

INITIAL SITE ASSESSMENT REPORT
for the
ENCINITAS HABITAT STEWARDSHIP PROGRAM
City of Encinitas, California

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1 INTRODUCTION

The City of Encinitas (City) is composed of a unique mosaic of native habitats and is home to many rare and endangered plant and wildlife species. The City is committed to preserving and restoring these resources in the community.

The City has established the Encinitas Habitat Stewardship Program (formerly referred to as the Early Multiple Habitat Conservation Program [MHCP] Implementation Program) to address the management and stewardship of City-owned open space areas in an effort to continue conserving and managing the habitats and biodiversity unique to the City. To continue its commitment to responsible stewardship practices, the City has requested this initial site assessment report to determine what management actions are necessary to preserve or restore native habitats within City-owned open space. The assessment report will assist City staff with prioritizing the needs and stewardship actions under this program. The field data and stewardship recommendations in this initial site assessment report are directed at providing a description of current site conditions, and an evaluation of five management categories as related to habitat quality including: presence of invasive plants, erosion and hydrology issues, access control (fencing and signage), trash and transient encampments, and fire abatement. This report also includes the estimated cost of the tasks of the program for any of the categories mentioned above.

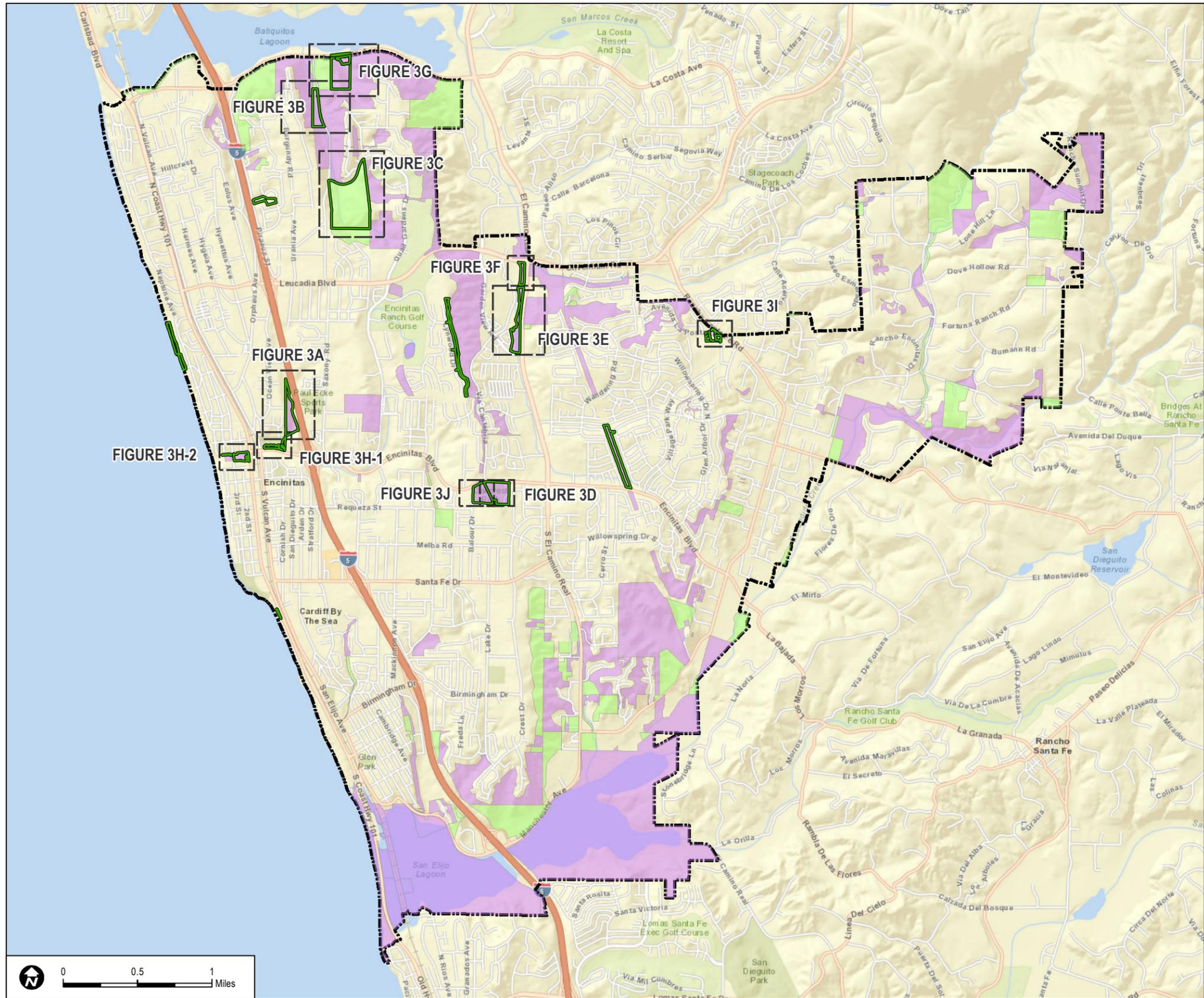
Each site has been prioritized for management needs based on the ecological benefit of the site and its value in providing an environment for native biological resources to flourish. A major assumption with the assessment of management and stewardship activities is that no actions are proposed in this assessment that will trigger the need for wetland or endangered species permitting. Moreover, the five management categories have been evaluated and prioritized for management needs based on their role in providing for the overall health and quality of the native habitat in each site. The areas considered in this report include: Cottonwood Creek Park (Unimproved), Saxony Road, Indian Head Canyon, Oak Crest Park Habitat Area, Open Space #1, Open Space #2, La Costa Avenue, Cottonwood Creek Drainage (Areas A, B, C), Sun Vista Park Habitat Area, and the Encinitas Senior Center (Figures 1 and 2). Areas with potential to trigger wetland permitting include Open Space #1, Open Space #2, and Cottonwood Creek Drainage (Areas A, B, C). Prior to activities taking place within the bed and bank of the drainages in these areas, a biological consultant or wetland agency representative should be consulted.

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Legend

-  City of Encinitas
-  City Open Space Area
- City of Encinitas Multiple Habitat Conservation Program**
- Focus Planning Area**
-  Hardline
-  Softline

FIGURE	FIGURE TITLE
FIGURE 3A	Cottonwood Creek Park (Unimproved)
FIGURE 3B	Saxony Road
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2 METHODS

2.1 Literature Review

Sensitive biological resources present or potentially present in the City's open space areas described in this report were identified through a literature search using the following sources: U.S. Fish and Wildlife Service (USFWS) (2000), California Department of Fish and Game (CDFG) (2005a–d), and California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2005). The California Natural Diversity Database (CNDDDB) (CDFG 2005e) was reviewed to identify sensitive species possibly occurring within the open space areas. The *Soil Survey, San Diego Area, California Part 1* (Bowman 1973) also was reviewed to identify potentially occurring sensitive plants based upon known soil associations. General information regarding vegetation communities and plant species was obtained from Holland (1986) as revised by Oberbauer (2008).

2.2 Field Reconnaissance

Dudek biologists Andrew Thomson, Kyle Matthews, and Scott Gressard conducted vegetation communities mapping and site assessments of the City's open space areas on January 7, 12, and 13, 2015. A follow-up survey of Cottonweed Creek Drainage (Areas A, B, and C) was conducted on May 27, 2015. Vegetation communities were mapped in the field directly onto a 200 -scale (1 inch = 200 feet) color digital orthographic map (Google 2014) of the area. All notes and stewardship recommendations were recorded on site on field survey forms (Appendix A; provided under separate cover). Focused surveys for sensitive plants and animals were not conducted during any of these site visits; however, any sensitive species encountered were mapped and included in the GIS data provided. Following completion of the fieldwork, all vegetation polygons were transferred to a topographic base map and digitized using ArcGIS software, thus creating a Site Issue Map and calculated acreages for the vegetation communities in each of the City's opens space areas.

2.2.1 Invasive Plant Management

Mapping of invasive plant species was prioritized by the seven target species or species groups listed in the City's RFP and is referred to as the City's target list throughout the report. These seven target species or groups include: pampas grass (*Cortaderia selloana*); ice plants (*Carpobrotus* spp. and *Mesembryanthemum* spp.); giant reed or cane (*Arundo donax*); castor bean (*Ricinus communis*); acacias (*Acacias cyclops* and *A. longifolia*); myoporum (*Myoporum laetum*); and kikuyu grass (*Pennisetum clandestinum*). Additional invasive species that are addressed by the City of Encinitas are listed in Appendix I of the Water Efficient Landscape

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Design Manual (Landscape Design Manual; County of San Diego 2010) and are indicated separately in each site specific invasive species table. Finally, invasive plant species included in the California Invasive Plant Council's Invasive Plant Inventory (Invasive Plant Inventory; Cal-IPC 2006), but not on the City's target list or on the Landscape Design Manual, were noted when present and their Cal-IPC rating is shown separately as well.

In most cases where an individual invasive tree or shrub was observed, a single point was mapped to document the locations. Spreading species, such as iceplant or giant cane, were field mapped using polygons or an estimated percent cover for cost estimating purposes. However, to reduce map complexity, all invasive plant species locations are displayed on the map as points. For larger invasive trees, such as Eucalyptus (*Eucalyptus* spp.) or palms (*Washingtonia robusta*, *Phoenix canariensis*), individual trees were mapped using individual point counts, and an estimated diameter at breast height (DBH) was recorded for each tree for cost estimating purposes.

Exotic species ecological threat within the City's open space areas was determined based on the Invasive Plant Inventory ratings (Cal-IPC 2006). The three rating categories in the Cal-IPC database are: high, moderate, and limited. A species with a "high" Cal-IPC rating creates severe effects to both native plant and wildlife in its environment in California through its natural life cycle. It also creates negative effects on physical processes within its environment. These species are adapted to disperse efficiently and have a high rate of recruitment in a variety of habitats and conditions, making them likely to spread given the opportunity. Invasive species with a Cal-IPC rating of "moderate" have a more mild ecological effect on their surrounding environment and often require a disturbance in order to recruit to a site, however they are still very efficient dispersers. The third Cal-IPC rating is "limited". Invasive species assigned this rating have a relatively low effect on their surrounding environment statewide and are not as proficient dispersers as the species assigned in the higher categories.

Following the completion of field surveys, all invasive plant species points recorded were transferred to a topographic base map and digitized using ArcGIS then added to the open space areas Site Issue Map.

2.2.1.1 *Prioritization of Invasive Plant Control*

Prioritization of invasive plant species control was determined based on the City's target list, the Water Efficient Landscape Design Manual Invasive Species list, the Invasive Plant Inventory rating, and if the species has been determined to be locally invasive. Prioritization for removal is "high" if the species has been placed on the City's target list for removal, or if the species has a "high" rating according to the California Invasive Plant Council's Invasive Plant Inventory (Cal-

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IPC 2006). Exotic species with a priority for removal as “moderate” has been assigned if the species has a “moderate” rating according to the California Invasive Plant Council’s Invasive Plant Inventory and is not on the City’s target list for removal. Exotic plant species with a “low” priority for removal are species that are not on the City’s target list for removal and are designated as a “limited” threat under the California Invasive Plant Council’s Invasive Plant Inventory. Species on the Water Efficient Landscape Design Manual Invasive Species list were prioritized in conjunction with the rankings from the City’s target list or the California Invasive Plant Council’s Invasive Plant Inventory. Thus, species on the City’s target list and on the Water Efficient Landscape Design Manual Invasive Species list were generally ranked as high priority. Those species on the Water Efficient Landscape Design Manual Invasive Species list and also on the California Invasive Plant Council’s Invasive Plant Inventory moderate list were given moderate priority. Those species with limited or no ranking on the California Invasive Plant Council’s Invasive Plant Inventory were given a low priority ranking.

Management of non-native plant species is a main priority for all sites. As such non-native invasive plants will be targeted for removal and long-term control through a combination of manual, mechanical (e.g., mowing, string-trimmers), and chemical methods. Physical removal of non-native plants, including the roots, may be the best method for those species for which the root system can readily be pulled out with the aboveground portions of the plant. These species will be physically removed before seed-set. If hand removal is possible only after seed-set, then seed heads should be cut off, bagged, and removed from the site before the weed removal.

Herbicides may be used for the invasive exotic plant species that have root systems that are impractical to remove or that regenerate from small root fragments. Herbicide control is often used for invasive species control but is the judgement call of the qualified landscape contractor. Herbicide applications should be conducted using methods that minimize effects to adjacent/desirable native species, such as brush application or spot spraying. At all times, herbicide application must be conducted by a California licensed pesticide applicator in accordance with State and local regulations. The herbicide to be used will be selected in accordance with the City’s integrated post management policy (IPM).

Herbicide for all non-native invasive plant control will be non-selective, broad-spectrum, post-emergent, trans-locating herbicide with low toxicity to wildlife approved for use in and around aquatic habitats by the U.S. Environmental Protection Agency (EPA). Only herbicides registered for aquatic use can legally be applied in locations where they might come in contact with open water.

Following weed control, the dead vegetation will be cleared and removed off site according to State and local regulations. Follow-up control measures will likely be necessary for non-native invasive plants with extensive root systems that cannot usually be killed with one herbicide

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application. Follow-up herbicide treatment should be done at the biologically appropriate time when the recovering plants are still relatively small and before they have time to regain strength and vigor.

2.2.2 Erosion and Hydrological Issues

Erosion or hydrological issues encountered on the open space areas were either mapped as points or polygons depending on the extent of the feature. Erosion features were categorized as minor or severe depending on the effort that would be required to repair them. Minor erosion typically consisted of small rills along a trail or hillside, while severe erosion was deep or long drainages cut through trails or sections of the site that would require more extensive grading and soil stabilization (such as installing a device such as a water bar) in order to repair.

Following completion of the fieldwork, all erosion points and polygons were transferred to a topographic base map and digitized using ArcGIS software and then added to the open space areas Site Issue Map.

2.2.3 Access Control

Issues relating to access control (fencing and signage) were assessed and documented during field reconnaissance of the open space areas. Notes detailing each issue as well as the biologist's recommendations were recorded in the field survey form and are detailed in each open space area section below.

Fencing and signage has been suggested at specific sites mainly to deter and discourage public use, of an area, or a specific location vulnerable to degradation and habitat loss. Criteria for determining the type of fencing to be used at each location was based on the following: the specific resources to be protected (i.e., sensitive species), level of impact to wildlife movement, habitat visibility/ aesthetics, and impacts resulting from manual fence installation.

Following completion of the fieldwork, all access and signage polygons and points were transferred to a topographic overlay map and digitized using ArcGIS software. All data was then added to the relative open space areas Site Issue Map. To calculate the cost of signs and installation, it was assumed that each sign cost is \$200 including installation and that the initial installation at each site would require five signs. For the ongoing cost of signs, it was assumed that one sign would be required annually for total cost of \$200.

