avoiding or minimizing impacts to CSS), habitat, or wildlife as identified in the Natural Conservation Communities Plan (NCCP) [See Section XXX of the NCCP (The Public Use Master Plan)]. Where habitat impacts, user conflicts, or safety concerns arise on a trail, change of trail use designation may be considered. Minor site improvements may also be used to correct the deficiency.

Trail Surface

Trails in the Preserve are to be "unimproved" trails and thus should be maintained in their natural surface material. The use of mulch is discouraged because of the potential to introduce non-native seeds to the Preserve and interfere with required fuel modification. Drainage control should be provided at appropriate points in such a way that the trail is not adversely affected by water erosion. Crossings over watercourses may require separate environmental review and/or permits (e.g., federal 404 and/or state 1600) that are not covered under the NCCP.

Trail Names

The trails throughout the Preserve are identified by specific names for each segment. The trail names were selected from different sources, including but not limited to names listed in the Conceptual Trails Plan, relevant landmarks, natural elements, or historic significance. In addition, trails within the Preserve may be named after donors who make monetary contributions to the City or PVPLC toward acquisition or management of the Preserve, pursuant to the provisions of the Preserve Management Agreement between the City and the PVPLC. All trail names must be approved by the City Council.

Trail Uses

In all cases, trail use is limited to passive activities. The following four trail use designations are available throughout the Preserve:

- pedestrian
- pedestrian / equestrian
- pedestrian / bicycle
- multipurpose (pedestrian, equestrian, and bicycle)

The specific trail uses for each trail segment are identified on the PTP Map and on the respective trail markers. All trail use designations must be approved by the City Council.

Preserve Trails Plan (PTP)

The following pages list the approved trails for each of the 11 Reserves that make up the entire Palos Verdes Nature Preserve. The trail mileage and user designation for each approved trail is listed by Reserve in the following sections indicated in the tables Trails that span multiple Reserves are listed in the table for the Reserve in which the majority of the trail is located.

VISTA DEL NORTE RESERVE

The Vista del Norte Reserve is an isolated portion of the Preserve that is geographically removed from the Portuguese Bend area and located near the intersection of Crestridge Road and Crenshaw Boulevard. This Reserve is comprised of the 16.7 acre City-owned "Crestridge" property. There are 0.56 miles of trails on this Reserve as described below:



Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Indian Peak Loop Trail	Yes	No	No	0.38	Yes
Vista del Norte Trail	Yes	No	No	0.19	Yes

Trail Access

There are two identified trailheads that provide access to the trails in this Reserve, one along Indian peak Road and one along Crestridge Road via the proposed Crestridge Senior Housing Project. On-street parking is available along Crestridge Road and designated public parking is located on a portion of Indian Peak Road across the street from this Reserve.

Public Facilities

There are no public restroom facilities or drinking fountains available at this Reserve.

Biological Resources/Compatibility

This Reserve consists mainly of grassland with limited CSS located at the western and eastern ends of the property. The site currently does not contain any known populations of NCCP covered species. As shown on the trails plan, all trails are located on historically used trails in grasslands areas that avoid impacts to CSS and NCCP covered species. No focused monitoring and/or restrictions on designated trail maintenance, new construction and/or access are anticipated at this site to be consistent with the NCCP.


Vista del Norte Reserve
Palos Verdes Nature Preserve
PALOS VERDES PENINSULA LAND CONSERVANCY
RANCHO PALOS VERDES
0
0.1 Miles
N
Indian Peak Rd
Indian Peak Loop Trail
Indian Peak Loop Trail
Vista del Norte Trail
Reserve Boundary
Trailhead
Road
Pedestrian Only
20m Contour Lines
10.20.2011

AGUA AMARGA RESERVE

The Agua Amarga Reserve encompasses approximately 59 acres consisting of a 39-acre parcel owned by the City and a 20-acre parcel owned by the PVPLC. The Reserve is located in the area between Crest Road and Hawthorne Blvd, extending to the City boundary line with Palos Verdes Estates. In light of the steep topography, this Reserve is limited to one 0.60 mile trail located at the northern portion of the site as described below:



Trail Matrix

Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Lunada Canyon Trail	Yes	No	Yes	0.60	Yes

Trail Access

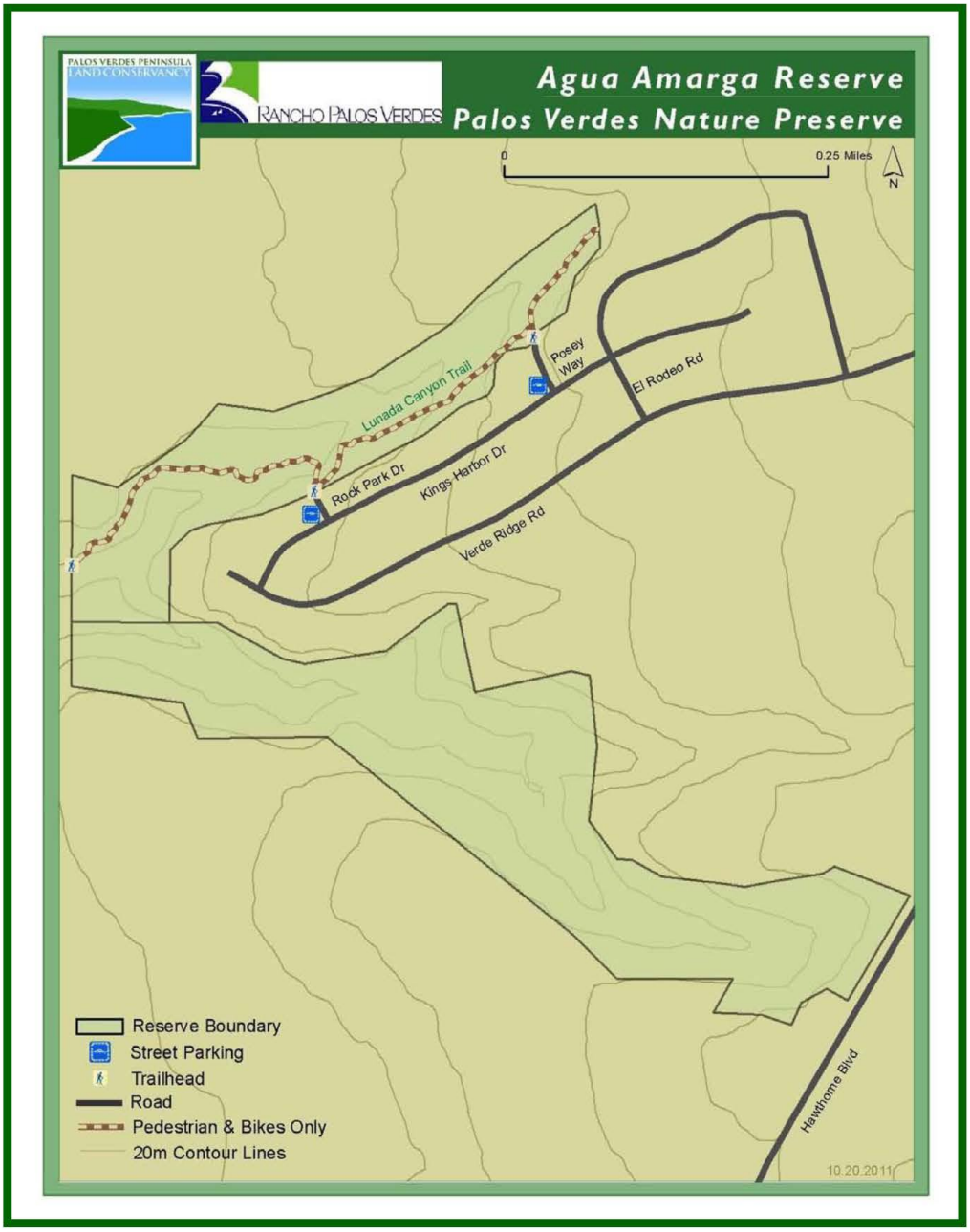
There are trailheads located on Posey Way and Rock View that provide access to the trails on this Reserve. Additionally, a trailhead is located at the lower portion of this Reserve at the boundary line with the City of Palos Verdes Estates. Public street parking is available in the surrounding neighborhood, specifically along the cul-de-sacs at the entry points to the Reserve.

Public Facilities

Restroom facilities and drinking fountains are not available at this Reserve.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, coastal cactus scrub, grassland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including the gnatcatcher and coastal cactus wren. As shown on the trails plan, the trails are located on historically used trails located in the northerly portion of the Preserve, and minimize impacts to CSS and sensitive species. However, since the designated trails would still cross some CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.


PALOS VERDES PENINSULA LAND CONSERVANCY
RANCHO PALOS VERDES
Agua Amarga Reserve
Palos Verdes Nature Preserve
0
0.25 Miles
N
Lunada Canyon Trail
Posey Way
El Rodeo Rd
Rock Park Dr
Kings Harbor Dr
Verde Ridge Rd
Hawthorne Blvd
Reserve Boundary
Street Parking
Trailhead
Road
Pedestrian & Bikes Only
20m Contour Lines
10.20.2011

ALTA VICENTE RESERVE



The Alta Vicente Reserve is located at Upper Point Vicente adjacent to the Rancho Palos Verdes Civic Center. The Reserve encompasses approximately 51 acres and is adjacent to the approximately 22-acre developable portion of the property (the relatively flat civic center campus area). Some of the trails at this Reserve are part of the PV Loop Trail system. There is a total of 1.67 miles of trails on this Reserve as described below:

Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Alta Vicente Trail	Yes	Yes	Yes	1.04	Yes
North Spur Trail	Yes	Yes	Yes	0.12	Yes
South Spur Trail	Yes	Yes	Yes	0.05	Yes
Nike Trail	Yes	Yes	Yes	0.10	Yes
Prickly Pear Trail	Yes	Yes	No	0.36	Yes

Trail Access

There are four trailheads identified for accessing the trails on this Reserve. There is a trailhead that provides access to this Reserve from the existing City Hall parking lot and over-flow dirt parking lot. There is a trailhead near the Salvation Army property line adjacent to Palos Verdes Drive South. Additionally, the trails for this Reserve can also be accessed from the cul-de-sac adjacent to St. Paul's Lutheran Church. Public parking is available at City Hall and along the cul-de-sac adjacent to St. Paul's Lutheran Church.

Public Facilities

A public restroom facility (portable bathroom) is available at the Civic Center Campus, west of the tennis courts. During regular business hours, a public restroom facility is also available at City Hall. A drinking fountain is available at the Civic Center campus next to the south lawn.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, coastal cactus scrub, grassland and disturbed vegetation. The site currently contains several known populations

of NCCP covered species, including the gnatcatcher, and coastal cactus wren. However, since the designated trails, although historically used trails, would still cross some CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.