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2.2.4 Property Trash and Encampments

Dudek mapped locations of trash accumulations or large items within the open space areas. This included items such as old cars, appliances, dump piles, or concentrated accumulations of household trash. All other minor trash was recorded qualitatively, but was not included on the site issue maps. Following completion of the fieldwork, all trash location points were transferred to a topographic overlay map and digitized using ArcGIS. All data was then added to the relative open space areas Site Issue Map. No encampments were encountered directly in any of the City's open space sites, however notable human activity and related trash were common. Instances of encroachment and human disturbance were noted during the surveys and are further discussed in the sections below.

2.2.5 Fire Abatement

. Fire abatement areas were assessed based on existing conditions and consultation with the Encinitas Fire Department. Issues, such as obvious brush management zone areas, were mapped when they were encountered. Brush management zones were not directly or specifically measured or analyzed in the field, as measurements are site specific for each structure. However, a general estimate of locations where brush management is needed, or has been historically occurring, were documented on field forms/maps, and are displayed on the figures. The fire abatement recommendations cited for each site are based on field conditions at the time of site inspection; it should be noted that conditions may change over time. All fire abatement shall be done in consultation with and to the satisfaction of the Encinitas Fire Department.

2.2.6 Recommendations and Cost Analysis

Based on the assessment of the conditions at each of the City's open space areas, including the ecological threat of each identified management issue, a stewardship prioritization for management action was prepared for each site. A cost analysis for rectifying identified management issues and for providing long-term management for each site is provided in this report.

A general cost analysis was also prepared to provide invasive plant maintenance. This is provided as both an average or cost range for removal and for on-going maintenance (Appendix B under separate cover).

An overview of the qualifications of Dudek/HRS is provided in Appendix C under separate cover as required in the scope of work for this project. This overview focuses on the capabilities of Dudek/HRS to provide both short and long-term stewardship action.

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3 RESULTS OF OPEN SPACE AREA ASSESSMENT SURVEYS

The assessment surveys found that each open space area varies in ecological value to the City’s native biota. As such, the City’s open space areas discussed in this report were prioritized for management action based on the presence of four categories (i.e., presence or potential for special status species to occur, presence of native habitat, presence of aquatic resources, and the level of management threats posed to each area) that are intrinsic to evaluating the overall ecological benefit of the respective sites. Table 1 shows the City’s open space areas and their priority for management. During the assessments of each site, the sites were evaluated for each category and assigned a ranking (high, moderate, or low) based on the field observations. These ranking of the habitat characteristics reflect overall quality of habitat within the site.

**Table 1
Management Prioritization Based on the Evaluation of the Habitat Quality of the
Open Space Areas**

Open Space Area	Management Priority Rank	Presence of Special Status Species	Presence of Native Habitat	Presence of Aquatic Resources	Management Threats
Cottonwood Creek Park (Unimproved)	1	High ¹	High	High	High
Saxony Road	2	High ²	High	High	Moderate
Indian Head Canyon	3	High ²	High	Low	Moderate
Oak Crest Park Habitat Area	4	High ³	Moderate	Low	High (fencing)
Open Space #1	5	Moderate	High	Moderate	Moderate
Open Space #2	6	Low	Moderate	High	Moderate
La Costa Avenue	7	Moderate	High	Low	Low
Cottonwood Creek Drainage (Areas A, B, C)	8	Low	Moderate	High	Low
Sun Vista Park Habitat Area	9	Low	Low-Moderate	Moderate	Low
Encinitas Senior Center	10	Low	Moderate-High	Low	Low

¹ Willow flycatcher (*Empidonax traillii*) has been recorded within this open space.

² California gnatcatcher (*Polioptila californica californica*) was observed utilizing adjacent coastal sage scrub habitat during field reconnaissance.

³ Encinitas baccharis (*Baccharis vanessae*) is present on site, Orcutt’s spineflower (*Chorizanthe orcuttiana*) was reported present.

Moreover, the five management categories have been prioritized for management needs based on their role in providing for the overall ecological benefit of their respective sites. Prioritization of the management issues are as follows: presence of invasive plants, site erosion, access control

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(fencing and signage), presence of trash, and fire abatement and/or brush management. Table 2 shows the open space areas and the extent of the management categories (i.e., issues) on site (severe, moderate, or low).

Table 2
Summary of City Open Space Areas and Level of Management Issues

Open Space Area	Management Issues					
	Management Priority Rank	Invasive Plant Species	Erosion	Access Control	Trash	Fire Abatement
Cottonwood Creek Park (Unimproved)	1	Severe	Moderate	Moderate	Moderate	Yes
Saxony Road	2	Moderate	Low	Moderate	Low	Yes
Indian Head Canyon	3	Moderate	Moderate	Moderate	Moderate	Yes
Oak Crest Park Habitat Area	4	Low	Low	Low	Low	No
Open Space #1	5	Moderate	Low	Moderate	Moderate	Yes
Open Space #2	6	Moderate	Low	Moderate	Moderate	No
La Costa Avenue	7	Moderate	Moderate	Moderate	Low	Yes
Cottonwood Creek Drainage (Areas A, B, C)	8	Moderate	Low	Moderate	Moderate	Yes (A & B) No (C)
Sun Vista Park Habitat Area	9	Low	Moderate	Low	Low	No
Encinitas Senior Center	10	Low	Low	Low	Low	Yes

An analysis and detailed description of each site management concern is described in the following sections. It should be noted that all stewardship recommendations are itemized by level of importance each recommendation has on the overall ecological benefit of the respective sites. It should also be noted that the stewardship recommendations and management actions assume that no wetland or endangered species permitting would be required. Triggers to wetland permitting include working within U.S. Army Corps of Engineers or California Department of Fish and Wildlife jurisdictional areas including grading, filling, alteration of stream bed or bank or removal of riparian vegetation. Triggers to endangered species permitting would include removal of occupied or potential habitat for endangered species or conducting work within areas occupied by endangered species during the breeding season.

The stewardship actions were assigned costs for each type of action and whether it was an initial activity or ongoing activity. These costs were totaled for each site and prioritized per the stewardship needs and are provided in Table 3.

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**Table 3
Summary of Stewardship Costs for each Open Space Site for Initial and On-going Tasks**

Open Space Area	Cost Estimate for Initial Tasks							
	Order for Priority	Invasive Management	Erosion	Access Control	Trash and Encampments	Fire abatement	Total initial	
Cottonwood Creek Park (Unimproved)	1	\$27,500	\$8,000	\$1,500	\$1,500	\$3,000	\$41,500	
Saxony Road	2	\$6,000		\$12,250	\$750		\$19,000	
Indian Head Canyon	3	\$25,000	\$4,000	\$8,500	\$1,000	\$3,000	\$41,500	
Oak Crest Park Habitat Area	4	\$6,000	\$500	\$1,000	\$500		\$8,000	
Open Space #1	5	\$20,000		\$2,500	\$1,000	\$1,000	\$24,500	
Open Space #2	6	\$15,000		\$1,750	\$1,000		\$17,750	
La Costa Avenue	7	\$7,500	\$6,500	\$17,500 (\$16,500 of this is optional)	\$750	\$1,000	\$33,250	
Cottonwood Creek Drainage (Areas A, B, C)	8	\$20,000		\$1,000	\$500	\$2,000	\$23,500	
Sun Vista Park Habitat Area	9	\$2,250		\$1,000			\$3,250	
Encinitas Senior Center	10	\$1,000		\$1,000	\$500		\$2,500	
Total		\$130,250	\$19,000	\$48,000 (\$16,500 of this is optional)	\$7,500	\$10,000	\$214,750	
Open Space Area	Annual Cost Estimate for On-going tasks							
	Order for Priority	Invasive Management	Erosion	Access Control	Trash and Encampments	Fire abatement	Additional Tasks	Total Ongoing
Cottonwood Creek Park (Unimproved)	1	\$3,000		\$500	\$1,000	\$2,000	\$2,000 ¹	\$8,500
Saxony Road	2	\$2,000		\$300	\$500		\$1,000 ¹	\$3,800
Indian Head Canyon	3	\$3,000	\$2,000	\$500	\$1,000	\$2,000	\$2,000 ¹	\$10,500
Oak Crest Park Habitat Area	4	\$1,000	\$500	\$500	\$6,000		\$1,000 ¹	\$9,000

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Table 3
Summary of Stewardship Costs for each Open Space Site for Initial and On-going Tasks

Open Space Area	Annual Cost Estimate for On-going tasks							
	Order for Priority	Invasive Management	Erosion	Access Control	Trash and Encampments	Fire abatement	Additional Tasks	Total Ongoing
Open Space #1	5	\$3,000		\$1,000	\$1,000	\$1,000	\$2,000 ¹	\$8,000
Open Space #2	6	\$2,000		\$500	\$1,000		\$1,000 ¹	\$4,500
La Costa Avenue	7	\$2,000		\$500	\$500	\$1,000	\$1,000 ¹	\$5,000
Cottonwood Creek Drainage (Areas A, B, C)	8	\$2,000		\$300	\$1,000	\$1,000	\$1,000 ¹	\$5,300
Sun Vista Park Habitat Area	9	\$5,500 ²		\$300			\$1,000 ¹	\$6,800 ²
Encinitas Senior Center	10	\$1,000		\$500	\$8,000		\$1,000 ¹	\$10,500
Total		\$24,500	\$2,500	\$4,900	\$20,000	\$7,000	\$13,000	\$71,900

¹ Biological Monitoring

² \$5,000 of this cost will only be within ongoing tasks until the revegetated area is established (approximately 4-5 years).

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4 COTTONWOOD CREEK PARK (UNIMPROVED)

4.1 Site Description

The Cottonwood Creek Park (Unimproved) open space area is approximately 10.2 acres and is located between Via Nancinta Drive to the west, Interstate 5 to the east, and Encinitas Boulevard to the south in the City of Encinitas, California. The open space area is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 10, Township 13 South, Range 4 West; latitude 117°17'21.18"W and longitude 33°3'4.47"N. The open space area is primarily characterized by eastward sloping terrain with elevations ranging from 102 feet above mean sea level (AMSL) to 157 feet AMSL.

The Cottonwood Creek Park (Unimproved) area is undeveloped and supports moderate to dense riparian habitat dominated by willow species (*Salix* spp.) along the perennial stream that extends the length of the open space area. The site is part of the Cottonwood Creek Park and a dirt trail allows access from the active recreation section of the park to the unimproved area north of and behind the shopping center. The open space supports native coastal sage scrub and southern willow scrub vegetation communities, as well as non-native land covers including Eucalyptus, ornamental plantings, and disturbed habitat (Figure 3A; Table 4). Additionally, some special-status plant species were incidentally observed during the surveys, including wart-stemmed ceanothus (*Ceanothus verrucosus*), Nuttall's scrub oak (*Quercus dumosa*), and Nevin's barberry (*Berberis nevinii*). Willow flycatcher (*Empidonax traillii*) has been observed within the riparian wetlands. CNDDDB data also has a record for Del Mar Mesa sand aster (*Corethrogyne filaginifolia* var. *filaginifolia*), which may be present but was not observed.

4.2 Results of Site Assessment

Results of the Cottonwood Creek Park (Unimproved) assessment (Figure 3A), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated cost are itemized in order of highest priority to lower priority.

4.2.1 Invasive Plants

Invasive plant species are present throughout the open space. On the western side of the access trail, which runs approximately through the center of the open space from north to south, a number of invasive species are present along the hillside. Areas dominated by iceplant and Indian fig (*Opuntia ficus-indica*) were mapped in this area as well as ornamental and invasive tree species points, including coastal wattle (*Acacia cyclops*) and eucalyptus (*Eucalyptus* spp.) (Figure 3A; Table 4). On the eastern side of the trail, which slopes to the perennial streambed,

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the eastern-facing slope of the riparian community has a dense understory of invasive species. Some of these species are garden nasturtium (*Tropaelum majus*), Bermuda buttercup (*Oxalis pes-caprae*) and annual stinging nettle (*Urtica urens*), with other invasive tree species scattered throughout, such as Mexican fan palm (*Washingtonia robusta*) and Eucalyptus (*Eucalyptus* spp.).

**Table 4
Invasive Plant Species Observed on the Cottonwood Creek Park (Unimproved)**

Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Coastal wattle ^{1,2}	<i>Acacia cyclops</i> ^{1,2}	None	Occasional	Scattered individuals across open space (10-12 trees <12" DBH)	High
Silver wattle ²	<i>Acacia dealbata</i> ²	Moderate	Occasional	1 tree in north section of site (<12" DBH)	High
Iceplant ^{1,2}	<i>Carpobrotus edulis</i> ^{1,2}	High	Common	Species more prevalent in coastal sage scrub habitat. Some areas with denser patches (5-10% total cover)	High
Pampas grass ^{1,2}	<i>Cortaderia selloana</i> ^{1,2}	High	Occasional	Scattered within the open space with two small patches on the east-facing slope dominated by coastal sage scrub	High
Crystalline iceplant ^{1,2}	<i>Mesembryanthemum crystallinum</i> ^{1,2}	Moderate	Occasional	Patches spread throughout site, with majority occurring in southern section near access location. (<1% total cover)	High
Myoporum ^{1,2}	<i>Myoporum laetum</i> ^{1,2}	Moderate	Occasional	Only one tree identified in SWS along channel <12" DBH	High
Kikuyu grass ^{1,2}	<i>Pennisetum clandestinum</i> ^{1,2}	Limited	Occasional	Large patch of this species in northern area of site along trail near the sewer pipeline.	High
Castor bean ^{1,2}	<i>Ricinis communis</i> ^{1,2}	Limited	Occasional	Three patches were identified on site, and two are located near the drainage and streambed	High
Bridal creeper ²	<i>Asparagus asparagoides</i> ²	Moderate	Occasional	Scattered, with largest patch in north portion of site (5-6 patches observed)	Moderate
Crown daisy ²	<i>Glebionis coronaria</i> ² (= <i>Chrysanthemum coronarium</i>)	Moderate	Common	Spread along both sides of the trail and eastward facing slope in disturbed areas (<1% total cover)	Moderate
Tree tobacco ²	<i>Nicotiana glauca</i> ²	Moderate	Occasional	All trees located in southeastern section of site (3 individuals <12" DBH)	Moderate

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**Table 4
Invasive Plant Species Observed on the Cottonwood Creek Park (Unimproved)**

Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Mexican fan palm ²	<i>Washingtonia robusta</i> ²	Moderate	Occasional	3 trees observed on site (12-24" DBH)	Moderate
Red apple ice-plant ²	<i>Aptetinia cordifolia</i> ²	None - Locally Invasive	Occasional	Scattered patches across open space (<5% total cover)	Low
Indian fig ²	<i>Opuntia ficus-indica</i> ²	None - Locally Invasive	Common	Patches scattered on west side of trail within disturbed coastal sage scrub (approximately 6 patches; <5% total cover)	Low
Canary Island date palm ²	<i>Phoenix canariensis</i> ²	Limited	Occasional	Only 2 trees located on site (12"-24" DBH)	Low
Brazilian pepper tree ²	<i>Schinus terebinthifolius</i> ²	Limited	Occasional	3 trees observed on site (<12" DBH)	Low
Garden nasturtium ²	<i>Tropaeolum majus</i> ²	None - Locally Invasive	Abundant	Dense in the understory of the SWS (10% total cover)	Low
Eucalyptus ²	<i>Eucalyptus</i> spp. ²	Limited	Common	Small patches along trail and near drainage in north section of site. Moderate potential for invasion to spread through streambed. (10-12 trees <12" DBH; 10-11 trees 12"-24" DBH; 4 trees >24" DBH)	None

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

** Refer to section 2.2.1.1 for methods used in priority categorization

Additional species observed on site that were not mapped, but that have a Cal-IPC rating include: curly leaved dock (*Rumex crispus*), London rocket (*Sisymbrium irio*), and Himalayan blackberry (*Rubus armeniacus*). Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis (e.g., brome grasses (*Bromus* spp.), wild oat (*Avena* spp.), filaree (*Erodium* spp.), annual stinging nettle (*Urtica urens*), mustard species, Maltese star thistle (*Centaurea melitensis*), etc.) were not mapped as individual occurrences; however, their presence was noted as components of either disturbed habitats or non-native grasslands mapped on site.

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4.2.2 Erosion and Hydrological Issues

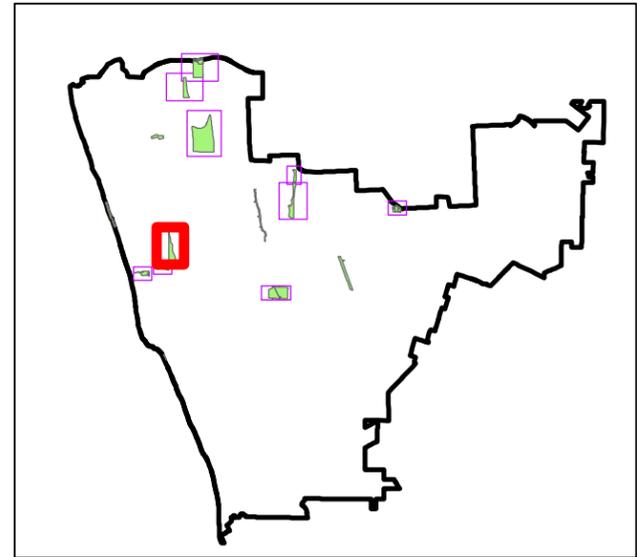
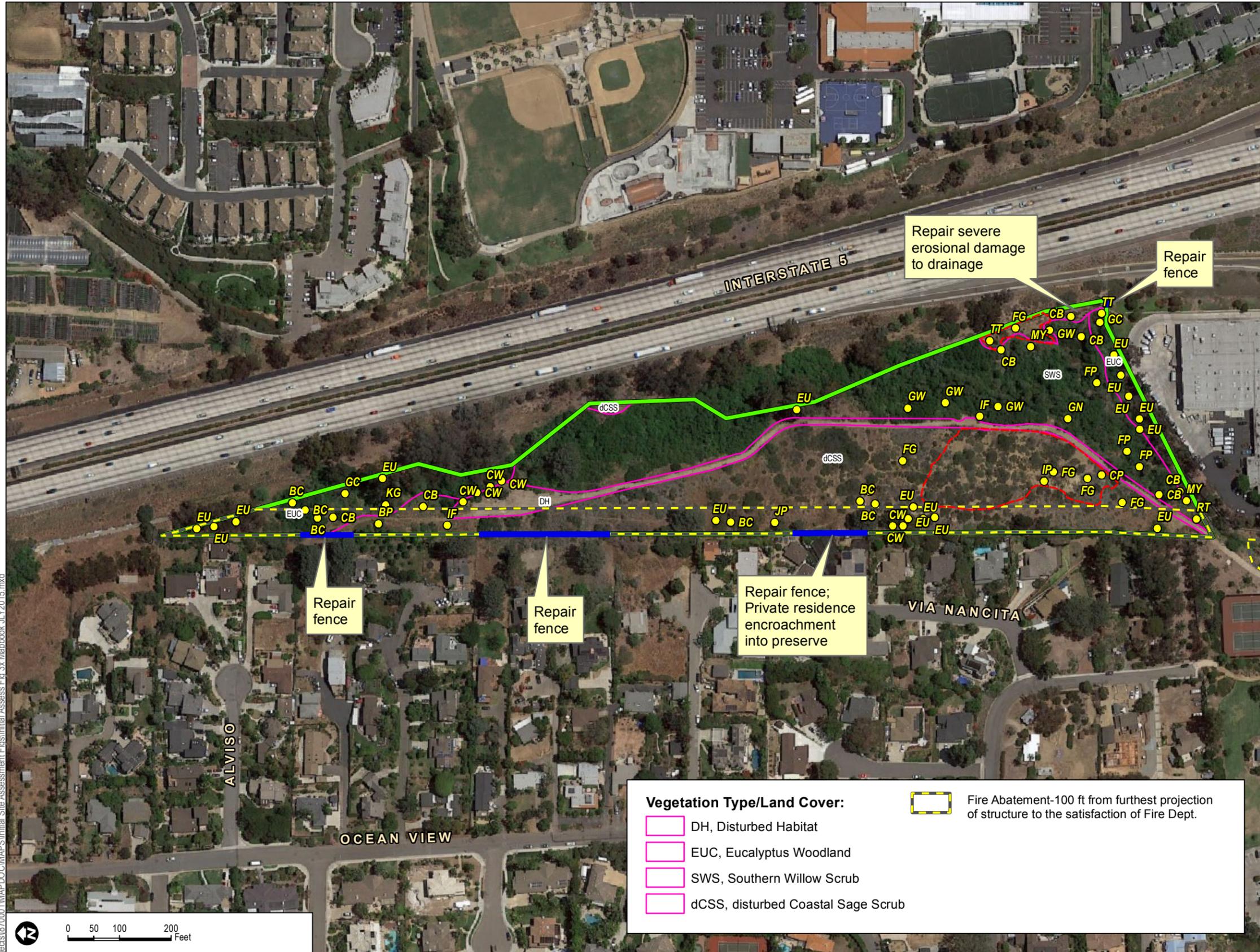
Erosion issues on site consisted primarily of:

- Minor rilling scattered throughout the slopes on site.
- Two eroded gullies were observed in the southeast corner of the site. One of the eroded drainages formed at an unprotected storm drain outlet pipe. (Figure 3A; Photo 1). The cause of the other eroded gully is unknown, but appears to be from coalescing surface runoff on the slope. The eroded drainages would require substantial grading and heavy equipment work to be repaired; however, this would cause detrimental effects to the native habitat that is established in these areas. Therefore, an attempt should be made to first stabilize the erosion issue to prevent further erosion at these locations.

4.2.3 Access Control

The fencing surrounding the open space appears to be maintained by the neighboring houses to the west and by the shopping center and Caltrans on the south and east boundaries, respectively. Encroachment into the open space should be brought to the attention of homeowners so that the issues can be addressed. The City should contact these entities to inform them of the existing issues and coordinate having these items remedied in a timely manner. Specific issues observed concerning access control (fencing and signage) include:

- Gap in the fencing on the southeast end of the project
- Fencing gaps along the western property line at the top of the slope (Figure 3A)
- Several trail spurs into the habitat on either side of the main trail.
- Approximately 350 feet north from the southwest edge of the open space area, a private residence has encroached into the open space (Photo 2).



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Invasive Plant Species

- BC, Bridal creeper
 - BP, Brazilian pepper
 - CB, Castor bean
 - CP, California pepper
 - CW, Coastal wattle
 - EU, Red gum
 - FG, Fountain grass
 - FP, Mexican fan palm
 - GC, Giant cane
 - GN, Garden nasturtium
 - GW, Golden wattle
 - IF, Indian fig
 - IP, Ice plant
 - JP, Jade plant
 - KG, Kikuyu grass
 - MY, Myoporum
 - RT, Russian thistle
 - TT, Tree tobacco
- ▭ City Open Space Area
 - ▭ Erosional Feature
 - ▬ Open Space Fence Repair

Vegetation Type/Land Cover:

- ▭ DH, Disturbed Habitat
- ▭ EUC, Eucalyptus Woodland
- ▭ SWS, Southern Willow Scrub
- ▭ dCSS, disturbed Coastal Sage Scrub

▭ Fire Abatement-100 ft from furthest projection of structure to the satisfaction of Fire Dept.



**FIGURE 3A
COTTONWOOD CREEK PARK (UNIMPROVED)**

Document Path: Z:\Projects\187000\1\MAPDOC\MAPS\Initial Site Assessment\Fig 3a Mapbook_JLY2015.mxd

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4.2.4 Property Trash and Encampments

No encampments were observed within Cottonwood Creek Park (Unimproved). However, there is an active encampment just outside the perimeter fencing of the eastern side of the open space which could potentially cause future issues. Trash within the open space was characterized by the following:

- Minor items (plastic and glass bottles, food related trash, one tire, clothes, and chain link fence roll).
- There was a higher density of trash observed along the stream course, likely washed into the site from upstream.
- No large trash items were observed that would require the use of heavy machinery for removal.

4.2.5 Fire Abatement

The western edge of the open space abuts homes and evidence of historic brush management activities were observed. The extent and level of brush management varies considerably along the slope. In some cases, native shrubs have been thinned and trees have been limbed up and do not require additional limbing. However, exotic annual species in the interstices between trees and shrubs will continue to pose a fire abatement issue. The fire abatement area shall be maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures

Fire abatement issues on site include:

- Brush management zones along the western edge of the open space that will require regular maintenance, refer to Figure 3A.

4.3 Stewardship Recommendations

1. Control targeted invasive perennial plant species as shown on the open space map (Figure 3A). In general, the high priority species to control are located at the edge of the riparian vegetation and removal would not result in triggering the need for wetland permits. If it is determined that permits from the resource agencies would be required in order to remove invasive species, the removal will not be conducted. Prioritization of invasive species control should be based on the City's target species list and Cal-IPC ratings. Cut and remove all large shrub and tree species (palm trees, giant cane, castor bean, acacias, pampas grass, and myoporum). Cut the remaining stumps as close to grade as possible

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and then treat cut stumps with the appropriate herbicide to prevent regrowth. Dispose of all cut material off site. Control herbaceous species, such as ice-plant and Kikuyu grass, with a foliar application of the appropriate herbicide and allow to desiccate on-site. The physical removal of these herbaceous species from the site is not recommended, as they are present on slopes which would be susceptible to erosion if no vegetation was present. Other non-native species listed that are not the prioritized target species should be monitored closely to ensure they are not spreading into native habitat. If it is determined that the non-native species are dispersing throughout the native habitat, additional removal actions will be required.

2. Control exotic annual weeds in disturbed areas to minimize spread into adjacent habitat areas.
3. When implementing invasive weed control and brush management work, maintenance crews should avoid impacting special-status plant species.
4. Removal of the Eucalyptus trees on site is not recommended based on their potential to provide nesting habitat to raptor species. They also appear to pose little threat to invade habitat, as very few saplings are present. Monarch butterflies (*Danaus plexippus*) may also be using these Eucalyptus trees as roosts during migration (10–20 butterflies observed during the field survey) and therefore removal of the trees is not recommended in order to avoid disrupting the butterfly's migration pattern.
5. Repair and stabilize eroded gullies in the southeast corner of the site. Line the eroded slope with a biodegradable coconut fiber blanket. Install biodegradable gravel bags in the eroded gullies and install check dams spaced every 10' along any noticeable flow lines. Place rock on the soil surface below the storm drain outlet to stabilize the land surface and minimize further erosion.
6. While a recommendation is not included to repair rill erosion, these areas should be monitored regularly to ensure they do not worsen and contribute to habitat degradation. Particular attention should be given to the exposed east-facing slopes and along the access road cut.
7. Install signage along the trail and accessible perimeter areas to encourage public users of the open space to remain on the trail and out of native habitat in order to help prevent habitat disturbance.
8. Coordinate fence replacement between residences and the open space on the western edge.
9. Repair fence break in the southeast corner of the open space

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10. City staff will notify the homeowners adjacent to the open space area regarding encroachment into the open space at the residence located approximately 350 feet north of the southern boundary (Figure 3A) and will work with the owner to remove the encroachment. Dudek recommends providing a map of the conservation area to the adjacent homeowners.
11. Remove trash and landscape debris piles from open space and dispose of off site.
12. Coordinate brush management adjacent to the residential development in the west area of the site and along the southern site boundary near the commercial boundary (within 100 feet). The fire abatement area shall be 100' from the furthest projection of structures to the satisfaction of the Fire Department.

4.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 5. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within Cottonwood Creek Park (Unimproved) will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table. Costs are based on assumptions of the acreage of the invasive species within the site, the species requiring control, and the type of control that is needed.

Table 5
Cost Estimate For Stewardship Maintenance at Cottonwood Creek Park (Unimproved)

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Initial Open space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor	Throughout open space as shown on map	\$25,000	One time removal of mapped invasive perennial plant species. Eucalyptus trees will not be removed.
Control exotic annual weeds in disturbed areas	Landscape contractor	Throughout disturbed areas of open space , particularly along trail and open areas of slope	\$2,500	One time control effort in the spring to target annual invasive weeds. Assumes a combination of mechanical and herbicide control.

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**Table 5
Cost Estimate For Stewardship Maintenance at Cottonwood Creek Park (Unimproved)**

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Erosion and Hydrological Issues</i>				
Repair and stabilize eroded gullies	Landscape contractor	southeast corner of open space	\$8,000	Does not include heavy equipment work to repair gullies. Includes installing sediment and erosion control materials (erosion control blankets, gravel bags and rock) to help stabilize the eroded areas.
<i>Access Control</i>				
Repair fence break	Landscape contractor	Southeast corner of the open space	\$500	Assumes that broken chain link section can be repaired without replacement of poles.
Install signage	City	Along trail and accessible perimeter areas	\$1,000	Total of 5 signs including installation
Coordinate fence replacement between residences and the open space on the western edge	City	All properties adjacent to the open space	N/A	Assumes City will handle coordination with homeowners.
<i>Property Trash and Encampments</i>				
Remove trash and debris piles from open space	Landscape contractor	Throughout open space , including some noted accumulations on map	\$1,500	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
Notify adjacent homeowners of encroachment into the open space and require removal	City	Residence located approximately 350 feet north of the southern boundary	N/A	Assumes City will handle notifications and coordination with homeowners.
<i>Fire Abatement</i>				
Conduct brush management for fire abatement on western edge of open space	Landscape contractor	Approximately 100 feet from the edge of structures, which includes an approximately 50-foot wide swath along most of the western open space boundary	\$3,000	One time weed removal within brush management zones using weed whips. The fire abatement area shall be 100' from the furthest projection of structures to the satisfaction of the Fire Department. Coordination with adjacent property owners may be warranted to maintain 100'.

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Table 5
Cost Estimate For Stewardship Maintenance at Cottonwood Creek Park (Unimproved)

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Ongoing Open Space Management Actions (Annual Cost)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$3,000	Twice per year weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$500	Assumes minor repairs to fencing breaks and signage. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$1,000	Assumes two visits per year. Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Conduct brush management for fire abatement on western edge of open space	Landscape contractor	Includes an approximately 50-foot wide swath along most of the western open space boundary	\$2,000	Annual removal of grasses and herbaceous weeds within fuel modification zones using weed whips. Fire abatement will be conducted within 100' from the furthest projection of structures to the satisfaction of the Fire Department.
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$2,000	Assumes two monitoring visits per year to provide additional recommendations for maintenance actions

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Photo 1: Severe erosion in southeast corner of open space boundary; photo taken looking north.