PALOS VERDES PENINSULA LAND CONSERVANCY
RANCHO PALOS VERDES
Alta Vicente Reserve
Palos Verdes Nature Preserve
Palos Verdes Dr West
North Spur Trail
Hawthorne Blvd
South Spur Trail
Alta Vicente Trail
Nike Trail
Prickly Pear Trail
Palos Verdes Dr South
Alta Vicente Trail
Pelican Cove
Reserve Boundary
RPV City Hall
Restrooms
Parking Lot
Street Parking
Trailhead
Multiuse Trail
Pedestrian & Equestrian Only
Driveway
20m Contour Lines
0
0.25Miles
N
Updated 2.22.2013

VICENTE BLUFFS RESERVE

The Vicente Bluffs Reserve is comprised of three separate parcels, a 52.6-acre portion of Ocean Front Estates, a 4.5-acre portion of Lower Point Vicente, and a 7.5-acre portion of the Pelican Cove Park. Because of the high volume of walkers in this area, the trails have been designated as pedestrian only at this Reserve. Although non-related to the Preserve, the sidewalk adjacent to the Golden Cove Trail at Ocean Front Estates is designated as a bicycle path per the Council adopted tract conditions. There are three trails in this Reserve that are part of the City's segment of the California Coastal Trail. There are 2.20 miles of trails in this Reserve as identified below:



Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Golden Cove Trail (California Coastal Trail)	Yes	No	No	0.95	Yes
Seascape Trail (California Coastal Trail)	Yes	No	No	0.58	Yes
Terrace Trail	Yes	No	No	0.23	Yes
Interpretative Trail (California Coastal Trail)	Yes	No	No	0.31	Yes
Tomevor Trail	Yes	No	No	0.14	Yes

Trail Access

Access to the trails can be made from four locations throughout this Reserve. Specifically, trailheads exist at the Point Vicente Interpretive Center at Lower Point Vicente and at Pelican Cove adjacent to the Terranea Resort and Spa. There are also trailheads at four locations within the Ocean Front Estates residential tract. Public parking is available at Ocean Front Estates off Calle Entradero, at the Lower Point Vicente parking lot, and at the Pelican Cove Parking lot.

Public Facilities

Restroom facilities are available at Lower Point Vicente at the Interpretative Center and at the Pelican Cove parking lot. Additionally, a portable bathroom is available at the north end of the Golden Cove Trail adjacent to the public parking lot at Ocean Front Estates.

Drinking fountains are available at the Point Vicente Interpretative Center and at Pelican Cove adjacent to the restroom facilities.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern coastal bluff scrub, southern cactus scrub, grassland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including the gnatcatcher, coastal cactus wren, dudleya virens, wooly seablight and the El Segundo blue butterfly. Most of these species are located in the preserved lands located between Palos Verdes Drive South and Hawthorne Boulevard. As shown on the trails plan, the trails are located in the westerly portion of the Preserve, along the bluff and away from CSS habitat and west of Palos Verdes Drive South to avoid sensitive species. However, since the designated trails would still cross some CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.




PALOS VERDES PENINSULA LAND CONSERVANCY
RANCHO PALOS VERDES
Vicente Bluffs Reserve
Palos Verdes Nature Preserve
0
0.25Miles
N
Point Vicente Interpretive Center
Point Vicente Lighthouse
Parking Lot
Restrooms
Street Parking
Trailhead
Vista Point
Pedestrian Trail
Road
Reserve Boundary
20m Contour Lines
Palos Verdes Dr West
Golden Cove Trail
Calle Entradero
Seascape Trail
Via Vicente
Hawthorne Blvd
Calle Viento
Terrace Trail
Pacifica del Mar
Interpretive Trail
Alta Vicente Reserve
Toyemore Trail
Palos Verdes Dr South
Pelican Cove
Updated 12.04.2012

ABALONE COVE RESERVE

The Abalone Cove Reserve is located between Palos Verdes Drive South and the coastline and consists of a 63-acre portion of the Abalone Cove Shoreline Park and 40 acres of the adjoining City-owned property formally owned by the RDA. A portion of this Reserve is designated by the State as an official Ecological Reserve. The trail routes identified for this Reserve utilize existing activities and permitted uses for an Ecological Reserve. Some of the trails in this Reserve are a part of the City's segment of the California Coastal Trail. There are a total of 15 trail routes which comprise 3.49 miles of trails extending from the neighborhood off Sea Cove Drive to the archery club to the south as identified below:

Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Via de Campo (California Coastal Trail)	Yes	No	Yes	0.33	Yes
Chapel View Trail	Yes	Yes	Yes	0.17	Yes
Abalone Cove Trail (California Coastal Trail)	Yes	No	No	0.20	Yes
Beach School Trail (Upper Section) (California Coastal Trail)	Yes	Yes	Yes	0.13	Yes
Beach School Trail (Lower Section)	Yes	No	Yes	0.27	Yes
Sea Dahlia Trail (California Coastal Trail)	Yes	No	No	0.23	Yes
Olmstead Trail (California Coastal Trail)	Yes	No	Yes	0.44	Yes
Portuguese Point Loop Trail (California Coastal Trail)	Yes	No	Yes	0.28	Yes
Smugglers Trail (California Coastal Trail)	Yes	No	No	0.10	No
Cave Trail	Yes	No	No	0.07	Yes
Sacred Cove View Trail (California Coastal Trail)	Yes	No	No	0.47	Yes
Cliffside Trail	Yes	No	No	0.10	Yes
Inspiration Point Trail (California Coastal Trail)	Yes	No	No	0.18	Yes
Bow and Arrow Trail (California Coastal Trail)	Yes	No	No	0.55	Yes
Archery Coastal Trail	Yes	No	No	0.06	Yes

Trail Access

There are 7 trailheads located throughout this Reserve. The trailheads are located at the west portion off Seacove Drive adjacent to the neighborhood, at the parking lot to the Abalone Cove Shoreline Park, and off Palos Verdes Drive South at the entry gate to the Beach School Trail, Olmstead Trail, Sacred Cove Trail, Inspiration Point Trail and the Bow and Arrow Trail. Public parking is available, for a fee, at the Abalone Cove Shoreline Park parking lot.

Public Facilities

Restroom facilities are available at the Abalone Cove Shoreline Park at the parking lot grounds. Portable restrooms are located at Abalone Cove beach adjacent to the tide pools, along Palos Verdes Drive South adjacent to the Sacred Cove Trailhead, and at the archery club. Drinking fountains are available at the Abalone Cove Shoreline Park and off the Beach School Trail adjacent to the nursery school building.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern coastal bluff scrub and grassland. The site currently contains several known populations of NCCP covered species, including the gnatcatcher, coastal cactus wren, Santa Catalina Island desert-thorn, wooly seablight, and south coast saltscale, As shown on the trails plan, the trails are located within existing paths/disturbed areas to minimize impacts to CSS and sensitive species to the maximum extent practicable and avoid having to create new trails. However, since the designated trails would still cross CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.




Abalone Cove Reserve
Palos Verdes Nature Preserve
PALOS VERDES PENINSULA LAND CONSERVANCY
RANCHO PALOS VERDES
Portuguese Bend Reserve
Palos Verdes Drive South
Via de Campo Trail
Abalone Cove Trail
Chapel View Trail
Bluff Scrub Trail
Sea Dahlia Trail
Olmstead Trail
Portuguese Point Loop Trail
Smuggler's Trail
Sacred Cove View Trail
Cave Trail
Cliffside Trail
Inspiration Point Trail
Bow and Arrow Trail
Archery Coastal Trail
Reserve Boundary
Parking Lot
Restrooms
Trailhead
Multiuse Trail
Pedestrian Only
Pedestrian & Bike Only
Road
20m Contour Lines
0
0.25 Miles
N
Updated 3.05.2013

OCEAN TRAILS RESERVE

The Ocean Trails Reserve generally consists of two properties, approximately 47.4 acres of the City's 52.8-acre Shoreline Park and 66.3 acres of the Trump National Golf Course that is designated as the habitat restoration area pursuant to the property's HCP. The trail routes for this Reserve take into account the existing project conditions for the Trump National Golf Course. Some of the trails in this Reserve are a part of the City's segment of the California Coastal Trail. There are a total of twelve (12) trails including five (5) trails to the shore that provide 3.43 miles of trails as identified below:



Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
West Portal Trail (California Coastal Trail)	Yes	No	No	0.12	Yes
West Bluff Trail (California Coastal Trail)	Yes	No	No	0.07	Yes
Sunset Trail	Yes	No	No	0.15	Yes
Sunrise Trail (California Coastal Trail)	Yes	No	No	0.25	Yes
Catalina Trail (West segment) (California Coastal Trail)	Yes	No	Yes	0.45	Yes
Catalina Trail (East segment) (California Coastal Trail)	Yes	No	No	0.57	Yes
Dudleya Trail	Yes	No	No	0.08	Yes
Coastal Switchback Trail	Yes	No	No	0.19	Yes
Sagebrush Walk Trail (California Coastal Trail)	Yes	No	Yes	0.12	Yes
Southshore Coastal Trail	Yes	No	No	0.07	Yes
Gnatcatcher Trail	Yes	No	Yes	0.27	Yes
Shoreline Park Trail	Yes	No	Yes	0.57	Yes
East Boundary Trail (California Coastal Trail)	Yes	No	Yes	0.32	Yes
Access Trails to Catalina and Gnatcatcher Trail	Yes	No	No	0.20	Yes

Trail Access

Trailhead access can be made from various locations throughout this Reserve. The Trump National Golf Course provides trailhead access at Founder's Park for the Sunset Trail and the Catalina Trail, from the La Rotunda Parking Lot to the Catalina Trail, and off Twin Harbor View Drive to the Gnatcatcher Trail. There are also two trailheads off Palos Verdes Drive South providing access to the Gnatcatcher Trail and the East Boundary Trail. Public parking is available off Ocean Trails Drive near the Trump National Club House, at the La Rotunda Parking Lot off La Rotunda Drive, and on-street public parking on Twin Harbor View Drive.

Public Facilities

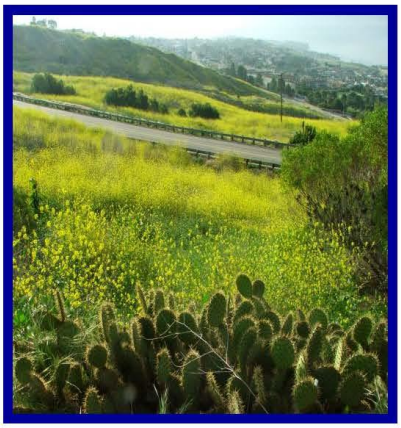
A public restroom facility is available at the basement level of the Trump National Club House and adjacent to the public parking lot at the end of La Rotunda Drive. A drinking fountain is available at the basement level of the Trump National Club House, at Founders Park, and next to the public restrooms at the end of La Rotunda.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern coastal bluff scrub, grassland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including the gnatcatcher, coastal cactus wren, island green dudleya, wooly seablight, and south coast saltscale. As shown on the trails plan, the trails have been located within existing paths/disturbed areas to minimize impacts to CSS and sensitive species to the maximum extent practicable and avoid having to create new trails. However, since the designated trails would still cross CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.


Ocean Trails Reserve
Palos Verdes Nature Preserve
RANCHO PALOS VERDES
PALOS VERDES PENINSULA LAND CONSERVANCY
San Ramon Reserve
Palos Verdes Dr East
Palos Verdes Dr South
La Rotonda Dr
Forrestal Dr
Ocean Trails Dr
West Portal Trail
West Bluff Trail
Sunset Trail
Sunrise Trail
Divide Trail
Catalina Trail
Coastal Switchback Trail
Southshore Coastal Trail
Shoreline Park Trail
East Boundary Trail
Sagebrush Walk Trail
Reserve Boundary
Trump National Golf Club
Parking Lot
Restrooms
Club House
Trailhead
Pedestrian Only
Pedestrian & Bike Only
Road
20m Contour Lines
0
0.25 Miles
Updated 2.13.2013
N

SAN RAMON RESERVE



The San Ramon Reserve is comprised of the 94-acre Switchback parcel which was deeded to the City in connection with the Sea Cliff Hills residential development project (11 acres of the site is currently a part of the Trump National project's habitat mitigation). As shown on the San Ramon trails map, a portion of the Switchback Trail and the entire San Ramon Trail are trail routes where the exact location has yet to be determined. The trails in the Reserve currently total 0.82miles as identified below:

Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
San Ramon Trail	Yes	No	Yes	TBD	No
Lower Palos Verdes Drive East Trail	Yes	No	Yes	0.23	Yes
Marymount Trail	Yes	No	Yes	0.23	Yes
Switchback Trail (West segment)	Yes	No	Yes	0.36	Yes
Switchback Trail (East segment)	Yes	No	Yes	TBD	No

Trail Access

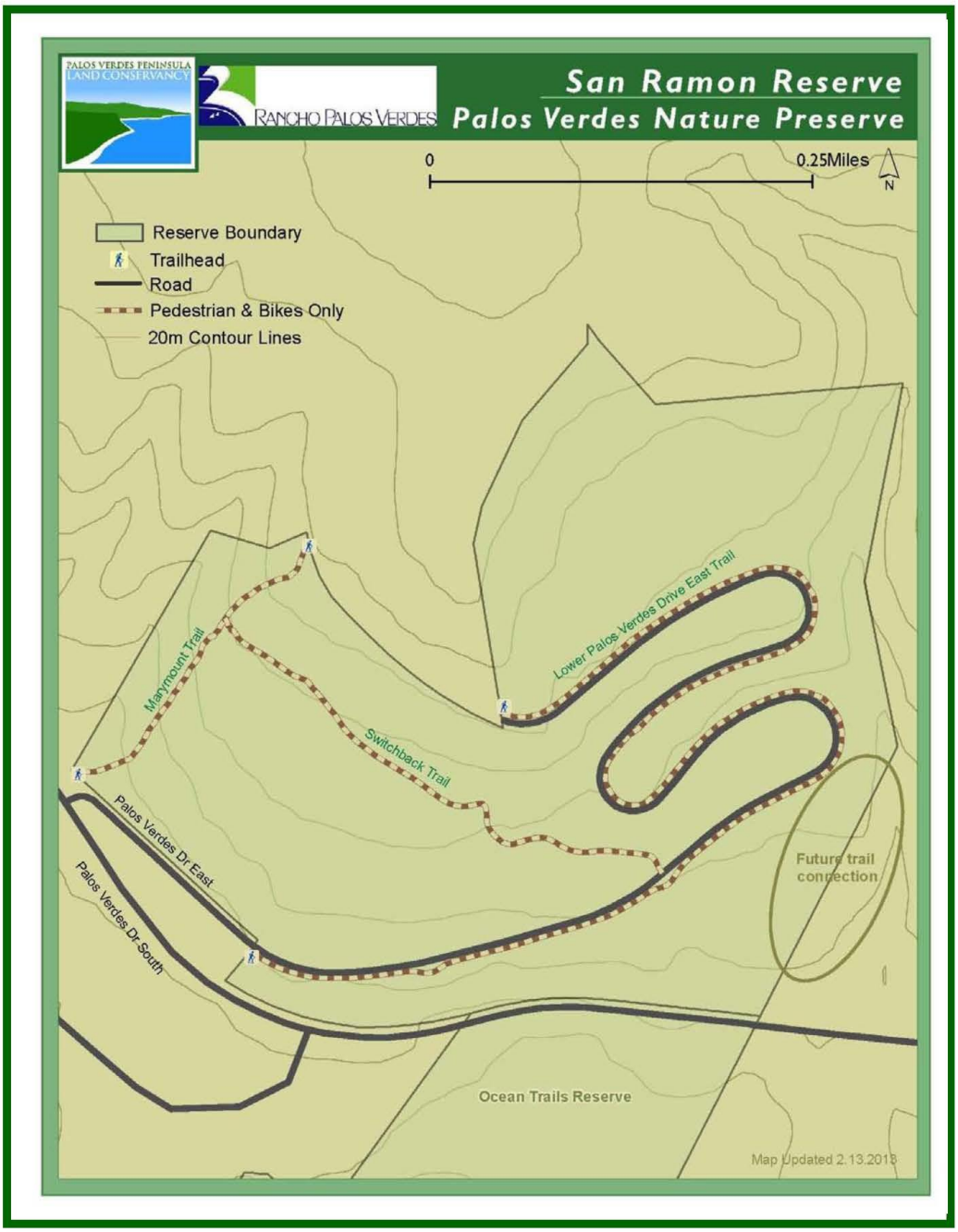
There are several trailheads that provide access to this Reserve. For the Marymount Trail and the San Ramon Trail, trailheads are located at both the lower and upper portions of these trails. As for the Lower Palos Verdes Drive East Trail, trailheads exist at the lower entry point to the trail and at the junction between this trail and the Switchback Trail. There is no available public parking for this Reserve.

Public Facilities

There is no public restroom facility at this Reserve. A drinking fountain is available at the lower segment of the Marymount Trail adjacent to the bicycle racks off Palos Verdes Drive South.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern cactus scrub, grassland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including the gnatcatcher and coastal cactus wren. As shown on the trails plan, the designated trails are located within existing paths/disturbed areas to minimize impacts to CSS and sensitive species to the maximum extent practicable and avoid having to create new trails. However, since the designated trails would still cross CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.


PALOS VERDES PENINSULA LAND CONSERVANCY
RANCHO PALOS VERDES
San Ramon Reserve
Palos Verdes Nature Preserve
0
0.25Miles
N
Reserve Boundary
Trailhead
Road
Pedestrian & Bikes Only
20m Contour Lines
Lower Palos Verdes Drive East Trail
Marymount Trail
Switchback Trail
Palos Verdes Dr East
Palos Verdes Dr South
Future trail connection
Ocean Trails Reserve
Map Updated 2.13.2013

FORRESTAL RESERVE

The 154.9-acre Forrestal Reserve is located at the end of Forrestal Drive adjacent to the Ladera Linda Community Center and the Palos Verdes Peninsula Unified School District athletic fields. There are 21 trails in this Reserve totaling 3.93 miles as identified below:

Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Forrestal Trail (West segment)	Yes	Yes	Yes	0.15	Yes
Forrestal Trail (East segment)	Yes	No	Yes	0.25	Yes
Quarry Trail	Yes	No	No	0.32	Yes
Docent Trail (off Fossil Trail)	Docent Only	No	No	0.06	Yes
Docent Walk Only (Off Quarry Trail)	Docent Only	No	No	0.07	Yes
Basalt Trail	Yes	Yes	Yes	0.05	Yes
Crystal Trail	Yes	Yes	No	0.12	No
Pirate Trail	Yes	No	Yes	0.30	Yes
Coolheights Trail	Yes	No	Yes	0.06	Yes
Cristo Que Viento Trail	Yes	No	No	0.22	Yes
Mariposa Trail	Yes	Yes	Yes	0.48	Yes
Flying Mane Trail	Yes	Yes	Yes	0.45	Yes
Packsaddle Trail	Yes	Yes	No	0.07	Yes
Canyon Trail	Yes	Yes	Yes	0.14	Yes
Red Tail Trail	Yes	No	Yes	0.05	Yes
Dauntless Trail	Yes	Yes	Yes	0.13	Yes
Conqueror Trail	Yes	Yes	Yes	0.23	Yes
Cactus Trail	Yes	Yes	Yes	0.11	Yes
Vista Trail	Yes	Yes	Yes	0.19	Yes
Exultant Trail	Yes	No	No	0.15	Yes
Purple Sage Trail	Yes	Yes	Yes	0.12	Yes
Intrepid Trail	Yes	Yes	Yes	0.15	Yes

Trail Access

Trailheads are located at four different locations at this Reserve. A trailhead is located at the cul-de-sac of Coolheights Drive in the Mediterrania tract, off the Forrestal Trail (Forrestal Drive) at the trail junctions for the Quarry Trail and the Crystal Trail, and off the Intrepid Trail (Intrepid Drive) at the Purple Sage Trail junction. Public parking is available on Forrestal Drive before the entry gate to the Preserve and at the Ladera Linda Community Center parking lot.

Public Facilities

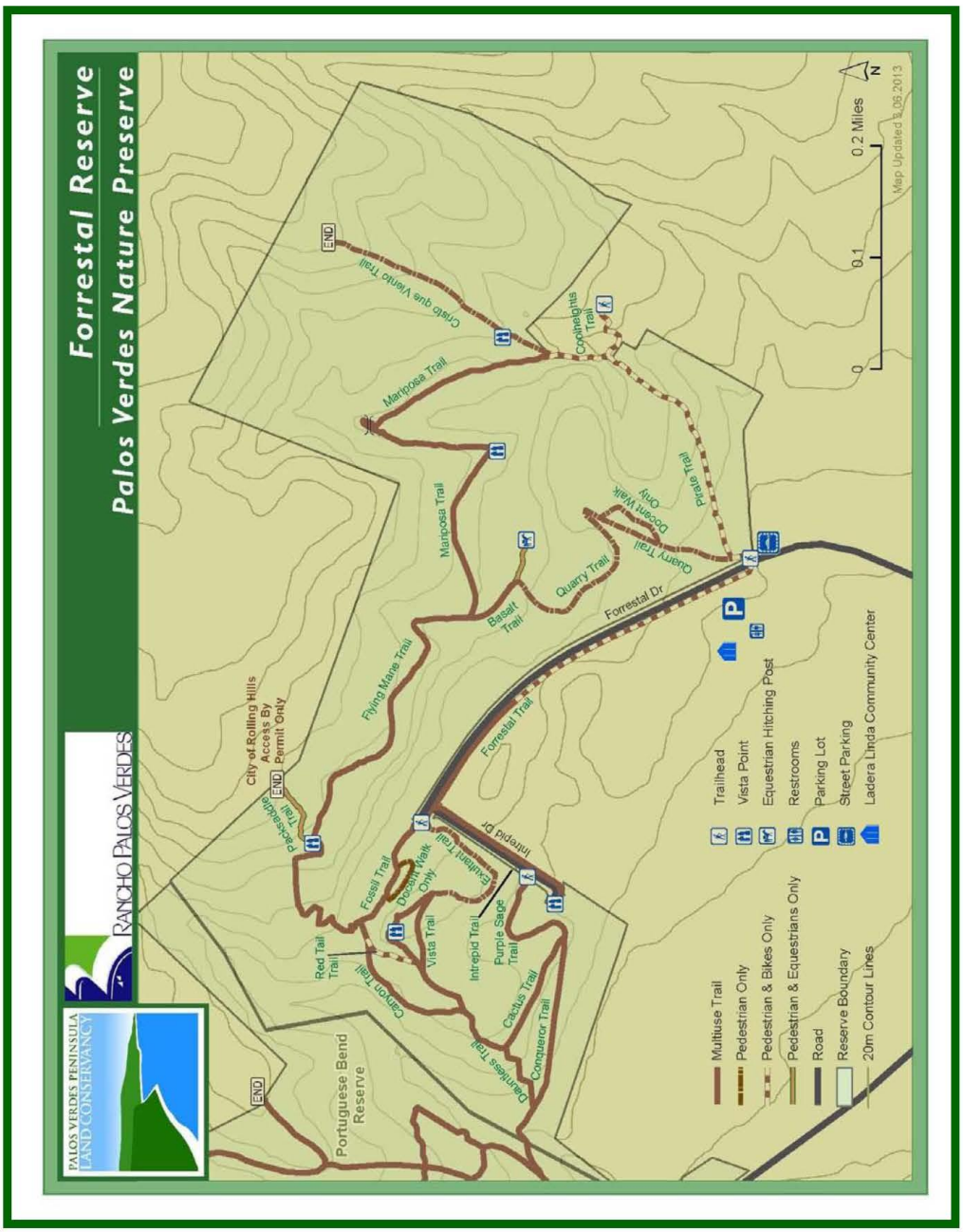
Restroom facilities are available at the Ladera Linda Community Center and a port-a-potty is available at the soccer fields off Intrepid Drive. A drinking fountain is available at the Ladera Linda Community Center and off Forrestal Drive behind the entry gate across from the Quarry Bowl trail junction (adjacent to the wall enclosing the Verizon mechanical equipment).