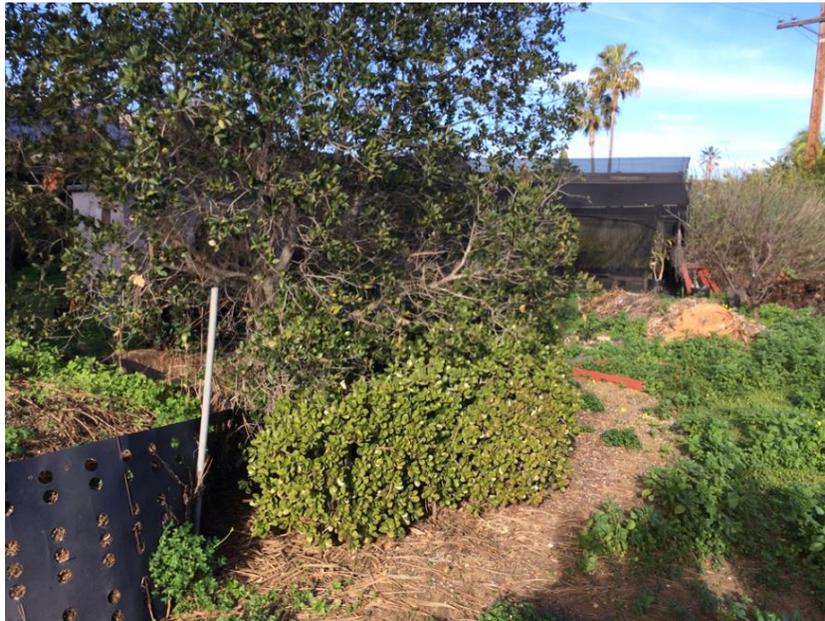


Photo 2: Property boundary encroachment by resident onto open space. Photo taken facing north on western boundary.

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5 SAXONY ROAD

5.1 Site Description

The 7.6 acre Saxony Road open space (site) is located approximately 600 feet south of the Saxony Road and La Costa Avenue intersection, on the west side of Saxony Road, and just east of an established residential development. The Saxony Road open space is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 34, Township 12 South, Range 4 West, latitude 33° 4'52.03"N and longitude 117°17'11.35"W. The site has an average elevation of 93.4 AMSL.

An ephemeral stream carrying runoff north to Batiquitos Lagoon from an upstream basin flows through the center of the site and supports intermittent southern willow scrub wetland habitat within the channel located in the site (Figure 3B). The area on the east side is dominated by disturbed coastal sage scrub and contains several invasive species, including tree tobacco and patches of iceplant (Figure 3B). The open space located on the west side of the stream (Figure 3B) is characterized by southern mixed chaparral and disturbed coastal sage scrub. Two federally listed threatened and California Species of Special Concern California gnatcatchers (*Polioptila californica californica*) were detected off site, approximately 20 feet north of the open space boundary. The California gnatcatcher likely utilizes the CSS habitat found throughout the site (Figure 3B).

5.2 Results of Site Assessment

Results of the Saxony Road field assessment (Figure 3B), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated cost are itemized in order of highest priority to lower priority.

5.2.1 Invasive Plants

Invasive plant species on-site were primarily characterized by non-native tree species along the eastern edge of the site adjacent to Saxony Road as well as intermittent patches of iceplant within the section east of the streambed and west of Saxony Road, among other species (Figure 3B; Table 6).

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**Table 6
Invasive Plant Species Observed on Saxony Road Open Space Area**

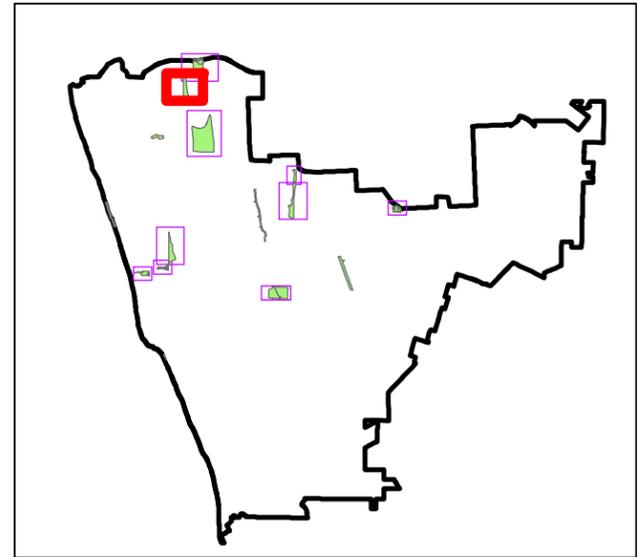
Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Sydney golden wattle ^{1,2}	* <i>Acacia longifolia</i> ^{1,2}	None	Common	Large tree near center of site adjacent to Saxony Road (1 tree 12"-24" DBH)	High
Iceplant ^{1,2}	* <i>Carpobrotus edulis</i> ^{1,2}	High	Common	Large patch located along Saxony Road (3-5% total cover)	High
Pampas grass ^{1,2}	* <i>Cortaderia selloana</i> ^{1,2}	High	Common	Located in near streambed in Baccharis-dominated coastal sage scrub	High
Fennel ²	<i>Foeniculum vulgare</i> ²	High	Common	Scattered throughout the disturbed area and along Saxony Road (<5% total cover)	High
Castor bean ^{1,2}	* <i>Ricinis communis</i> ^{1,2}	Limited	Common	Located near southern section of site bear dr and along Saxony Road.	High
Crown daisy ²	<i>Glebionis coronaria</i> ² (= <i>Chrysanthemum coronarium</i>)	Moderate	Common	Scattered throughout the disturbed area and along Saxony Road (<5% total cover)	Moderate
Tree tobacco ²	<i>Nicotiana glauca</i> ²	Moderate	Occasional	Located along Saxony Road (4 trees >12" DBH)	Moderate
Peruvian peppertree ²	<i>Schinus molle</i> ²	Limited	Occasional	One tree (12"- 24" DBH) along Saxony Road.	Low
Spiny sowthistle	<i>Sonchus asper</i>	None	Common	Located along Saxony Road, within disturbed coastal sage scrub, and near off-site basin in southern end of site (<3% of total cover)	Low
Spanish dagger	<i>Yucca gloriosa</i>	None	Occasional	One individual along Saxony Road.	Low
Eucalyptus ²	<i>Eucalyptus</i> spp. ²	None	Occasional	1 tree (<12" DBH) adjacent to Saxony Road.	None

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

** Refer to section 2.2.1.1 for methods used to determine priority for control categorization

Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis included annual stinging nettle, cheeseweed (*Malva parviflora*), filaree, milk thistle, black mustard, spiny sowthistle, and Maltese star thistle. These species were not mapped as individual occurrences; however, their presence was noted as components of the disturbed habitats mapped on site.



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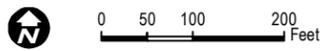
Invasive Plant Species

- CP, California pepper
- EU, Red gum
- GW, Golden wattle
- IP, Ice plant
- TT, Tree tobacco

- City Open Space Area
- Fire Abatement conducted by Public Works Dept. in consultation with Encinitas Fire Dept.

Vegetation Type/Land Cover:

- BS, Baccharis Scrub
- CSS, Coastal Sage Scrub
- DH, Disturbed Habitat
- SMX, Southern Mixed Chaparral
- SWS, Southern Willow Scrub
- dCSS, disturbed Coastal Sage Scrub



Imagery ©2015, DigitalGlobe, U.S. Geological Survey

**FIGURE 3B
SAXONY ROAD**

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5.2.2 Erosion and Hydrological Issues

Hydrological issues on site consist of:

- Maintaining the shape and stability of the streambed, which is fed from the off-site basin to the south of the open space.

5.2.3 Access Control

Access control (fencing and signage) issues for the open space include:

- Lack of fencing or signage, especially along Saxony Road, to inform the public that public use of the open space is prohibited. The sensitive habitat is occupied by California gnatcatcher and the site is connected to other sensitive habitat. Fencing and signage would inform the public that the site contains sensitive resources.

5.2.4 Property Trash and Encampments

Trash on the Saxony Road site was characterized by:

- Food related items, a shopping cart, and other random small items on the eastern edge adjacent to Saxony Road.
- No machinery would be required to remove the trash items on site.

There were no encampments observed on the site (Photo 3).

5.2.5 Fire Abatement

Fire management issues on site include:

Significant percentages of exotic annuals in disturbed communities, which could create a large fuel load for fires over time. However, the Public Works Department maintains a 10' strip along Saxony Road every year.

5.3 Stewardship Recommendations

1. Control targeted invasive plant species noted on map. Cut and remove all large shrub and tree species including California pepper, tree tobacco, Indian fig, and golden wattle. Cut the remaining stumps as close to grade as possible and then treat cut stumps with the appropriate herbicide to prevent regrowth. Dispose of all cut material off site. For herbaceous species such as ice-plant and other exotic annuals removal is not

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recommended as they are stabilizing the soil. These species should be treated with the appropriate herbicide and allowed to desiccate on-site. Other non-native species listed that are not the prioritized target species should be monitored closely to ensure they are not spreading into native habitat. If it is determined that the non-native species are dispersing throughout the native habitat, additional removal actions will be required, refer to section 2.1.1 for methods of exotic species removal. In the spring, weed whip or spray exotic annuals in disturbed areas to reduce the potential fuel load for fire. Refer to section 2.2.1 for methods of exotic plant management.

2. Steep banks of the streambed should be monitored periodically to determine if erosion is occurring.
3. Install t-posts and 3-wire strand barbless wire fencing (Approximately 1,500 linear feet) and signage along eastern and northern edges of the open space, which borders Saxony Road. Fencing and signage will discourage public use. T-posts and 3-wire strand barbless wire fencing is recommended based on the criteria outlined in section 2.2.5 of this report.
4. Remove all trash and debris items from open space

5.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 7 below. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

Table 7
Cost Estimate For Stewardship Maintenance at Saxony Road

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor	Throughout open space as shown on map	\$6,000	One time removal of mapped invasive perennial plant species including weed-whipping as needed. Eucalyptus trees will not be removed.
<i>Access Control</i>				
Install fencing	Landscape contractor	Northwest corner of the open space	\$11,250	Assumes 1,500 lf with t-posts every 10 feet and 3 strands of barbless wire

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**Table 7
Cost Estimate For Stewardship Maintenance at Saxony Road**

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
Install signage	City	Along Saxony Rd. and accessible perimeter areas	\$1,000	Total of 5 signs including installation
<i>Property Trash and Encampments</i>				
Remove trash and debris piles from open space	Landscape contractor	Throughout open space , including some noted accumulations on map	\$750	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Ongoing Open Space Management Actions (Annual Cost)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$2,000	Twice per year weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$300	Assumes minor repairs to fencing breaks and signage on an annual basis. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$500	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$1,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions

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Photo 3: Looking north along Saxony Road from about halfway up the open space

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6 INDIAN HEAD CANYON

6.1 Site Description

The approximately 52.3 acre Indian Head open space area is located between Quail Hollow Drive to the north, a nursery operation to the east, Saxony Road to the west, and a residential development to the south in the City of Encinitas, California. The open space is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 3, Township 13 South, Range 4 West; latitude 33° 4'20.69"N and longitude 117°16'56.79"W. The site is characterized by rolling hills and basins with elevations ranging from 313 feet AMSL to 132 AMSL.

The open space is undeveloped and the vegetation communities supported on the site are primarily southern-mixed chaparral, coastal sage scrub, Baccharis-dominated coastal sage scrub, and coastal sage-chaparral scrub. The other dominant land cover on site is disturbed habitat, which has been established through extensive public use of the site. Special status species known to be present include California gnatcatcher.

6.2 Results of Site Assessment

Results of the Indian Head Canyon field assessment (Figure 3C), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated cost are itemized in order of highest priority to lower priority.

6.2.1 Invasive Plants

A number of invasive plant species are distributed throughout the open space area. A large Eucalyptus woodland area exists along the drainage on the western side of the site, which contains more than one hundred trees, many of which are saplings (Figure 3C; Photo 4). Other Eucalyptus trees are scattered across the open space, but their locations do not pose a dispersal threat. There were several iceplant patches (*Carpobrotus edulis*) mapped along the northern edge of the open space where Quail Hollow Road curves (Figure 3C), which pose a threat of further invasion from the species. Other invasive species found on site included annual exotic species such as wild mustard (*Hirshfeldia incana*) (Table 8).

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**Table 8
Invasive Plant Species Observed on the Indian Head Canyon Open space Site**

Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Coastal wattle ^{1,2}	* <i>Acacia cyclops</i> ^{1,2}	None	Occasional	Scattered individuals across open space (primarily in center of site) with 5-10 total trees all <12" DBH	High
Fennel ²	<i>Foeniculum vulgare</i> ²	High	Occasional	Exists in limited sections of disturbed habitat (<1% total cover)	High
Bridal creeper ²	<i>Asparagus asparagoides</i> ²	Moderate	Occasional	Scattered throughout Southern mixed chaparral habitat, but not dominant in any location	Moderate
Australian saltbush ²	<i>Atriplex semibaccata</i> ²	Moderate	Common	5-10 individuals scattered within Southern mixed chaparral and Baccharis-dominated coastal sage scrub habitat in northern portion of open space .	Moderate
Indian fig ²	<i>Opuntia ficus-indica</i> ²	None	Occasional	One large patch in western section of open space .	Low
Red apple ice-plant ²	<i>Aptinia cordifolia</i> ²	None	Common	5-10 individuals isolated in small section within northern portion of open space . Ideal to eradicate now before cover spreads.	None

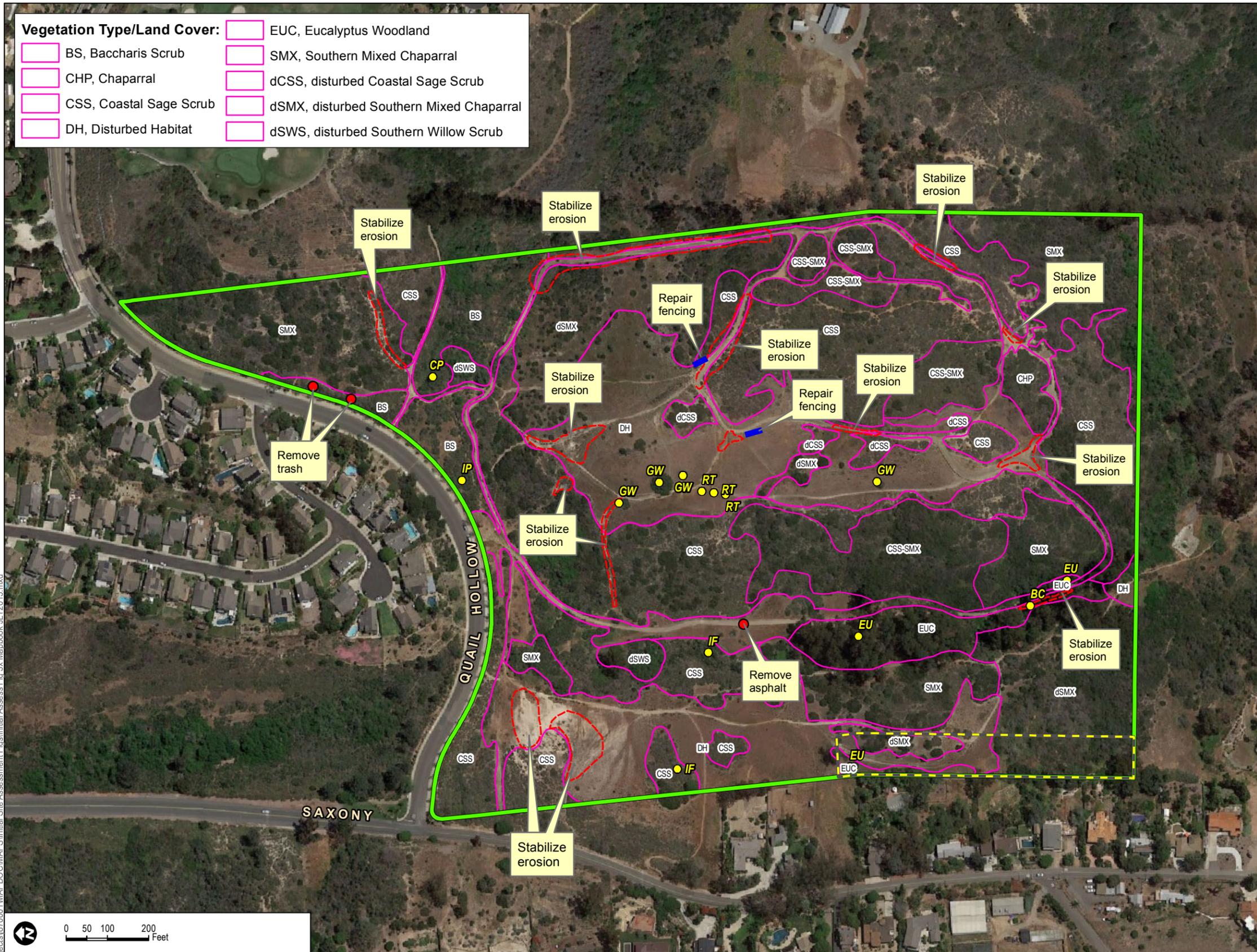
¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

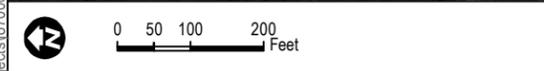
** Refer to section 2.2.1.1 for methods used in priority categorization

Additional species observed on site that were not mapped, but have a Cal-IPC rating include: curly leaved dock (*Rumex crispus*), horehound (*Marrubium vulgare*), milk thistle (*Silybum marianum*), and Russian thistle (*Salsola tragus*). Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis included brome grasses, wild oat, filaree, mustard species, Bermuda buttercup (*Oxalis pes-caprae*), Maltese star thistle. These species were not mapped as individual occurrences; however, their presence was noted as components of the disturbed habitats mapped on site.

An area along the western side of the open space is mowed and maintained by the Parks and Recreation Department and will continue to be maintained.



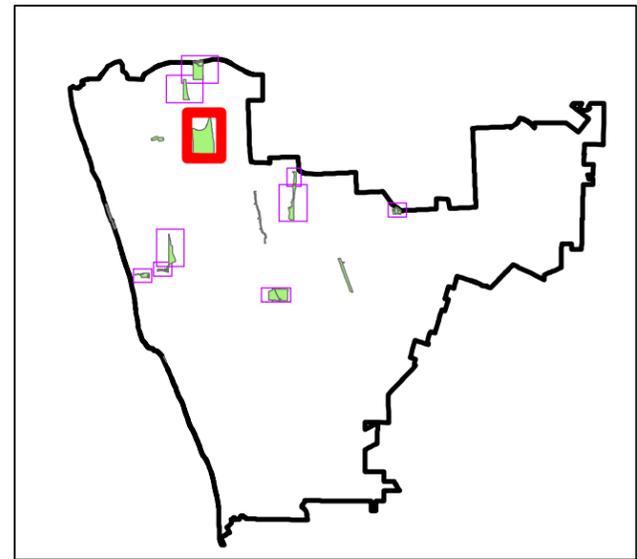
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Encinitas Habitat Stewardship Program

- Invasive Plant Species**
- BC, Bridal creeper
 - CP, California pepper
 - EU, Red gum
 - GW, Golden wattle
 - IF, Indian fig
 - IP, Ice plant
 - RT, Russian thistle
- City Open Space Area
 - Erosional Feature
 - Open Space Fence Repair
 - Fire Abatement-100 ft from furthest projection of structure to the satisfaction of Fire Dept.

**FIGURE 3C
INDIAN HEAD CANYON**

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6.2.2 Erosion and Hydrological Issues

Erosion issues on site consist primarily of:

- Minor rilling along the trails and on some of the un-vegetated hillsides (Photo 6)
- There are some severe sections where rilling or erosional features are deep or widespread and would require heavy equipment to grade and repair (Figure 3C).

6.2.3 Access Control

The Parks and Recreation Department will continue to maintain the designated trails within Indian Head Canyon. Issues relating to regulating access to the site include:

- Fencing and signage missing along trails through coastal sage scrub and other sensitive vegetation communities that occur in the site.
- Fencing may be required in the future if pedestrian uses create new volunteer trails.
- Some areas of fencing need repair. This would be repair of the existing fencing and is the responsibility of the Parks and Recreation Department.

6.2.4 Property Trash and Encampments

Trash on the Indian Head Canyon open space was characterized by:

- Some food related trash
- Pet waste
- A wood chip pile, an asphalt and dirt pile (Photo 5)
- Patch of asphalt along the trail near the Eucalyptus forest (Figure 3C)
- The Parks and Recreation Department will continue to be responsible for removing trash within proximity of the existing designated trails.

There were no encampments observed on site.

6.2.5 Fire Abatement

- Significant percentages of exotic annuals in disturbed communities, which could create a large fuel load for fires over time. Fire abatement measures shall be conducted where structures are within 100 feet of the open space. There is an area in the southwestern

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corner of the open space where that occurs. The fire abatement area shall be 100' from the furthest projection of structures to the satisfaction of the Fire Department.

6.3 Stewardship Recommendations

1. Control Eucalyptus within Eucalyptus woodland as shown on the map. Due to the fact that the Eucalyptus woodland is located along an ephemeral streambed with the potential to distribute Eucalyptus seedlings downstream, high removal priority should be given to the smaller and younger trees, however no removal is recommended within the drainage in order to avoid the requirement of obtaining wetland permits. The larger trees are recommended to be removed with lower priority and as an ongoing task (see section 6.2.1).
2. Control targeted invasive perennial plant species as shown on the open space map. Prioritization of invasive species control should be based on the City's target species list and Cal-IPC ratings (Table 8).
3. Control exotic annual weeds in disturbed areas to minimize spread into adjacent habitat areas.
4. Install additional fencing and signage (assume five signs to be installed) throughout the site in order to discourage users from disturbing native vegetation stands and areas impacted by erosion in order to prevent further invasive species recruitment in these sections and to allow these areas to be restored. For the purpose of this cost estimate, it is assumed that 1,000 linear feet of new fencing is required at various locations within the open space. The location will be determined based on future studies of use of the site by hikers. T-posts and 3-wire strand barbless wire fencing is recommended based on the criteria outlined in section 2.2.5 of this report. Parks and Recreation will continue to maintain the designated trails within this site and will continue to repair and maintain the existing fencing. Parks and Recreation is not responsible for installing new fencing as part of the stewardship efforts.
5. Remove trash and landscape debris piles from open space and dispose of offsite.
6. Coordinate brush management adjacent to the residential development in the southwest area of the site. The fire abatement area shall be 100' from the furthest projection of structures to the satisfaction of the Fire Department.

6.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 9. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

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Table 9
Cost Estimate For Stewardship Maintenance at the Indian Head Canyon

Task	Responsible Party	Location in Open space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor	Throughout open space as shown on map	\$25,000	One time removal of mapped invasive perennial plant species. Eucalyptus trees will not be removed.
<i>Erosion and Hydrological Issues</i>				
Repair and stabilize eroded gullies	Landscape contractor	southeast corner of open space	\$4,000	Does not include heavy equipment work to repair gullies. Includes installing sediment and erosion control materials (erosion control blankets, gravel bags and rock) to help stabilize the eroded areas.
<i>Access Control</i>				
Fencing installation	Landscape contractor	Open space -wide	\$7,500	Assumes installation of 1,000 linear feet of fencing to protect the habitat in the open space. Locations will be determined in coordination with the Parks and Recreation Department and will depend on the use of the site by hikers.
Install signage	City	Along trail and accessible perimeter areas	\$1,000	Total of 5 signs including installation
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$1,000	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Conduct brush management for fire abatement on western edge of open space	Landscape contractor	Approximately 100 feet from the edge of structures, which includes an approximately 50-foot wide swath along most of the western open space boundary	\$3,000	Fire abatement will be conducted within 100' from the furthest projection of structures to the satisfaction of the Fire Department. One time weed removal within brush management zones using weed whips.

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Table 9
Cost Estimate For Stewardship Maintenance at the Indian Head Canyon

Task	Responsible Party	Location in Open space	Cost Estimate	Assumptions
<i>Ongoing Open Space Management Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$3,000	Twice per year weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Erosion and Hydrological Issues</i>				
Erosion	Landscape contractor	Open space -wide	\$2,000	Additional BMP measures should be installed prior to the rainy season on an annual basis in areas susceptible to erosion problems.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$500	Assumes minor repairs to fencing breaks and signage. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$1,000	Assumes twice per year visits. Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Conduct brush management for fire abatement southern portion of open space	Landscape contractor	Southwest portion	\$2,000	Annual removal of grasses and herbaceous weeds within fuel modification zones using weed whips.
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$2,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions

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Photo 4: Eucalyptus woodland in west side of site



Photo 5: Dirt and asphalt mound near trail on western portion of site

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Photo 6: Erosional rilling in trail

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7 OAK CREST PARK HABITAT AREA

7.1 Site Description

The Oak Crest Park Habitat Area is approximately 12.70 acres and is located west of Witham Road, east of the Encinitas Senior Center, south of Encinitas Boulevard and north of Oak Crest Middle School in the City of Encinitas, California. The open space is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 14, Township 13 South, Range 4 West, latitude 33°2'41.85"N and longitude 117°15'55.94"W.

The open space is primarily characterized by northward sloping terrain with an approximate elevation of 341 AMSL. The open space contains undeveloped Southern maritime chaparral habitat, which surrounds a maintained park and playground area in the center of the site. There are concrete sidewalks as well as dirt trails that run from the manicured park through the native habitat as well as signs of off trail use in the section of southern maritime chaparral north of the sidewalk adjacent to Encinitas Boulevard, where state-endangered Encinitas baccharis (*Baccharis vanessae*) is documented to be present (Figure 3D). The state- and federal-endangered Orcutt's spineflower (*Chorizanthe orcuttiana*) has also been documented to be onsite, however, Orcutt's spineflower has not been observed in some years. The species is presumed to be potentially present and thus the California Natural Diversity Database location is shown on Figure 3D. There are also special status Torrey pine (*Pinus torreyana* ssp. *torreyana*) trees found on site around the edges of the maintained park and within some sections of the southern maritime chaparral. The park receives moderate to high public use primarily from local residents and from the adjacent Oak Crest Middle School. The section of habitat between the Encinitas Boulevard access road and the residential development east of the site has been disturbed from off trail public use and erosion (Figure 3D).

7.2 Results of Site Assessment

Results of the Oak Crest Park Habitat Area assessment (Figure 3D), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated costs are itemized in order of highest priority to lower priority.

7.2.1 Invasive Plants

Invasive plant species on-site are limited to the disturbed section along the eastern open space boundary with limited species scattered throughout the southern maritime chaparral habitat (Figure 3D; Table 10) as well as a small Eucalyptus woodland in the northwest corner

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of the open space within an ornamental area (Photo 7). Invasive species were not a major issue on this site.

**Table 10
Invasive Plant Species Observed on the Oak Crest Park Habitat Area**

Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Iceplant ^{1,2}	* <i>Carpobrotus edulis</i> ^{1,2}	High	Common	Small patches in southern section near Oak Crest Middle School (<1% total cover)	High
Fountain grass ²	<i>Pennisetum setaceum</i> ²	Moderate	Occasional	3-4 individual bunches in disturbed areas	Moderate
Eucalyptus ²	<i>Eucalyptus</i> spp. ²	None	Occasional	Scattered around edges of open space , primarily along northwest corner adjacent to Encinitas Boulevard (3-4 trees <12" DBH and 6-7 trees 12"-24" DBH)	None

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

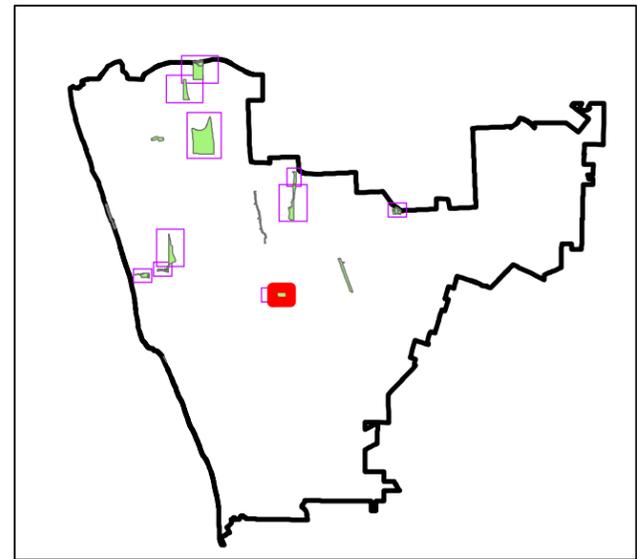
** Refer to section 2.2.1.1 for methods used in priority categorization

Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis were annual stinging nettle and spiny sowthistle. These species were not mapped as individual occurrences; however, their presence was noted as components of the disturbed habitats mapped on site.

7.2.2 Erosion and Hydrological Issues

Erosion issues on site consist primarily of:

- Minor rilling on the small sections of dirt trails on the western side of the open space within the Southern mixed chaparral habitat
- Some major rilling within the disturbed southern maritime chaparral habitat along the eastern open space boundary.
- Some erosion areas have currently been repaired.
- No other hydrological or erosional issues were observed.