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern cactus scrub, southern coastal bluff scrub, grassland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including the gnatcatcher, coastal cactus wren, and Catalina crossosoma. As shown on the trails plan, the designated trails are located within existing paths/disturbed areas to minimize impacts to CSS and sensitive species to the maximum extent practicable and avoid having to create new trails. However, since the designated trails would still cross CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.






Forrestal Reserve
Palos Verdes Nature Preserve
RANCHO PALOS VERDES
PALOS VERDES PENINSULA LAND CONSERVANCY
Portuguese Bend Reserve
City of Rolling Hills Access By Permit Only
Peacekeeper Trail
Flying Mares Trail
Fossil Trail
Desert Walk Only
Exhibitant Trail
Red Tail Trail
Canyon Trail
Vista Trail
Intrepid Trail
Purple Sage Trail
Cactus Trail
Conqueror Trail
Peerless Trail
Intrepid Dr
Forrestal Trail
Forrestal Dr
Bazair Trail
Quarry Trail
Mariposa Trail
Quarry Trail
Decent Walk Only
Pirate Trail
Coolnights Trail
Mariposa Trail
Cinco que Vienta Trail
END
Trailhead
Vista Point
Equestrian Hitching Post
Restrooms
Parking Lot
Street Parking
Ladera Linda Community Center
Multiuse Trail
Pedestrian Only
Pedestrian & Bikes Only
Pedestrian & Equestrians Only
Road
Reserve Boundary
20m Contour Lines
0
0.1
0.2 Miles
N
Map Updated 3.05.2013

PORTUGUESE BEND RESERVE

The Portuguese Bend Reserve consists of a 399-acre parcel purchased by the City in 2005 and the 17-acre Del Cerro Park buffer parcel. The trails plan for this Reserve represents a balance between public access with habitat preservation and the interest of various user groups to access and enjoy the Preserve.



This Reserve includes 23 trails, some of which connect to the adjoining Forrestal and Filiorum Reserves. This Reserve contains 9.87 miles of trails as identified below:

Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Klondike Canyon Trail	Yes	Yes	Yes	0.26	Yes
Barn Owl Trail	Yes	Yes	Yes	0.17	Yes
Panorama Trail	Yes	Yes	Yes	0.34	Yes
Sandbox Trail	Yes	Yes	Yes	0.18	Yes
North Sandbox Trail	Yes	Yes	No	0.13	Yes
Ishibashi Farm Trail (West segment)	Yes	Yes	Yes	0.27	Yes
Ishibashi Farm Trail (East segment)	Yes	Yes	No	0.20	Yes
Peppertree Trail	Yes	Yes	Yes	0.57	Yes
Landslide Scarp Trail	Yes	Yes	No	0.25	Yes
Garden Trail	Yes	Yes	No	0.25	Yes
Toyon Trail	Yes	Yes	Yes	0.15	Yes
Water Tank Trail	Yes	Yes	No	0.21	Yes
Vanderlip Trail	Yes	Yes	No	0.51	Yes
Kubota Trail	Yes	Yes	No	0.26	Yes
Burma Road Trail	Yes	Yes	Yes	2.17	Yes
Burma Road Overlook Trail	Yes	Yes	Yes	0.1	Yes
Rim Trail (upper segment)	Yes	Yes	No	0.77	Yes

Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Rim Trail (lower segment)	Yes	No	No	0.23	Yes
Paintbrush Trail	Yes	Yes	No	0.34	Yes
Grapevine Trail	Yes	Yes	No	0.36	Yes
Fire Station Trail	Yes	Yes	No	0.20	Yes
Ishibashi Trail	Yes	Yes	Yes	0.88	Yes
Eagle's Nest Trail	Yes	Yes	Yes	0.50	Yes
Ailor Trail	Yes	Yes	No	0.30	Yes
Peacock Flats Trail	Yes	Yes	No	0.26	Yes

Trail Access

Trailheads are located at eight different locations at this Reserve. At the upper north portion of this Reserve, trailheads are located at the entry gate off Crenshaw Boulevard at the Burma Road Trail, and at the City boundary line adjacent to the Fire Station Trail and the Rim Trail. It should be noted that the latter of these two trailheads serve the residents of the City of Rolling Hills and visitors with access permits from the City of Rolling Hills. A Trailhead at the lower portion of the Vanderlip Trail provides access to this Reserve from the Portuguese Bend Community. This is a gated community and access is by permission only. There are three trailheads at the lower portion of this Reserve that provide access from Gateway Park to the Ishibashi Farm Trail, the Peppertree Trail, and the Sandbox Trail. Lastly, a trailhead is located at the City boundary with Rolling Hills at the lower southern portion of the Burma Road Trail that serves the residents of the City of Rolling Hills and visitors with access permits from the City of Rolling Hills.

On-street parking is available along Crenshaw Blvd. prior to the entry gate at the Burma Road Trail. Construction of a public parking lot is planned at the Gateway Park as part of the California Coastal Trail project and as part of the proposed future improvements for Gateway Park as envisioned in the City Council adopted Vision Plan.

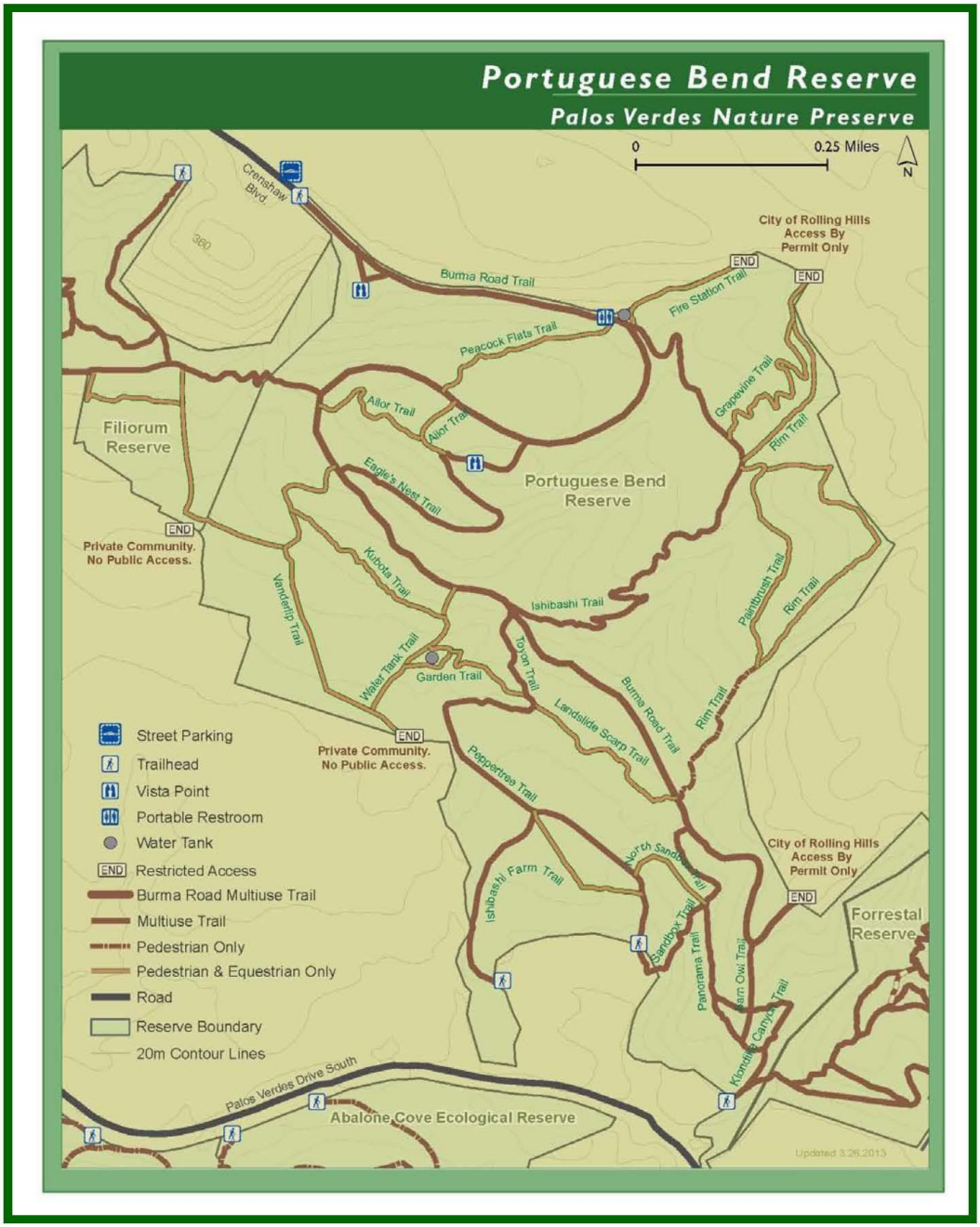
Public Facilities

A portable restroom is available at the junction between the Fire Station and Burma Road Trails and at the Gateway Parking Lot located off Palos Verdes Drive South. A drinking fountain is not available at this Reserve.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern cactus scrub, grassland, exotic woodland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including core populations of the gnatcatcher and coastal cactus wren. As shown on the trails plan, the designated trails have been located within existing paths/disturbed areas to minimize impacts to CSS and sensitive species to the maximum extent practicable and avoid having to create new trails. However, since the designated trails would still cross CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.