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Special-status Species

- ▲ Orcutt's spineflower
- ▲ long-spined spineflower
- ▲ Encinitas baccharis

Invasive Plant Species

- CP, California pepper
- EU, Red gum
- MY, Myoporum

Vegetation Type/Land Cover:

- ▭ DEV, Developed
- ▭ DH, Disturbed Habitat
- ▭ EUC, Eucalyptus Woodland
- ▭ SMC, Southern Maritime Chaparral
- ▭ dSMC, disturbed Southern Maritime Chaparral

▭ City Open Space Area
▭ Erosional Feature

**FIGURE 3D
OAK CREST PARK HABITAT AREA**

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7.2.3 Access Control

Issues relating to access to the site (fencing and signage) include:

- Fencing and signage gaps, especially near the sections of trail that are adjacent to the Encinitas baccharis locations on the north end of the site. Additional fencing would also help to reduce off-trail use of the site.
- The Parks and Recreation Department maintains the designated trails, trash in proximity of the trails, and repairs of fencing along the designated trails.

7.2.4 Property Trash and Encampments

Trash on the Oak Crest Park open space was characterized by:

- Food related trash and pet waste.
- No other major trash issues were observed on site.
- There were no homeless encampments detected but the Parks and Recreation Department report that encampments are routinely removed from the open space.

7.2.5 Fire Abatement

There are no significant fire management issues on site. All structures and vegetation have appropriate buffer zones between them. However, where needed fire abatement areas shall be maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100 feet from the furthest projection of structures and to the satisfaction of the Fire Department.

7.3 Stewardship Recommendations

1. Install fencing and post signs asking public users to not enter the areas where Encinitas baccharis is found on site. Four foot high vinyl clad fencing is recommended for protection of the Encinitas baccharis found in the site. This type of fencing will prohibit pedestrian and potentially their pets from directly impacting the special status vegetation, while still allowing for moderate visibility of the area.
2. Encampments have been reported to be an issue and thus patrols should be conducted and removal and notification should be done with the Sheriff's department.
3. No invasive plants other than Eucalyptus were identified within the open space so no control is needed at this time. The open space should continue to be monitored for the presence of invasive species and subsequently controlled if identified.

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4. The erosion noted in the Southern Maritime Chaparral area is a natural component of this habitat type and soil texture so no repair is recommended at this time. The erosion rills along the trails on the west side of the open space should be raked out to level the grade as much as possible, then stabilized with gravel bags, and monitored for future issues. Erosion issues in other areas that have already been repaired should be monitored for potential future repair actions.
5. Additional signage should be installed along the City established trail to encourage the public to stay on the trail as to avoid impacts to sensitive native habitat (Photo 8).
6. The fencing surrounding the site is in good condition and does not require repairs at this time. Off-trail activity should be monitored and additional fencing may be needed along the trails in the future if impacts to habitat are observed.
7. Remove trash and debris present within the open space. No large items were identified so no heavy equipment usage will be necessary. All small items can be removed by hand crews.

7.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 11 below. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

Table 11
Cost Estimate For Stewardship Maintenance at Oak Crest Park Open space

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Install fencing along area adjacent to where Encinitas Baccharis is located to protect from invasive species and intrusion by people	City	Along areas containing Encinitas Baccharis as shown on site map	\$6,000	Chain link fencing to provide protection
<i>Erosion and Hydrological Issues</i>				
Stabilize erosion rills	Landscape contractor	Trails on western side of open space	\$500	Assumes approximately 20 gravel bags will be installed in the rills

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Table 11
Cost Estimate For Stewardship Maintenance at Oak Crest Park Open space

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Access Control</i>				
Install signage	City	Along trail and accessible perimeter areas	\$1,000	Total of 5 signs including installation
<i>Property Trash and Encampments</i>				
Remove trash and debris	Landscape contractor	Throughout the open space	\$500	Assumes that all noted trash and debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Ongoing Open Space Management Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$1,000	Annual weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Erosion and Hydrological Issues</i>				
Erosion	Landscape contractor	Open space -wide	\$500	Additional BMP measures should be installed prior to the rainy season on an annual basis in areas susceptible to erosion problems.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$500	Assumes minor repairs to fencing breaks and signage. Does not include replacement or additions to fencing. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$6,000	Assumes monthly visits and removal of encampments. Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.

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Table 11
Cost Estimate For Stewardship Maintenance at Oak Crest Park Open space

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$1,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions



Photo 7: Looking east from the western border along concrete trail near majority of Eucalyptus trees on site.

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Photo 8: Photo taken from the eastern side of the Encinitas Senior Center looking east towards Oak Crest Park

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8 OPEN SPACE #1

8.1 Site Description

The 9.9 acre Open Space #1 open space is located from the intersection of El Camino Real and Garden View Road north on the west side of El Camino Real to Town Center Drive in the City of Encinitas, California just east of the Leo Mullen Sports Park. The open space is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 11, Township 13 South, Range 4 West, latitude 33° 3'41.80"N and longitude 117°15'47.58"W.

The open space is primarily characterized by relatively level terrain with an approximate elevation of 118.7 feet AMSL. A perennial stream carrying stormwater runoff from the culvert under Garden View Road flows through the center of the open space and is the source of the moderate to dense southern willow scrub habitat found throughout the channel (Figure 3E). The stream flows north through an approximately 6-foot culvert under Town Center Drive to the Open Space #2 open space. A number of non-native trees and palms (discussed below) were observed along the channel within the southern willow scrub with a number of Sycamore trees (*Platanus* spp.) scattered throughout (see Section 8.2.1). There is a small section of Baccharis-dominated coastal sage scrub at the southwest end of the open space adjacent to the off-site residential area on an east-facing slope that may have been previously cleared for landscape vegetation, but is now dominated by coyote brush (*Baccharis pilularis*).

8.2 Results of Site Assessment

Results of the Open Space #1 assessment (Figure 3E), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated costs are itemized in order of highest priority to lower priority.

8.2.1 Invasive Plants

Invasive plant species on-site are characterized by fan palms and pepper tree species, which are present throughout the southern willow scrub habitat (Figure 3E; Table 12). There were no large patches, but rather individuals scattered within the open space.

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

Table 12
Invasive Plant Species Observed on the Open Space #1 Open Space Site

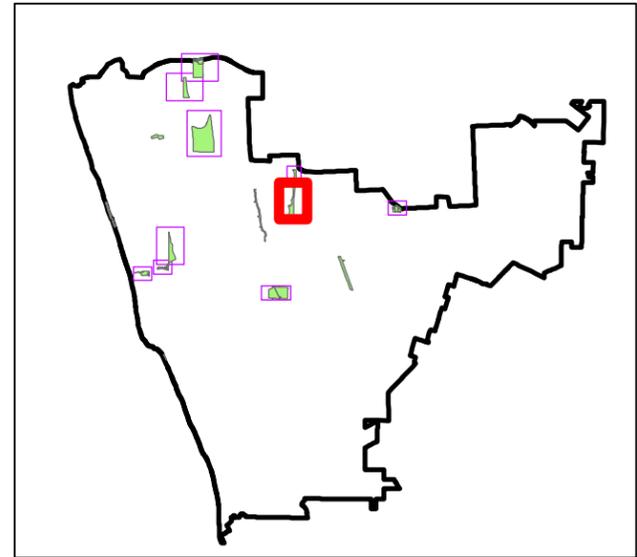
Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Coastal wattle ^{1,2}	* <i>Acacia cyclops</i> ^{1,2}	None	Occasional	5-10 trees scattered throughout open space (<12" DBH)	High
Pampas grass ^{1,2}	* <i>Cortaderia selloana</i> ^{1,2}	High	Common	Located in southwest section of site adjacent to streambed (approximately 4-7 bunches)	High
Mexican fan palm ²	<i>Washingtonia robusta</i> ²	Moderate	Occasional	One tree at southern end of open space near Garden View Road culvert (12"-24" DBH)	Moderate
Red apple ice-plant ²	<i>Aptinia cordifolia</i> ²	None	Common	Patches located in southwestern section of open space .	Low
Stork's bill	<i>Erodium cicutarium</i>	Limited	Occasional	Located along edges of Southern willow scrub habitat (<1% total cover)	Low
Canary Island date palm ²	<i>Phoenix canariensis</i> ²	Limited	Occasional	Scattered throughout open space (5-7 trees 12"-24" DBH)	Low
Brazilian peppertree ²	<i>Schinus terebinthifolius</i> ²	Limited	Common	Scattered throughout open space (4-6 trees <12" DBH).	Low
Eucalyptus ²	<i>Eucalyptus</i> spp. ²	None	Common	Scattered throughout the Southern willow scrub habitat around the stream bed (2-5 trees <12" DBH)	None

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

** Refer to section 2.2.1.1 for methods used in priority categorization

Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis were brome grasses, wild oat, filaree, spiny sowthistle, and Bermuda buttercup. These species were not mapped as individual occurrences; however, their presence was noted as components of either disturbed habitats mapped on site.



Encinitas Habitat Stewardship Program

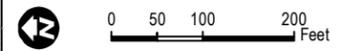
Invasive Plant Species

- BP, Brazilian pepper
- CP, California pepper
- DP, Canary Island Date Palm
- EU, Red gum
- FP, Mexican fan palm
- GC, Giant cane
- GW, Golden wattle
- PG, Pampas grass

- City Open Space Area
- Open Space Fence Repair
- Fire Abatement-100 ft from furthest projection of structure to the satisfaction of Fire Dept.

Vegetation Type/Land Cover:

- BS, Baccharis Scrub
- DEV, Developed
- DH, Disturbed Habitat
- FWM, Freshwater Marsh
- OW, Open Water
- PAM, Pampas Grass
- SWS, Southern Willow Scrub
- dBS, disturbed Baccharis Scrub
- dSWS, disturbed Southern Willow Scrub



**FIGURE 3E
OPEN SPACE 1**

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8.2.2 Erosion and Hydrological Issues

There were no erosion or hydrological issues identified on site.

8.2.3 Access Control

Access control (fencing and signage) issues include:

- A tear in the chain-linked fencing, which is being used for access by individuals utilizing the area, in the northeast corner of the site. Sufficient signage to discourage public use of the site is not in place.
- Fencing along the Leo Mullen park area will be maintained by the Parks and Recreation Department.

8.2.4 Property Trash and Encampments

Trash on the Open Space #1 open space was characterized by:

- Extensive food related trash, clothing, several shopping carts, and other miscellaneous items.
- There was a homeless presence within and adjacent to the open space in the tunnel under Town Center Drive which likely contributes to the majority of these trash items.
- There were no trash items on site that would require heavy machinery to remove.

There were no encampments observed on the Open Space #1 open space.

- However, it did appear that individuals were using the site, via an opening in the chain-link fence in the northeast corner of the site at the El Camino Real and Town Center Drive intersection as well as a second opening located along the length of fence adjacent to the baseball field on the western boundary of the site (Photo 9). These openings were being used to access a possible encampment area within the tunnel underneath Town Center Drive, which connects Open Space #1 to Open Space #2. It is recommended that the City coordinate with the Sheriff's Department for encampment issues.

8.2.5 Fire Abatement

The vegetation was dense, yet for the most part is not adjacent to any homes or structures. However in the southwest corner of the southerly half of open space #1 a designated fire abatement area exists as referenced on Figure 3E. The fire abatement shall be conducted to the satisfaction of the Fire Department within 100 feet from the furthest projection of structures.

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

8.3 Stewardship Recommendations

1. Control targeted invasive plant species noted on map. Cut and remove all large shrub and tree species which includes pampas grass, California pepper, Brazilian pepper, Mexican fan palm, Canary island date palm, and golden wattle. Cut the remaining stumps as close to grade as possible and then treat cut stumps with the appropriate herbicide to prevent regrowth. Dispose of all cut material off site. Other non-native species listed that are not the prioritized target species should be monitored closely to ensure they are not spreading into native habitat. If it is determined that the non-native species are dispersing throughout the site, additional removal action will be required. If it is determined that permits from the resource agencies would be required in order to remove invasive species, the removal will not be conducted.
2. Install additional signage on fence surrounding the open space to discourage public use.
3. Repair tears in chain-link fencing
4. Remove trash and debris present within the open space. No large items were identified so no heavy equipment usage will be necessary. All small items (including shopping carts) can be removed by hand crews. It appears the grass trimmings from the baseball field are being dumped into the open space on a regular basis. The City should coordinate with the landscaping contractor responsible for this area to address this issue.
5. The baccharis scrub (BS) vegetation located along in the southwest site boundary, adjacent to the existing homes, has been historically cleared for fire abatement and should continue. The fire abatement shall be conducted to the satisfaction of the Fire Department within 100' from the furthest projection of structures.

8.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 13. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

Table 13
Cost Estimate For Stewardship Maintenance at Open Space #1

Task	Responsible Party	Location in Open space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor in consultation with a biologist	Throughout open space as shown on map	\$20,000	One time removal of mapped invasive perennial plant species. Eucalyptus trees will not be removed. Wetland permit requirements will not be triggered.
<i>Access Control</i>				
Install signage	City	Along trail and accessible perimeter areas	\$1,000	Total of 5 signs including installation
Repair fence break	Landscape contractor	Northeast corner of the open space (two locations)	\$1,500	Assumes that broken chain link section can be repaired without replacement of poles.
<i>Property Trash and Encampments</i>				
Remove trash and debris piles from open space	Landscape contractor	Throughout open space, including some noted accumulations on map	\$1,000	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Fire abatement	Landscape contractor	Area on western slope in the southwestern part of Open Space #1	\$1,000	The fire abatement area shall be maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures and conducted to the satisfaction of the Fire Department.
<i>Additional Maintenance Cost</i>				
Notify landscaping company maintaining the baseball field to not dump grass trimmings into the open space	City	West side of open space near baseball field	N/A	Assumes City will handle notifications and coordination with the field maintenance staff
<i>Ongoing Open Space Management Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$3,000	Twice per year weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

Table 13
Cost Estimate For Stewardship Maintenance at Open Space #1

Task	Responsible Party	Location in Open space	Cost Estimate	Assumptions
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space - wide	\$1,000	Assumes minor repairs to fencing breaks and signage on an annual basis. Does not include replacement. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space - wide	\$1,000	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Fire Abatement	Landscape contractor	Area on western slope in the southern part of Open Space #1	\$1,000	The fire abatement area shall be maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures and to the satisfaction of the Fire Department.
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space - wide	\$2,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions



Photo 9: Tear in fence at corner of El Camino Real and Town Center drive

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9 OPEN SPACE #2

9.1 Site Description

The 2.61 acre Open Space #2 open space is located within an urban drainage which starts at the intersection of El Camino Real and Town Center Drive and extends along the west side of El Camino Real to Leucadia Boulevard in the City of Encinitas, California just east of Buffalo Wild Wings restaurant and the Town Center parking lot. The open space is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 11, Township 13 South, Range 4 West, latitude 33° 3'57.79"N and longitude 117°15'45.84"W.

The open space is primarily characterized by relatively level terrain with an approximate elevation of 85.9 AMSL. A perennial stream carrying stormwater runoff from the culvert under Town Center Drive flows through the center of the open space and contains moderate to dense southern willow scrub habitat found throughout the channel (Figure 3F). The stream is fed from Open Space #1 and flows north through an approximately 6-foot culvert under Leucadia Boulevard. A number of non-native trees and palms were observed along the channel within the southern willow scrub (see Section 9.2.1).

9.2 Results of Site Assessment

Results of the Open Space #2 assessment (Figure 3F), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated costs are itemized in order of highest priority to lower priority.

9.2.1 Invasive Plants

Invasive plant species on-site are characterized by scattered non-native trees throughout the southern willow scrub habitat (Figure 3F; Table 14). There were no large patches, but rather individuals scattered throughout the site.

**Table 14
Invasive Plant Species Observed on the Open Space #2**

Common Name	Scientific Name	Cal-Ipc Rating	Presence On Site (Occasional, Common, Abundant)	Notes, Including Percent Cover, Approximate Area, Or Point Counts (If Applicable)	**Priority For Control
Coastal wattle ^{1,2}	Acacia cyclops ^{1,2}	None	Occasional	3-4 trees (<12" DBH) scattered through site.	High

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**Table 14
Invasive Plant Species Observed on the Open Space #2**

Common Name	Scientific Name	Cal-ipc Rating	Presence On Site (Occasional, Common, Abundant)	Notes, Including Percent Cover, Approximate Area, Or Point Counts (If Applicable)	**Priority For Control
Pampas grass ^{1,2}	<i>Cortaderia selloana</i> ^{1,2}	High	Occasional	Scattered throughout the edges of the southern willow scrub habitat (2-5 bunches)	High
Mexican fan palm ²	<i>Washingtonia robusta</i> ²	Moderate	Occasional	1 tree (12"-24" DBH)	Moderate
Weeping bottlebrush ²	<i>Callistemon viminalis</i> ²	None	Common	Found throughout southern willow scrub (4-6 trees <12" DBH).	Low
Canary Island date palm ²	<i>Phoenix canariensis</i> ²	Limited	Occasional	Primarily located in northern section of the site (3-4 trees 12"-24" DBH)	Low
Brazilian peppertree ²	<i>Schinus terebinthifolius</i> ²	Limited	Common	Scattered throughout open space (5-10 trees <12" DBH)	Low
Peruvian peppertree ²	<i>Schinus molle</i> ²	Limited	Common	Scattered throughout open space (5-7 trees <12" DBH)	Low
Eucalyptus ²	<i>Eucalyptus</i> spp. ²	None	Occasional	2-3 trees (12"-24" DBH) primarily located in the northwest corner of the site	None

¹ City's target list species

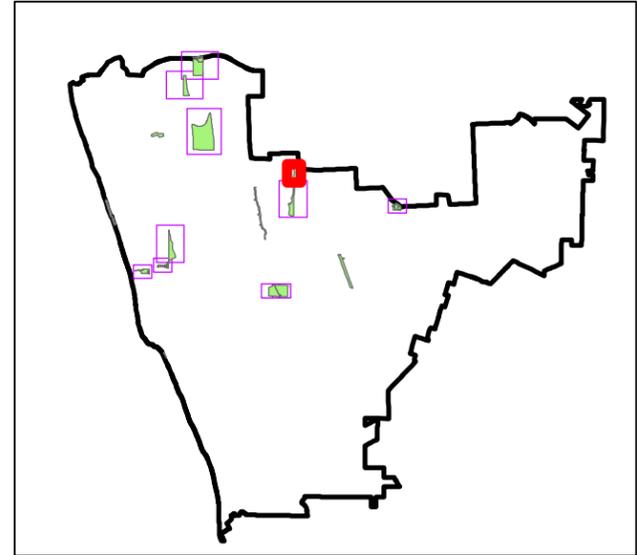
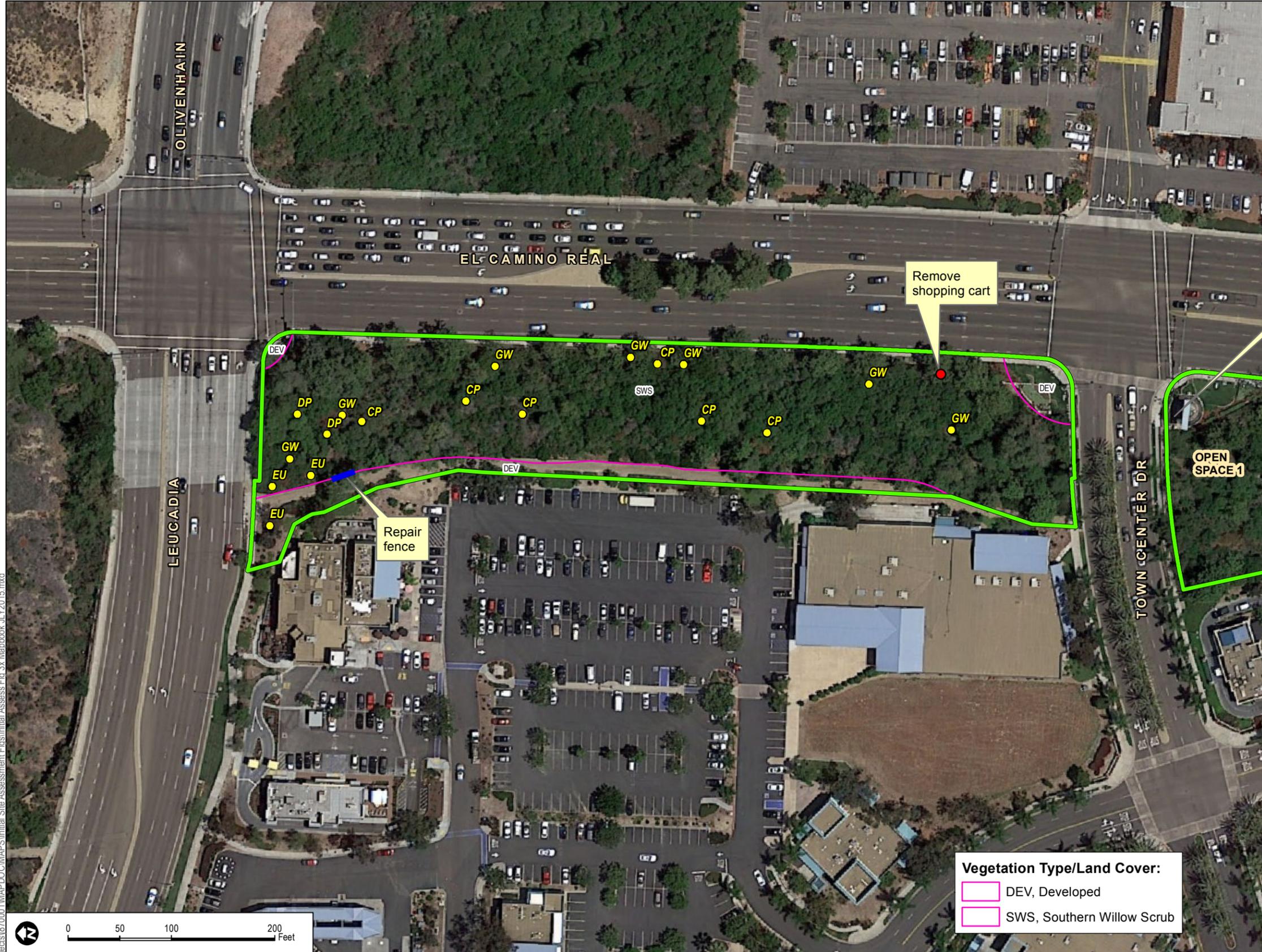
² Water Efficient Landscape Design Manual Invasive Species List

** Refer to section 2.2.1.1 for methods used in priority categorization

Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis were spiny sowthistle and creeping wood sorrel (*Oxalis corniculata*). These species were not mapped as individual occurrences; however, their presence was noted as components of disturbed habitats mapped on site.

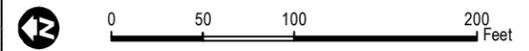
9.2.2 Erosion and Hydrological Issues

There were no erosion or hydrological issues identified on site.



- Encinitas Habitat Stewardship Program**
- Invasive Plant Species**
- CP, California pepper
 - DP, Canary Island Date Palm
 - EU, Red gum
 - GW, Golden wattle
- Vegetation Type/Land Cover:**
- ▭ City Open Space Area
 - ▬ Open Space Fence Repair
 - ▭ DEV, Developed
 - ▭ SWS, Southern Willow Scrub

- Vegetation Type/Land Cover:**
- ▭ DEV, Developed
 - ▭ SWS, Southern Willow Scrub



**FIGURE 3F
OPEN SPACE 2**

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9.2.3 Access Control

Access control (fencing and signage) issues include

- A locked fence surrounds the entire open space. However, sufficient signage to help discourage use of the open space thus reduce trash in the area is not in place. Additionally, the fence had a tear in it (Figure 3F; Photo 10).

9.2.4 Property Trash and Encampments

Trash on the Open Space #2 open space was characterized by:

- Extensive food related trash, clothing, and other miscellaneous items.
- There was a homeless presence within and adjacent to the open space in the tunnel under Town Center Drive which likely contributes to the majority of these trash items.
- There were no trash items observed on site that would require heavy machinery to remove.

There were no encampments observed on the Open Space #2 open space.

- There were no encampments observed in the open space area. However, it appears that individuals are using the site to access a possible encampment area within the tunnel underneath Town Center Drive, which connects Open Space #1 to Open Space #2. It is recommended that the city coordinate with the Sheriff's Department for encampment issues.

9.2.5 Fire Abatement

Since construction mitigation measures were incorporated into the existing commercial structures adjacent to the site, no abatement measures are required at this time.

9.3 Stewardship Recommendations

1. Control all invasive species listed to prevent them from spreading downstream. If it is determined that permits from the resource agencies would be required in order to remove invasive species, the removal will not be conducted.
2. Install additional signage on fence surrounding open space to discourage public use of the area.
3. Repair tears in chain-linked fencing
4. Remove trash items from open space

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9.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 15. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

Table 15
Cost Estimate For Stewardship Maintenance at Open Space #2

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor and biologist	Throughout open space as shown on map	\$15,000	One time removal of mapped invasive perennial plant species. Eucalyptus trees will not be removed. Wetland permit requirements will not be triggered
<i>Access Control</i>				
Install signage	City	On fence along trail and accessible perimeter areas	\$1,000	Total of 5 signs including installation
Repair fence break	Landscape contractor	Northwest corner of the open space	\$750	Assumes that broken chain link section can be repaired without replacement of poles.
<i>Property Trash and Encampments</i>				
Remove trash and debris piles from open space	Landscape contractor	Throughout open space including some noted accumulations on map	\$1,000	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Ongoing Open Space Management Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$2,000	Twice per year weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$500	Assumes minor repairs to fencing breaks and signage on an annual basis. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$1,000	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.

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Table 15
Cost Estimate For Stewardship Maintenance at Open Space #2

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$1,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions



Photo 10: Tear in fence adjacent to parking lot on the western boundary of open space .

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10 LA COSTA AVENUE

10.1 Site Description

The approximately 17.7 acre La Costa Avenue open space is located along the east side of Saxony Road, approximately 400-600 feet east of the Saxony Road and La Costa Avenue intersection, with a small section on the north side of La Costa Avenue adjacent to the Batiquitos Lagoon. The open space is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 34, Township 12 South, Range 4 West, latitude 33° 5'11.84"N and longitude 117°17'0.70"W. The open space is primarily characterized by a southward sloping terrain with elevations ranging from 61 feet to 189 feet AMSL.

The site has a major drainage from the north-facing slope which empties into a detention basin at the lowest point on the site, the detention basin is maintained by the Public Works Department and is Not a Part of the open space stewardship efforts that are the subject of this report (Figure 3G). The site is dominated by southern mixed chaparral habitat with some coastal sage scrub and non-native grassland covering the basin area in the northern section of the open space. There are informal pedestrian walking trails in the upper elevations on the hill within the western section of the site that are accessed from the residential neighborhood to the south as well as from a private residence to the west.

10.2 Results of Site Assessment

Results of the La Costa Avenue field assessment (Figure 3G), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated costs are itemized in order of highest priority to lower priority.

10.2.1 Invasive Plants

Invasive vegetation on site consists of annual grasses and other herbaceous species surrounding and within the detention basin in the north section of the site (Table 16). At the top of the hill, invasive vegetation is primarily two patches of cactus pear (*Opuntia ficus-indica*) along with a few annual species, including wild mustard. Outside of the basin area, there are few invasive species. However, it should be noted that several pampas grass individuals (*Cortaderia selloana*) are present upstream outside the open space site boundary (5-10), but within the drainage that runs through the site. These individuals could colonize areas within the open space if they are not removed.

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**Table 16
Invasive Plant Species Observed on the La Costa Avenue Open space Site**

Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Fennel ²	<i>Foeniculum vulgare</i> ²	High	Occasional	Exists in limited sections of disturbed habitat (<3% total cover)	High
Crown daisy ²	<i>Glebionis coronaria</i> ² (= <i>Chrysanthemum coronarium</i>)	Moderate	Occasional	Found throughout non-native grass habitat (3-5% total cover)	Moderate