Portuguese Bend Reserve
Palos Verdes Nature Preserve
0
0.25 Miles
N
Crenshaw Blvd
360
Burma Road Trail
City of Rolling Hills Access By Permit Only
END
Fire Station Trail
Peacock Flats Trail
Grapevine Trail
Rim Trail
Allor Trail
Filiorum Reserve
Eagle's Nest Trail
Portuguese Bend Reserve
Private Community. No Public Access.
Vanderlip Trail
Kubota Trail
Ishibashi Trail
Paintbrush Trail
Water Tank Trail
Garden Trail
Toyon Trail
Landslide Scarp Trail
Burma Road Trail
Rim Trail
Private Community. No Public Access.
Peppertree Trail
Ishibashi Farm Trail
Sandpiper Trail
Panorama Trail
Barn Owl Trail
Klondike Canyon Trail
City of Rolling Hills Access By Permit Only
Forrestal Reserve
Street Parking
Trailhead
Vista Point
Portable Restroom
Water Tank
Restricted Access
Burma Road Multiuse Trail
Multiuse Trail
Pedestrian Only
Pedestrian & Equestrian Only
Road
Reserve Boundary
20m Contour Lines
Palos Verdes Drive South
Abalone Cove Ecological Reserve
Updated 3.26.2013

FILIORUM RESERVE

The 190-acre Filiorum property was added to the Palos Verdes Nature Preserve on December 31, 2009. This Reserve links the Three Sisters and the Portuguese Bend Reserves. This reserve contains 8 trails consisting of 3.76 miles of trails as identified below:



Trail Name	Pedestrian	Equestrian	Bicycle	Miles	Existing
Jack's Hat Trail	Yes	Yes	Yes	0.76	Yes
Pony Trail	Yes	Yes	Yes	0.61	Yes
Zote's Cutacross	Yes	Yes	Yes	0.88	Yes
Ford Trail	Yes	Yes	No	0.33	Yes
Kelvin Canyon Trail	Yes	Yes	Yes	0.35	Yes
Rattlesnake Trail	Yes	Yes	Yes	0.32	Yes
Eucalyptus Trail	Yes	Yes	No	0.17	Yes
Gary's Gulch Trail	Yes	Yes	No	0.33	Yes

Trail Access

Access to the trails can be made from three trailheads at this Reserve. From the northern portion of this Reserve, the trailhead is located at the junction of Zote's Cutacross Trail with McBride Trail. This occurs in the middle of McBride Trail near Pacifica Drive. There is a pedestrian right-of-way between Pacifica Drive and McBride Trail slightly above Zote's Cutacross trailhead. The westernmost access to McBride Trail is located at the end of Ocean Terrace Drive, and eastern access is from Crest Road slightly east of Highridge Road.

Trailhead parking is currently not available for this Reserve. Public on-street parking is available on Ocean Terrace Drive, Pacifica Drive and Crenshaw Boulevard. Users of the public street parking should be mindful of the surrounding residences.

Public Facilities

Restroom facilities and drinking fountains are not available at this Reserve.

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern cactus scrub, grassland, exotic woodland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including core populations of the gnatcatcher and coastal cactus wren. As shown on the trails plan, the designated trails have been located within existing paths/disturbed areas to minimize impacts to CSS and sensitive species to the maximum extent practicable and avoid having to create new trails. In addition, certain existing trails will not remain open, and will be restored to provide a connected block of habitat for sensitive species. However, since the designated trails would still cross CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.




Filiorum Reserve
Palos Verdes Nature Preserve
RANCHO PALOS VERDES
PALOS VERDES PENINSULA LAND CONSERVANCY
Crenshaw Blvd
Highridge Road
Crest Road
Ocean Terrace Drive
Peartree Drive
Rattlesnake Trail
Zola's Cutacross Trail
Ford Trail
Jack's Hat Trail
Pony Trail
Kelvin Canyon Trail
Burma Road Trail
Vanderlip Trail
Gary's Gulch Trail
Eucalyptus Trail
Private Community. No Public Access.
END
Portuguese Bend Reserve
Three Sisters Reserve
Barkentine Trail
Three Sisters Trail
Sunshine Trail
McCarrell Canyon Trail
Parking
Trailhead
Restricted Access
20m Contour Lines
Walk Bike Zone (Canyon Crossing)
Multiuse Trail
Pedestrian & Equestrian Only
Road
Reserve Boundary
0
0.25 Miles
N
Updated 3.28.2013

THREE SISTERS RESERVE

The Three Sisters Reserve consists of the 98-acre Barkentine parcel which was purchased by the City in 2001. This Reserve connects to the Filiorum Reserve to the east providing a continuous connection to the greater Palos Verdes Nature Preserve. This Reserve contains 4 trails consisting of 1.76 miles of trails as identified below:



Trail Name	Pedestrian	Equestrian	Bicycle	Length	Existing
McCarrell Canyon Trail	Yes	Yes	Yes	0.41	Yes
Three Sisters Trail	Yes	Yes	Yes	0.39	Yes
Barkentine Trail	Yes	Yes	Yes	0.66	Yes
Sunshine Trail	Yes	Yes	Yes	0.31	Yes

Trail Access

Access to the trails can be made via trailheads from various locations at this Reserve. From the lower portion of this Reserve, there are two trailheads. One trailhead is located off the Barkentine Drive cul-de-sac accessing the Barkentine and Sunshine Trails, and the other trailhead is located off the Three Sisters Trail adjacent to the common open space area for the Tramonto Tract. From the upper portion of this Reserve, a trailhead is located at the Ocean Terrace cul-de-sac.

Trailhead parking is currently not available for this Reserve. Furthermore, on-street parking on Barkentine Road or other streets in the Upper Abalone Cove Residential Tract is restricted and by permit only. Public street parking is available at the Ocean Terrace Drive cul-de-sac in the residential neighborhood. Users of the public street parking should be mindful of the surrounding residences.

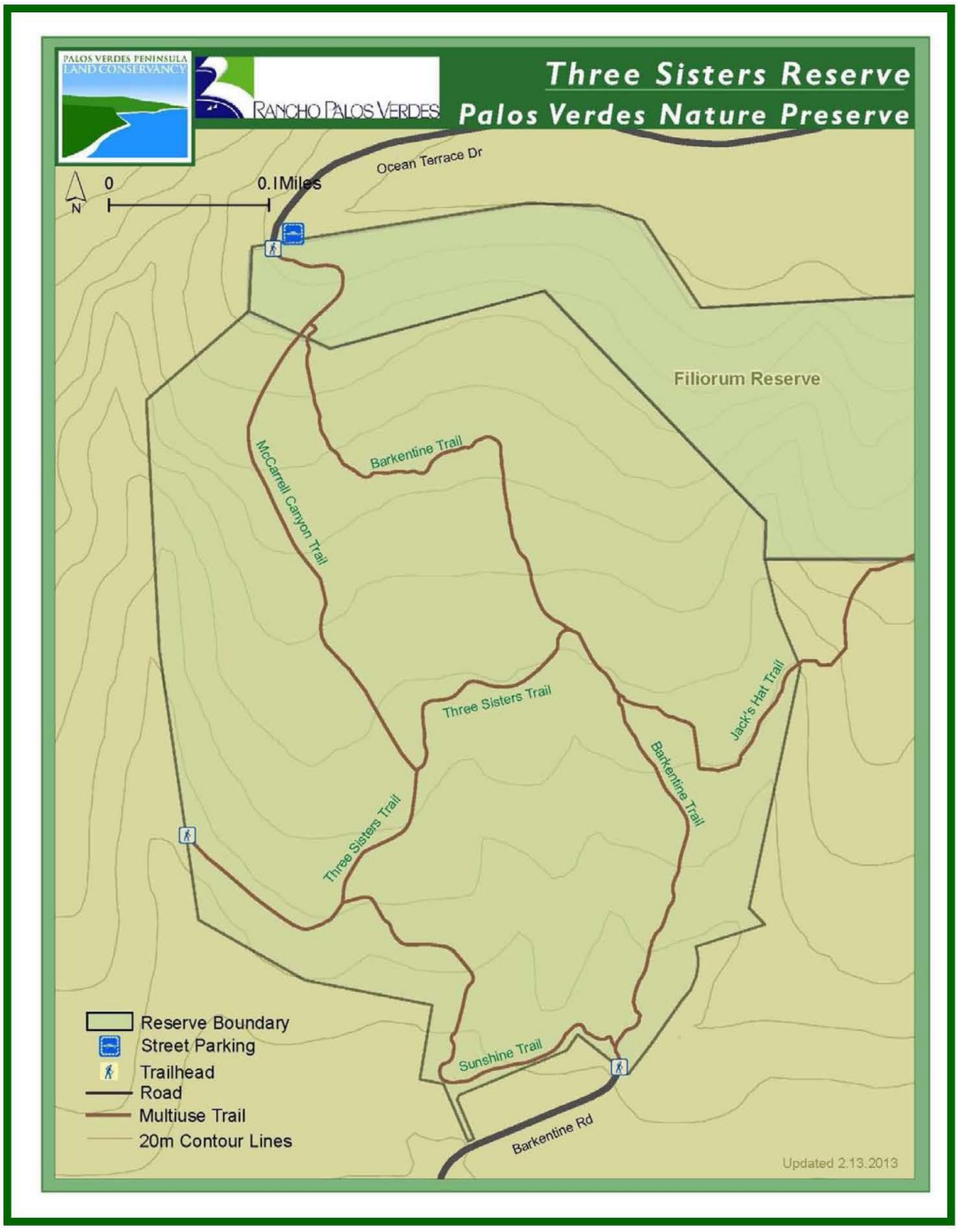
Public Facilities

Restroom facilities and drinking fountains are not available at this Reserve

Biological Resources/Compatibility

This Reserve consists of a combination of coastal sage scrub, southern cactus scrub, grassland and disturbed vegetation. The site currently contains several known populations of NCCP covered species, including core populations of the gnatcatcher and coastal cactus wren. As shown on the trails plan, the designated trails have been located within existing paths/disturbed areas to minimize impacts to CSS and sensitive species to the maximum extent practicable and avoid having to create new trails. A connection to the Filiorum Reserve from this Preserve will have to avoid core populations of sensitive species and may also require a stream crossing with related federal/state wetland permits. However, since the designated trails would still cross CSS and known locations of sensitive species, focused monitoring and/or restrictions on maintenance, new construction and access may be required to be consistent with the NCCP.




Three Sisters Reserve
Palos Verdes Nature Preserve
PALOS VERDES PENINSULA LAND CONSERVANCY
RANCHO PALOS VERDES
0
0.1Miles
N
Ocean Terrace Dr
Filiorum Reserve
Barkentine Trail
McCarrell Canyon Trail
Three Sisters Trail
Jack's Hat Trail
Barkentine Trail
Three Sisters Trail
Sunshine Trail
Barkentine Rd
Reserve Boundary
Street Parking
Trailhead
Road
Multiuse Trail
20m Contour Lines
Updated 2.13.2013

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3. ACTIVITIES IN THE PRESERVE

Pursuant to the NCCP (Section XX – Preserve Management), in order to conserve the unique biodiversity and maintain sensitive resources in the Preserve while balancing public recreational opportunities, this chapter identifies authorized and prohibited public activities in the Preserve. The following public uses and activities are considered conditionally compatible uses under the NCCP (See Section XXX and Table XX of the NCCP), provided these projects/activities comply with the NCCP, including the public use guidelines and habitat mitigation ratios and Habitat Impact Avoidance and Minimization Measures for Covered Activities (See Sections XX and XXX of the NCCP:

PUBLIC USE GUIDELINES

The public uses and activities in the PUMP shall be consistent with the following guidelines set forth in the NCCP [Section XXX (Public Use) and XXX (Public Use Master Plan)]:

1. Development of a Preserve Trail Plan (PTP) that places an emphasis on avoiding or minimizing impacts to CSS habitat and Covered Species. Future modifications to the approved PTP that will result in additional impacts to the Covered Species or Preserve habitat will require the prior written concurrence of the Wildlife Agencies. Existing trails within the Preserve that are not included in the approved PTP will be closed.

2. Development of a PTP where new trail construction avoids direct access to sensitive resource areas and major biological features (i.e. 7.6-meter [25-foot] setback to coastal bluffs) and the following measures are taken into consideration:

   a) Limit public use to specified trails where impacts upon habitat can be minimized. If trails become degraded because of heavy use; rotate or limit use during certain seasons to minimize further degradation.
   b) Limit trails for shoreline access to prevent extensive trampling and compaction.
   c) Locate new trails away from sensitive resources or restrict their use.
   d) Provide a 30-foot upland buffer along major drainages for new trails sited adjacent to drainages.

3. Determine allowable passive recreational activities within the Preserve, depending on the resources to be protected, season, and successional stage of the adjacent habitat.

4. Restrict the archery range and any passive recreational uses to areas where impacts to habitat can be avoided.

5. Develop guidelines for any passive overlook areas, benches, tie rails, portable toilets, and trash cans, so that no existing native habitat will be lost.

6. Develop litter control measures, such as closed garbage cans and recycling bins, and restrict such receptacles to access points for the Preserve.

The following public uses and activities, which conform to the PUMP, are considered allowable uses in the Preserve under the NCCP:

1. Public use and implementation of the PTP contained in the Wildlife Agency-approved PUMP. Section XXX of the NCCP provides the design criteria and guidelines that will be used for the PTP.

2. Closure of existing trails within the Preserve that are not included in the PTP, as approved by the City Council and Wildlife Agencies.

3. Passive recreational activities (e.g. horse riding, hiking, bicycling, wildlife viewing) as described in the PUMP and approved by the City and Wildlife Agencies.

4. Subject to the PUMP, the creation and maintenance of passive overlook or vista areas with seating benches and trail markers may be located at key vista points near existing trails in the Preserve, provided no existing habitat will be lost. The location of these overlooks shall be located to avoid or minimize direct and indirect impacts to biological resources. The location of these overlooks will be approved by City Council.

5. Installation and maintenance of benches, individual picnic tables, tie rails, portable toilets, and trash cans within the Preserve and near Preserve boundaries, provided no existing habitat will be lost. The location of these facilities shall be sited to avoid or minimize direct and indirect impacts to habitat and Covered Species. Location of overlooks shall be reviewed for consistency with the PUMP and this Plan and approved by the City Council prior to initiation of any implementation work.

6. Installation of trailhead signage/kiosks within the Preserve adjacent to existing roads or other access ways and away from sensitive resource areas. The location of trailhead signage/kiosks shall be reviewed for consistency with the PUMP and this Plan and approved by the City prior to initiation of any implementation work.

7. Operation and maintenance of the existing archery range in its current location and acreage (approximately 8 acres) within the Preserve, provided the appropriate City permits are maintained and the facility is not expanded.

8. Operation of the existing agricultural use at Upper Point Vicente (Alta Vicente Reserve) of approximately 5 acres in size provided the appropriate City lease agreement is maintained and all agricultural practices and improvements remain consistent with this NCCP. No other agricultural activities are allowed in the Preserve.

9. Night use of the Preserve for hiking only provided use is limited, controlled, monitored, and managed through a permit issued by the City. Any night use of the Preserve shall be consistent with the requirements of this Plan.

The following PUMP public uses and activities are considered conditionally compatible uses under the NCCP:

1. Ensure that public access to the Preserve is consistent with the approved PUMP to provide protection and enhancement of biological resources.

2. If unforeseen circumstances warrant it, close specific approved trails for temporary time periods to minimize biological impacts.

3. Close unapproved trails using fencing or signage to prevent the use or creation of unauthorized trails and protect sensitive plant species adjacent to established trails.

4. Monitor existing access points and trails to prevent degradation of the Preserve. Adverse effects of passive recreation such as trampling vegetation and erosion will be minimized by taking the following measures:

   a) Establish a trail inspection and maintenance program to monitor trail conditions, and detect vandalism and habitat degradation.
   b) Seasonally restrict access to certain trails if deemed necessary to prevent disturbance of breeding activities of Covered Species.
   c) If trails become degraded because of heavy use, rotate or limit use as deemed appropriate. This can also be during certain seasons to minimize further degradation.
   d) In areas deemed necessary to minimize trail user conflicts, passive control measures may be used on trails in the Preserve, such as pinch points or signage.

5. Prepare and maintain trail surfaces to minimize erosion. Do not use materials for trails that will be a source of seed of invasive exotic species. Prohibit use of eucalyptus chips that could suppress native plant growth adjacent to trails.

6. Install water-bars on steep trails to minimize erosion and sedimentation.

7. Locate new trails away from sensitive resources or restrict their use.

8. Construct barriers and/or signage at viewpoints or prominent features to discourage access to sensitive coastal bluff areas. This measure will be appropriate at viewpoints or prominent features along established trails.

9. Provide litter control measures, such as closed garbage cans and recycling bins, at access points within the Preserve.

AUTHORIZED PUBLIC ACTIVITIES

Consistent with the covered projects and activities set forth in the NCCP (Section XX) and Preserve Management: PUMP (Section XX), the following public activities are considered conditionally compatible uses in the Preserve:

a. Dog and Other Pet Walking

Pursuant to Section 12.16.050 of the RPVMC, dogs or other pets may be brought into the Preserve provided that the animal is restrained by a substantial chain or leash not exceeding six feet in length and is in the charge, care, custody and control of such person. Moreover, dog walking as a commercial activity is permitted in the Preserve provided that the appropriate City business licenses are obtained and kept current, and that the proprietor complies with the leash requirements stated herein.

Pursuant to Section 6.04.010 of the RPVMC and LA County Code Section 10.40.060, It is unlawful for the owner or person having custody of any dog or other animal to permit, either willfully or through failure to exercise due care or control, any such dog or animal to commit any nuisance and to allow such nuisance to thereafter remain upon any public or private property not owned or possessed by the owner or person in control of said animal, provided that the person who owns, harbors, keeps or has charge or control of a dog (other than a sightless person who has charge or control of a guide dog) shall immediately and securely enclose all feces deposited by such dog in a bag, wrapper or other container and dispose of the same in a sanitary manner in a trash receptacle. Any person (other than a sightless person with a guide dog) who has charge or control of a dog in a location other than on the property of such person or the property of the owner of the dog, shall have in his or her possession a suitable wrapper, bag or container (other than articles of personal clothing) for the purpose of complying with the requirements of this section. Failure of such person to carry such wrapper, bag or container when in charge or control of a dog in a location other than on property of such person or the property of the owner of the dog or animal shall constitute a violation of this section

b. Farming

The City's NCCP allows the continued operation of any farming activities in the Preserve provided that such activities are not expanded. Farming is currently conducted as an existing agricultural use at the Alta Vicente Reserve (Upper Point Vicente / Civic Center) on the southeastern slopes along the Prickly Pear trail consisting of approximately 5 acres in size. This farming operation can continue provided the appropriate City lease agreement is maintained, no habitat restoration is scheduled for the site, and all agricultural practices and improvements remain consistent with this NCCP/HCP. The use of pesticides and herbicides shall be prohibited from being used as part of the farming operation at Upper point Vicente. No other agricultural activities are allowed in the Preserve.

c. Archery

The City's NCCP allows the continued operation of an archery club in the Preserve provided that the area of the archery club is not expanded. The Palos Verdes Archery Club has been operating a roving field archery range at the Abalone Cove Reserve (on property owned by the City's former RDA at Portuguese Bend) since

1989. Permission to use this City land was granted by the City Council in 1989 through the approval of Conditional Use Permit No. 10. The conditions adopted by the City Council in 1989 specify the parameters for using City land, including the City's ability to revoke the approval with a 30-day notice or immediately if incidents involving landslides or geologic conditions that prove to be an imminent hazard to health, safety and welfare occur. The Archery Club maintains the fire road on an annual basis. The Archery Club is used between dawn and dusk in accordance with the City park hours and occasionally conducts special events, such as tournaments, competitions, and picnics.

On April 7, 2009, the City Council allowed the Archery Club to continue its operation under the existing Conditional Use Permit (CUP) in its current location only with the future review of the CUP, and, consideration of a lease agreement with the Archery Club. No open flames, barbecues, or smoking is permitted.

d. Commercial Filming or Photography

Pursuant to Section 9.16.020 of the RPVMC, the Preserve may be used for the purpose of producing, taking or making any motion picture or television production or engaging in still commercial photography provided a permit is first obtained from the City. Permit requests for commercial filming and/or photography in the Preserve will be considered on a case-by-case basis to ensure that potential impacts to biological resources and public safety are minimized. In considering a commercial film or photography permit in the Preserve, the following review criteria shall apply:

1. The location is in an area that does not jeopardize or adversely impact biological resources;
2. No more than 10 persons shall be allowed to participate in the filming or photographic activity;
3. Vehicles are parked outside the Preserve in designated areas;
4. Such activity will not unduly interfere with the public's use of trails unless City authorization has been obtained to temporarily close a trail. In such cases, the temporary closure shall be posted a minimum of five days in advance of the film or photography shoot.
5. The conduct of such activity will not unduly interfere with normal governmental or city operations, threaten to result in damage or detriment to the Preserve, or result in the City incurring costs or expenditures in either money or personnel not reimbursed in advance by the applicant.
6. The conduct of such activity will not constitute a fire hazard and all proper safety precautions will be taken.

The decision of the City Manager to issue, conditionally issue, or not issue a film or photography permit in the Preserve shall be final unless appealed in writing within five working days of the decision by requesting a hearing of the City Council at the next available meeting.

e. Specimen Material Collection Policy

Collection of specimen material in the Preserve must be tightly controlled due to the potential impacts to biological resources. The following collection policies shall apply to the Preserve:

- Collecting of native plant material or flowers is forbidden due to potential impacts to plant reproduction and on fauna which may be dependent on the plants for food and habitat, and due to the potential impact on soil erosion and geological stability. Collecting of seeds and cuttings may be permitted only with the written permission of the City and the PVPLC, with appropriate permits/authorization from federal and state agencies.

- Research on and proposed collection of plants, insects and birds may be permitted only with the appropriate Resource Agency permits (i.e., permit under the Federal Endangered Species Act of 1973, as amended and/or state scientific research/collecting permit) and the written permission of the City and the PVPLC. All entities listed herein shall receive a copy of the research results for permitted research activities conducted within the Preserve.

f. Geocaching

Placing and searching for geocaches in the Preserve is permitted on a limited basis, so long as activities take place on designated trails and do not impact sensitive habitat and wildlife. Geocaches placed off-designated trails and/or in sensitive areas are not allowed, and are a violation of the RPVMC and subject to City fines for going off-trail.

g. Preserve Management

Management of the Preserve by the PVPLC and the City in accordance with the provisions described in Sections XX and XX of the NCCP is a covered activity. Specific management covered activities anticipated to occur in the Preserve include the following:

a) Monitoring of Covered Species
b) Vehicular access
c) Habitat restoration
d) Invasive species control
e) Predator control
f) Reintroduction of Covered Species
g) Photo documentation
h) Installation of signage
i) Trail maintenance

j) Field research and studies designed to contribute to the long-term protection of habitats and species and other basic research of habitats and species included in the Preserve.

h. Preserve Hours

Pursuant to Section 12.16.030 of the RPVMC, no person shall be or remain in the Preserve at any time between one hour after sundown and one hour before sunrise, unless attending or participating in city authorized activities, such as City permitted night hikes.

PROHIBITED PUBLIC ACTIVITIES

Activities that may affect covered species addressed in the NCCP and are not covered activities as set for in the NCCP are prohibited without the proper authorization from the Resource Agencies. Some, but not limited to, of the following activities are prohibited from occurring in the Preserve in order to reduce impacts upon biological resources and to minimize hazards to public safety and property within or adjacent to the Preserve:

- Commercial or industrial uses
- Placement of billboards
- Introducing or dispersing non-native or exotic plant or animal species
- Altering the surface or general topography
- Paintballing
- Archery/target shooting (except as authorized herein)
- Feeding of wild or feral animals
- New (or expansion) of trails or jumps (see "a." below)
- Organized or unorganized bike races, including night rides and/or night riders
- Unauthorized fuel clearing and/or planting
- Camping/overnight stay (see "b." below)
- Campfires and Barbecues (see "d." below)
- Hunting or collection of wildlife (see "e." below)
- Smoking of any kind (see "d." below)
- Motorized vehicles (see "f." below)
- Paragliding and Parasailing (see "g." below)
- Motorized or Radio-Controlled Models (see "h." below)
- Any other use deemed inappropriate or in conflict with the NCCP.

a. Bicycle Jumps

The creation of man-made or natural jumps, whether on designated trails or off-trails, is prohibited in the Preserve. Such features promote activities in the Preserve that directly contradict the passive recreational use intended for the Preserve as described in the NCCP. Moreover, Section 12.16.010 of the RPVMC states that no person other than authorized employees or City agents or other authorized persons

in the performance of their duties shall cut, break, dig up, remove, or in any manner injure any plant, animal, public building, structure or contents therein on public property.

b. Camping

Overnight camping within the Preserve is inconsistent with the purpose of the Preserve for a number of reasons, including, but not limited to, lack of adequate and appropriate sanitary facilities and shelters; adverse impacts upon sensitive plant and animal communities; increased risk of wildfire due to human activity; and limited emergency access to the Preserve. As such, pursuant to Section 12.16.140 of the RPVMC no person shall camp within the Preserve. For this purpose, "camp" shall mean to remain on site overnight, whether entirely out of doors or utilizing an enclosed or semi-enclosed temporary accommodation, including but not limited to, a tent, tarp, canopy, trailer, recreational vehicle, passenger car or truck. City or PVPLC covered activities are exempt from this provision.

c. Abandonment of Animals

Pursuant to Section 12.16.150 of the RPVMC, no person shall willfully abandon any animal on any City-owned property including the Preserve. For the purposes of this section, "willfully abandon" shall not include the release or rehabilitation and release of native California wildlife by persons or agencies so authorized pursuant to State law or regulations of the California Department of Fish and Wildlife (formerly "Fish and Game") or the NCCP.

d. Fires, Open Flames or Smoking

In consideration of reducing hazards to human safety, private property, and biological resources as part of the fuel modification program for the Preserve, fires, open flames or smoking is strictly prohibited in the Preserve. Moreover, pursuant to Section 12.16.070 of the RPVMC, no persons shall light or maintain any fire in the Preserve.

e. Hunting

According to Section 12.16.110 of the RPVMC, no person shall, by any means, hunt any animal, fowl, fish, amphibian, or reptile on city property, including the Preserve, unless expressly authorized by the City. For the purposes of this Code section, "hunt" shall mean stalk, pursue, catch, capture, kill, or attempt to stalk, pursue, catch, capture or kill.

f. Motorized vehicles

Motorized vehicles have the tendency to result in adverse impacts to sensitive environments, such as the Preserve, because of exhaust, dust, soil erosion and

sedimentation into local waters, noise and habitat degradation. Disturbance from off-road vehicles can also disrupt breeding activities. For these reasons, off-road vehicle use, except for emergency, law enforcement, utility maintenance, and City or PVPLC vehicles, is not compatible with conservation goals and is prohibited in the Preserve. Moreover, Section 12.16.020 of the RPVMC indicates that no person shall park or operate any motorized vehicle in the Preserve except in designated areas, other than authorized park employees or city agents in performance of their duties.

g. Paragliding and Parasailing

According to Section 12.16.045 of the RPVMC no person shall land, release, take off in, or fly in any balloon designed to carry passengers, helicopter, parasail, hang glider, or other aircraft from any city-owned land except in areas specifically set aside therefore or with the express written permission from the city. On April 7, 2009, the City Council reviewed a request to allow paragliding in the Preserve, as well as the PUMP Committee's recommendation on this activity. After considering all information, including public testimony, the City Council determined to prohibit paragliding and parasailing in the Preserve.

h. Motorized or Radio-Controlled Models

Pursuant to Section 12.16.040, no person shall operate any motorized or radio-controlled model in the Preserve unless written authorization is obtained from the City Manager or the City Manager's designee.

i. Reckless Use of Trails

Pursuant to Section 12.16.130 of the RPVMC, it shall constitute a public nuisance for any person, including pedestrians, equestrians and bicyclists, to use any trail within the Preserve in a reckless manner that demonstrates a wanton disregard for the safety of other human beings or animals or causes injury or harm to others.

j. Littering

No person should throw, place or dispose of any refuse, garbage, waste paper, bottles or cans, in any place in the Preserve other than into a garbage can or other receptacle provided for that purpose. In areas that receptacles are not available, the trash should be taken out of the Preserve and properly disposed.

k. Protection of Flora, Fauna and Natural or Geologic Resources

Pursuant to Section 12.16.010 of the RPVMC, no person shall cut, break, dig up, remove, or in any manner injure any plant, animal, natural or geologic resource, public building, structure or contents in the Preserve.

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4. PRESERVE AMENITIES/IMPROVEMENTS

Public access to the Preserve is allowed for passive recreational purposes and to promote the understanding and appreciation of natural resources. The following chapter identifies amenities and improvements intended to enhance the public's experience and recreational use of the Palos Verdes Nature Preserve. The amenities and improvements are consistent with the passive recreational activities that are permitted to take place in the Preserve consistent with the City's NCCP.

Overlook Areas and Vista Points

Overlooks or vista points located in the Preserve are intended to provide trail users with a rest area and an enhanced viewing opportunity of the Preserve, including views of the Pacific Ocean, Catalina Island and the Palos Verdes Coastline. Overlooks and vista points are to be located adjacent to a designated trail to prevent impacts to natural resources that may result from walking off-trail. Overlooks or vista points are improvements that include seating areas and other amenities for the public's use. Seating areas may be in the form of an improved bench, stone seating, or other natural materials. Overlook and vista point areas are to utilize vernacular materials so as to keep with the natural setting of the site, such as decomposed granite and natural stones. Overlooks are typically larger in scale than vista points. The overlooks and vista points may consist of an identification pilaster made of Palos Verdes Stone, a stone clad bench, a low stone clad wall, stone edge paving, and low profile native planting as identified in the Council adopted Rancho Palos Verdes Coast Vision Plan. Interpretive signs may also be located at an overlook or vista point.

The City-owned Preserve properties or portions thereof, along with scenic points within the Preserve may be named after donors who make monetary contributions to the City or PVPLC toward acquisition or management of the Preserve, pursuant to the Preserve Management Agreement between the City and the PVPLC. The following are existing Council approved overlooks and vista points to recognize donors who have contributed significantly towards the acquisition of certain Preserve properties:

- Eagle's Nest
- Ridge east of Del Cerro
- Education Area
- Three sisters Overlook
- Fossil Hill Overlook
- Abalone Cove (along the existing fence line)
- Portuguese Point (at the tip near the Perry Ehlig memorial)
- Overlooking the Educational Area
- Lower Point Vicente

Seating Areas

In addition to providing public seating within overlooks and vista points, benches or other seating may be situated along designated trails. Such seating areas may be improved or unimproved provided that the seating area is designed to blend with the natural environment through the use of natural materials such as wood or stone. Benches should be designed and treated to deter potential vandalism and secured to the ground to prevent unauthorized removal or relocation.

Picnic Areas

Picnicking in the Preserve is permitted provided that it does not occur off designated trails. Designated picnic areas, consisting of grouped benches and tables, are not to be located in the Preserve. However, individual picnic tables may be placed in the Preserve provided habitat impacts are avoided and serviceable trash cans are provided.

Fencing

Fencing can play an important role in controlling human behavior while visiting the Preserve. Fences aid in defining the boundary lines and access points in the Preserve, deterring off-road vehicles from entering the Preserve, and minimizing impacts (i.e. trespassing) to adjacent neighborhoods. Fencing, however, also can restrict normal wildlife movement and access to food and water, and guide wildlife onto roads. Although fencing should be considered on a case-by-case basis, general guidelines for Preserve fencing are as follows:

- In order to protect the scenic aspects and experience of the preserve, fencing should generally not exceed 3 feet in height except in areas adjacent to private property.
- Fencing may be used to delineate a trail and/or to close areas off from public use, such as restoration areas.
- Fencing should provide adequate barrier to prevent vehicular access to the Preserve, except for through gates to existing access roads intended to provide controlled access for emergency and service vehicles for maintenance purposes.
- The fencing system shall allow a number of convenient and safe pedestrian access points around the perimeter of the preserve.
- Fencing should be constructed of economic and durable material that is marine resistant and will require minimum maintenance. Where possible, fences should be made of natural materials that blend well with the surrounding environment such as post and cable/rope.
- Fencing should be compatible with the scenic, cultural and historical aspects of the surrounding community.
- As set forth in the NCCP (Section 9.2.3/Fencing and Signage), existing fencing inside the Preserve shall be dismantled and no new fencing shall be installed except as necessary to:

a) Protect particularly sensitive species or habitats. For example, perimeter fencing could be used in habitat linkage areas where Preserve widths are narrower and there is greater exposure to adverse edge effects.
b) Direct human access away from sensitive resource areas. Efforts to limit human access will involve the use of natural vegetation, topography, signs, and limited fencing.
c) Protect from natural hazards or other public safety needs.
d) Design and locate new fences within the Preserve so they do not impede wildlife movement or impact Covered Species.

Signs

Signs educate, provide direction, and promote the sensitive use and enjoyment of natural areas by the visiting public. As identification devices, signs should not subject the public to excessive visual competition, but rather be an appropriate identification device that naturally blends with the surrounding environment and other signs in the Preserve. The use of signs that may attract attention to sensitive species should be used minimally in the Preserve because such signs may invite disturbance of their habitat.

The following types of informational and regulatory signs may be located in the Preserve:

- **Trail markers** as informational and identification signs that provide basic trail information to trail users. Trail markers provide identification to the trail ahead, uses allowed and not allowed on the trail route, a directional arrow, and if applicable, the City's trail system (i.e. Palos Verdes Loop Trail). Trail markers should be located at the starting point to a trail, as well as at trail junctions where trails cross or intersect. In cases where two or more trails intersect, trail markers should be provided to identify each trail.

- **Trailhead signs** at key public access points to provide the name of the Reserve and to identify that Reserve's trail system. Additionally, City regulations should be posted on the Trailhead Sign.

- **Kiosks signs** should be located near main entrances (i.e. those adjacent to public parking areas) and may include:

    - Reserve Map showing facilities and trails
    - The trail information with brochures and maps
    - Additional information such as trail conditions and amenities
    - Trail user responsibilities, rules and regulations
    - Interpretive and volunteer programs and upcoming events
    - Emergency contact information and ranger hotline number

- **Temporary signs,** as deemed necessary, may be installed to indicate habitat restoration, erosion-control areas, temporary trail closures, alert users (to slow down, yield, horses on trail, walk bikes, etc.), etc.

- **Interpretive signs** may be installed adjacent to trails when necessary to enhance public understanding of the history, geology, wildlife, habitat and special characteristics of an area. Interpretation should work in service of the visitor and the missions of the governing institutions. Interpretation is meant to increase awareness and understanding, build personal connections, and foster stewardship behaviors that help manage and protect resources.

- **Precautionary "warning signs"** may be installed at designated areas deemed to be hazardous based on concerns pertaining to geologic instability, The City's Public Works Director and the City's geotechnical consultants should identify the exact on-site location for each precautionary "warning sign."

Precautionary "warning signs" relating to the temporary closure of certain trail segments should be posted at strategic and visible locations, pursuant to the City Attorney's guidance. These signs should feature graphic representations of the potential danger, based on the nature and location of the hazard.

- **Regulatory Signs** may be installed to advise the public of rules and regulations.

Sign Verbiage and Installation Process

Pursuant to the Preserve Management Agreement between the City and the PVPLC, the PVPLC is generally responsible for providing trail information signs while the City is generally responsible for providing entry signs/kiosks and/or warning signs beyond PVPLC's responsibilities. As determined necessary by the PVPLC, the PVPLC is responsible for the installation or replacement of up to 25 signs per year that provide trail direction and way finding; trail location and identification; donor recognition, trail closure, protection of habitat and species, and geologic, historic features and education. The specifications regarding signs in the Preserve, including their general placement, should be reviewed at the monthly team meetings between the City (Community Development and Public Works Departments) and the PVPLC prior to installation. Signs that are in a state of disrepair, vandalized, weathered or removed should be repaired immediately by the responsible entity.

Signs that explain the rules of the Preserve (e.g., hiking, bicycle riding and horseback riding) are most effective at public entrance points. Signs for educational nature trails and on roads near wildlife corridors (to reduce road kills) shall be posted at appropriate locations. As set forth in the NCCP (Section XXX/Fencing and Signage), the following recommendations shall be considered in the placement of all Preserve signage:

a) Provide educational brochures, interpretive kiosks, and signs to educate the public about the resources and goals of the NCCP and Preserve.

b) Establish signs for access control and education at the periphery of the Preserve that are accessible to individuals. Post signs to prohibit firearms and unleashed pets.
c) Install signs for educational nature trails.
d) Limit the use and/or language of signs that might attract attention to sensitive species, because such designation may invite disturbance of their habitat.
e) Install temporary signs to indicate habitat restoration or erosion-control areas.
f) Install barriers and informational signs to discourage shortcuts between established trails.
g) Establish road signs near wildlife corridors to help reduce road kills.
h) Consider signs denoting reduced speed limits along roads that have relatively high incidence of road killed wildlife.
i) Include, where appropriate, contact information for law enforcement, emergency services, and management staff.
j) Include, where appropriate, signs that identify where a trail ends at private property.

Lighting

With the exception of temporary safety or security lighting for NCCP covered activities; lighting shall not be permitted within the Preserve.

Drinking Fountains

Typically, water facilities, such as drinking fountains, are not available within the Preserve because of the lack of utilities. In cases where existing water and sewer lines are available, drinking fountains may be located at certain trailheads. In such cases, the drinking fountains should also include doggie bowls.

Bathrooms

While Bathrooms structures are not allowed in the Preserve, portable bathrooms may be located at trailheads within the Preserve or at other appropriate locations that are easily accessible to City maintenance crews.

Trash Bins

As a means of encouraging the public's role in the maintenance of the trails and the surrounding grounds, trash bins should be installed in the Preserve by the City at strategic locations that are accessible to the general public and City maintenance crews. The trash bins shall be wildlife proof and shall be constructed from materials that blend with the natural terrain and shall be placed at locations that are easily accessible to City maintenance crews. For security reasons, it is recommended that the trash bins be mounted to the ground or chained to a solid structure, such as a sign pole or bench, to prevent tampering. Trash bins should be designed with an enclosure to ensure that trash is not removed by humans or animals.

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5. IMPLEMENTATION

a. Preserve Management

To ensure that appropriate management practices are put into place, the City's NCCP devotes an entire chapter (Chapter X) to "Preserve Management". According to the NCCP, the PVPLC is the City's Habitat Manager for the NCCP Preserve. In this role, the PVPLC is responsible for completing specific habitat management and monitoring tasks within the entire Preserve pursuant to the NCCP. The NCCP also delegates various other responsibilities for overall Preserve management to the City and the PVPLC. Pursuant to the Preserve Management Agreement approved by the City Council on November 1, 2011, the City and PVPLC each have the following major responsibilities for managing the Preserve:

- PVPLC Areas of Responsibility
    - Habitat restoration/enhancement (5 acres every year), periodic biotic surveys, invasive plant control and habitat monitoring (annual reports)
    - Installation or replacement of up to 25 signs per year on an as needed basis
    - Fuel modification on PVPLC owned lands
- City of RPV Areas of Responsibility
    - Access Control to maintain City gates and other City barriers that prevent/control unauthorized access
    - Waste management on as needed basis, including maintaining and refilling pet waste bag dispensers
    - Public safety (Ranger patrols, City staff or the L.A. County Sherriff) to enforce the City's municipal code
    - Regulatory signage installation and maintenance
    - Maintenance of any roads (i.e. Burma Road)
    - Fuel Modification on City owned lands

A detailed list of specific responsibilities for both the PVPLC and the City is attached to the Management Agreement on file with the City.

b. Temporary Trail Closures

In cases where the protection of the public interest, health, welfare, or safety occurs, Section 12.16.090 of the RPVMC provides the City Manager or the City Manager's designee the authority to close from public access the Preserve or portion thereof (including trails) on a temporary and/or permanent basis. This may include seasonal

closures to protect wildlife and/or changes in use designations of trails if incompatibility among user groups exists. Likewise, pursuant to the Preserve Management Agreement between the City and the PVPLC, the PVPLC has the ability to recommend that certain trails be closed or designated trail users removed if impacts to habitat are occurring.

c. Preserve Oversight and Opportunity for Public Involvement

It is anticipated that public use issues will be encountered and brought to the City's and PVPLC's attention by Preserve users and nearby residents. When public use issues are brought to the PVPLC's attention, the PVPLC will either take the appropriate action to address the issue in accordance with its mandatory or permissive obligations under the Preserve Management Agreement or request the City to take certain action if the issue falls under the City's Preserve responsibilities described above or in the Preserve Management Agreement. If issues brought to the City's attention directly fall under the City's Preserve responsibilities the City will take appropriate action. These issues will be addressed at the monthly team meetings between the City and the PVPLC.

The PVPLC will use reasonable efforts to ensure public involvement and participation in the management and periodic evaluation of the Preserve. Such efforts may include, but are not limited to, PVPLC's participation in the Annual Report presentation to the City Council; involving members of the community as "keepers" to provide regular monitoring of the Preserve; soliciting public comments through outreach such as comment boxes, mailings, events and workshops; and inclusion of members of the public on committees that the PVPLC may from time to time establish.

In addition, to obtain direct feedback from the public on all the public use issues identified in this PUMP document, the City and the PVPLC will conduct meetings that will be open to all members of the public. Said meetings will cover trail related topics, such as, Preserve Use Issues, Trail Repair or Construction Issues, Signage Issues and Public Use Enforcement Issues.

d. Preserve Trail Improvement Projects List

Working together, the PVPLC and the City will prepare an Annual Preserve Trail Project List that will identify any trail projects in the Preserve planned for the coming year. The Project List will demonstrate how it is consistent with the NCCP and may designate the priority for completing each project ranging between a high and low priority. High priority projects should include, but are not limited to, public safety projects. Projects not completed in the time period specified in the List can be continued on the following year's Project List. The project list is a best attempt at providing projects that may be conducted in the year ahead. However, lack of inclusion on a project list shall not prevent a project from occurring, as it is a permissive activity pursuant to the Management Agreement. The

Project List should be submitted at the same time the Annual Report, as described above, is submitted to the City for City Council review.

The completion of trail projects as described above will be at the discretion of the City and the PVPLC and will be based on available funding opportunities, such as grants and volunteer efforts. The majority of work will typically be conducted outside the gnatcatcher breeding season (February 15 through August 31), except for work that will not impact habitat.

e. Amendments to the PUMP Document

Pursuant to the NCCP and the Preserve Management Agreement, the City and the PVPLC are responsible for completing any amendments or modifications to the PUMP or any replacements or substitutions of the PUMP. Any amendments to the PUMP must include PVPLC advice on and consent to matters that in the reasonable judgment of the PVPLC impact biological protection, such as open space preservation, habitat preservation and restoration and species protections. The PVPLC will make any recommendations to amend the PUMP document as part of the Annual Report that the PVPLC is required to submit to the City Council every spring. This may also include recommendations to modify use access based on incompatibility with habitat conservation and protection of covered species. Any amendments to the PUMP must be approved by the City Council and the Wildlife Agencies per the NCCP (See Section X.X), and shall take into account impacts to biological protection, such as open space preservation, habitat preservation and restoration and species protection.