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

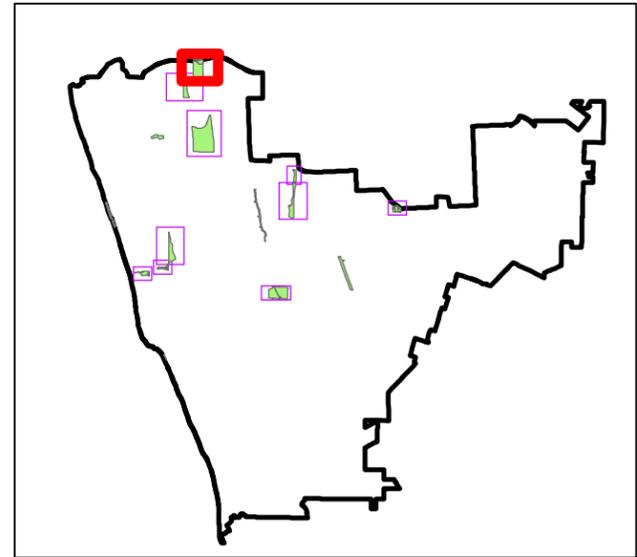
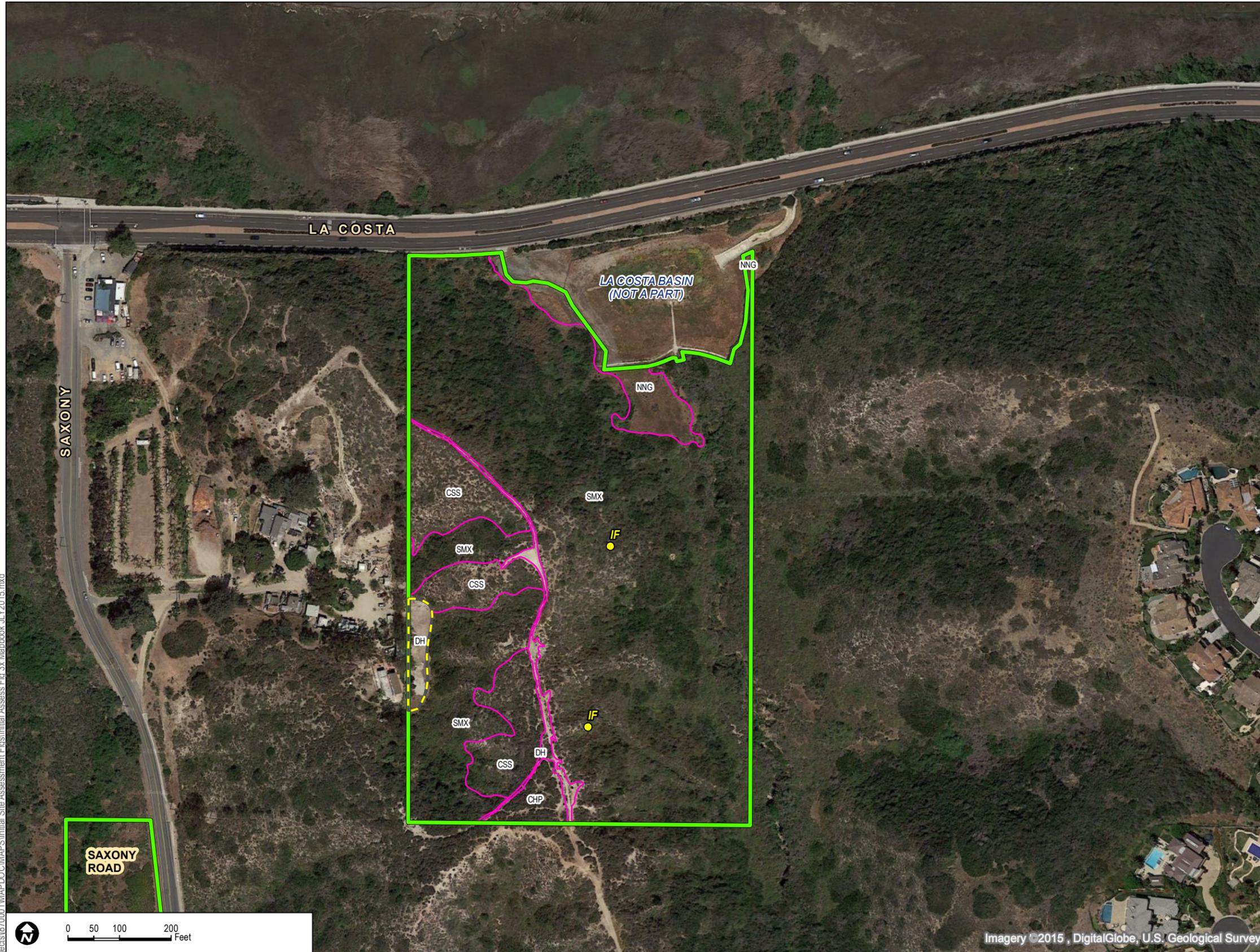
** Refer to section 2.2.1.1 for methods used in priority categorization

Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis included brome grasses, wild oat, filaree, mustard species, Bermuda buttercup and Maltese star thistle. These species were not mapped as individual occurrences; however, their presence was noted as components of the disturbed and non-native grassland habitats mapped on site.

10.2.2 Erosion and Hydrological Issues

Erosion issues on site consist primarily of:

- Moderate to severe rilling in the trail along the top of the hill in the west portion of the site (Photo 11)
- Minor features around the on-site drainage that feeds into the Not a Part detention basin on the north end of the open space.



Encinitas Habitat Stewardship Program

Invasive Plant Species

- IF, Indian fig
- ▭ City Open Space Area
- ▭ Fire Abatement-100 ft from furthest projection of structure to the satisfaction of Fire Dept.

Vegetation Type/Land Cover:

- ▭ CHP, Chaparral
- ▭ CSS, Coastal Sage Scrub
- ▭ DH, Disturbed Habitat
- ▭ NNG, Non-Native Grassland
- ▭ SMX, Southern Mixed Chaparral

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**FIGURE 3G
LA COSTA AVENUE**

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10.2.3 Access Control

Issues relating to regulating access to the site (fencing and signage) include:

- Fencing is degraded along trails on ridgeline within western portion of the open space. Replacing the fencing will provide for protection of the habitat. Because this is not a designated trail within the Encinitas trails system, the fencing of the trail is optional but would provide protection of habitat.

10.2.4 Property Trash and Encampments

Trash on the La Costa Avenue open space site was characterized by:

- Minor food items (plastic bottles, bags, etc...)
- Clothing
- A rain gutter (Figure 3G)
- No trash items on site would require large equipment to remove.

No encampments were identified on site; however, it did appear that there was significant foot traffic through a hole in the fence that surrounds the Not a Part basin and up through the canyon along the drainage.

10.2.5 Fire Abatement

Fire management issues on site include:

- A significant percentage of exotic annuals are present in the disturbed community in and around the north-end basin (Not a Part area) and in the southwest boundary of the open space area. The exotic fuel load could create a potential fire hazard and should be monitored. Given that structures exist adjacent to the site in the south west boundary a fire abatement area is established. The fire abatement area shall be conducted to the satisfaction of the Fire Department 100' from the furthest projection of structures.

10.3 Stewardship Recommendations

1. Control targeted invasive plant species noted on map. Cut and remove all large shrub and tree species including Mexican fan palm and Indian fig. Cut the remaining stumps as close to grade as possible and then treat cut stumps with the appropriate herbicide to prevent regrowth. Dispose of all cut material off site. For herbaceous species such as ice-

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plant and other exotic annuals removal is not recommended as they are stabilizing the soil. These species should be treated with the appropriate herbicide and allowed to desiccate on-site. Other non-native species listed that are not the prioritized target species should be monitored closely to ensure they are not spreading into native habitat. If it is determined that the non-native species are dispersing throughout the native habitat, additional removal actions will be required.

2. Remove exotic annuals in disturbed areas each Spring through herbicide application or weed whipping.
3. Repair severe erosional rilling along trails on top of hill on west side of open space (Figure 3G)
4. Install fencing and signage along trails on the ridgeline within west side of open space (Figure 3G). While this is not a designated trail, it is well established and fencing will provide protection of the adjacent habitat. This fencing is optional.
5. Remove trash items from open space
6. The fire abatement area shall be maintained to the satisfaction of the Encinitas Fire Department and shall be 100' from the furthest projection of structures.

10.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 17. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

Table 17
Cost Estimate for Stewardship Maintenance at La Costa Avenue

Task	Responsible Party	Location in Open space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor	Throughout open space as shown on map	\$4,000	One time removal of mapped invasive perennial plant species.
Control annuals in the spring	Landscape contractor	Throughout open space	3,500	Assumes weed whipping/mowing of annuals.

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Table 17
Cost Estimate for Stewardship Maintenance at La Costa Avenue

Task	Responsible Party	Location in Open space	Cost Estimate	Assumptions
<i>Erosion and Hydrological Issues</i>				
Erosion Control	Landscape contractor	West side of open space.	\$6,500	Assumes no fill material would be required and that heavy equipment access is allowed; assumes that all work can be conducted without impacts to jurisdictional resources or the need to obtain wetland permits.
<i>Access Control</i>				
Install fencing	Landscape contractor	Westside of open space boundary	\$16,500 (optional)	Assumes total of 2,200 lf with t-posts every 10 feet and 3 strands of barbless wire
Install signage	City	At access points to open space and along trails	\$1,000	Total of 5 signs including installation
<i>Property Trash and Encampments</i>				
Remove trash and debris piles from open space	Landscape contractor	Throughout open space, including some noted accumulations on map	\$750	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Conduct brush management for fire abatement in southwestern boundary of open space area.	Landscape contractor	Approximately 100 feet from the edge of structures located in the south west area of the site	\$1,000	One time weed removal within brush management zones using weed whips. The fire abatement area shall be maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures and to the satisfaction of the Fire Department.
<i>Ongoing Open Space Management Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$2,000	Twice per year weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$500	Assumes minor repairs to fencing breaks and signage on an annual basis. Assumes replacement of one sign per year at \$200 (included in this cost).

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Table 17
Cost Estimate for Stewardship Maintenance at La Costa Avenue

Task	Responsible Party	Location in Open space	Cost Estimate	Assumptions
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$500	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Fire Abatement	Landscape Contractor	South west area of site	\$1,000	The fire abatement area shall be addressed annually and maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures and to the satisfaction of the Fire Department.
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$1,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions



Photo 11: Severe erosion rilling along trail at top of hill

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11 COTTONWOOD CREEK DRAINAGE (A, B, C)

11.1 Site Description

The Cottonwood Creek Drainage areas (A, B, C) are located west of Interstate 5, north and south of Encinitas Boulevard in the City of Encinitas, California. The open space areas are located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 10, Township 13 South, Range 4 West; latitude 117°17'21.18"W and longitude 33° 3'4.47"N. The open space areas consist of wetlands and riparian habitat associated with the Cottonwood Creek Drainage, at elevations ranging from 70 feet above mean sea level (AMSL) to 14 feet AMSL.

The Cottonwood Creek Drainage Area A is part of the Cottonwood Creek Park and is located along the southerly part of the park, adjacent to Encinitas Boulevard. It consists of the riparian corridor from where Cottonwood Creek and Moonlight Creek merge at the east end of the park to where Cottonwood Creek is piped underground at the west end of the park. Associated with the amenities the park, there are trails and viewing platforms next to and within the open space area. The habitat consists primarily of sycamore-willow riparian woodland. (Figure 3H-1; Table 17). Cottonwood Creek Drainage Area A does not include the open water area within which a drain is located; that area is maintained by the Public Works and Parks and Recreation Departments.

Cottonwood Creek Drainage Area B is located west of South Coast Highway 101 and south of Encinitas Boulevard (Figure 3H-2). The area consists of the riparian corridor following Cottonwood Creek. A pedestrian trail occurs within the open space, and there is a tennis court embedded within the open space area. The habitat is primarily cottonwood-willow woodland and southern willow scrub, with a patch of cis-montane alkali marsh near the tennis court and disturbed habitat (iceplant and grasses) on the southern slope. There is also a patch of large canary island date palms within the open space area. The tennis court is not included as part of the stewardship efforts of the open space area.

Cottonwood Creek Drainage Area C is located west of Third Street and south of Encinitas Boulevard (Figure 3H-2). The area consists of the Cottonwood Creek drainage channel from where it outlets underneath Third Street to where it is piped underground through Moonlight Beach Park. The habitat consists of disturbed freshwater marsh dominated by garden nasturtium and morning-glory (*Ipomea cairica*).

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11.2 Results of Site Assessment

Results of the Cottonwood Creek Drainage (A, B, C) assessment (Figures 3H-1, and -2), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated cost are itemized in order of highest priority to lower priority.

11.2.1 Invasive Plants

Cottonwood Creek Drainage Areas A and B consist of native habitat, but a few invasive plant species are scattered throughout the open space. Most invasive plants occur on Cottonwood Creek drainage area A in the open space area furthest to the east, between Moonlight Creek and the commercial buildings east of Cottonwood Creek Park. Cottonwood Creek Drainage Area C is dominated by invasive plant species, nearly to the exclusion of any natives. However, this area functions as a flood conveyance to the ocean and the vegetation is functioning to stabilize the channel and side slopes. Table 18 includes the invasive species mapped at the Cottonwood Creek Drainage (areas A, B, C)..

Table 18
Invasive Plant Species Observed on the Cottonwood Creek Drainage (A, B, C)

Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Coastal wattle ^{1,2}	<i>Acacia cyclops</i> ^{1,2}	None	Occasional	Scattered individuals located along drainage at east end of Area A (5-6 trees <12" DBH)	High
<i>Iceplant</i> ^{1,2}	<i>Carpobrotus edulis</i> ^{1,2}	High	Common	Patch located at east end of Area A and on southern slopes of Area B.	High
Pampas grass ^{1,2}	<i>Cortaderia selloana</i> ^{1,2}	High	Occasional	One individual observed in Area A in the riparian habitat next to the park.	High
<i>Myoporum</i> ^{1,2}	<i>Myoporum laetum</i> ^{1,2}	Moderate	Occasional	Scattered individuals at east end of Area A (2-3 trees <12" DBH)	High
Castor bean ^{1,2}	<i>Ricinis communis</i> ^{1,2}	Limited	Occasional	Scattered individuals at east end of Area A. Plants were mostly small, with 2-3 larger individuals.	High
Tree tobacco ²	<i>Nicotiana glauca</i> ²	Moderate	Occasional	Scattered individuals at east end of Area A. (3 individuals <12" DBH)	Moderate
Mexican fan palm ²	<i>Washingtonia robusta</i> ²	Moderate	Occasional	Seedlings observed at edge of creek in Area A.	Moderate
Morning-glory ²	<i>Ipomea cairica</i>	None – Locally Invasive	Common	Extensive within Area C and intermixed with garden nasturtium.	Low

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Table 18
Invasive Plant Species Observed on the Cottonwood Creek Drainage (A, B, C)

Common Name	Scientific Name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Indian fig ²	<i>Opuntia ficus-indica</i> ²	None - Locally Invasive	Common	A few scattered individuals at east end of Area A.	Low
Canary Island date palm ²	<i>Phoenix canariensis</i> ²	Limited	Occasional	Eight very large trees located in Area B (24"-36" DBH)	Low
Brazilian pepper tree ²	<i>Schinus terebinthifolius</i> ²	Limited	Occasional	A few small trees observed at east end of Area A (<12" DBH)	Low
Garden nasturtium ²	<i>Tropaeolum majus</i> ²	None - Locally Invasive	Abundant	Dense in the understory of the SWS in Area A at east side of park; patches in Area B on slope and in drainage; dense in Area C along channel.	Low
Eucalyptus ²	<i>Eucalyptus</i> spp. ²	Limited	Common	One tree observed at east end of Area A (12"-24" DBH)	None

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

** Refer to section 2.2.1.1 for methods used in priority categorization

Ubiquitous species observed scattered within the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis (e.g., brome grasses (*Bromus* spp.), filaree (*Erodium* spp.), mustard species, Maltese star thistle (*Centaurea melitensis*), etc.) were not mapped as individual occurrences; however, their presence was noted as components of disturbed habitats mapped on site.

11.2.2 Access Control

The Parks and Recreation Department will continue to maintain the designated trails at Cottonwood Creek Drainage (Areas A, B, C), which allow access within and adjacent to the open space areas in Areas A and B. However, unauthorized access into the open space is an ongoing management issue. There are heavily used, unauthorized trails in the understory of the woodland habitat in Area A. The trails are likely used by park visitors exploring the habitat area for play. Additionally, there is frequent human visitation in the understory of the woodland in Area B, which appears to be primarily transients. Area C is essentially inaccessible due to the steep channel side banks. However, frequent human visitation is evident along both the northern and southern edges of the channel. The Parks and Recreation Department regularly maintains the designated trails within the open space. Within the proximity of the trails, trash removal, invasive species removal and maintenance are conducted.

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Due to the high pressure from park and trail users to access the open space areas, access control (fencing and signage) would be difficult to enforce. To be effective it would require extensive fencing additions, which would be undesirable for the park and trail atmosphere. Therefore, recommended access control (fencing and signage) for these areas includes the addition of signage to remind users to stay on developed trails.

Issues relating to regulating access to the site (fencing and signage) include:

- Install signage at common unauthorized access points to deter unauthorized entry into open space areas.

11.2.3 Property Trash and Encampments

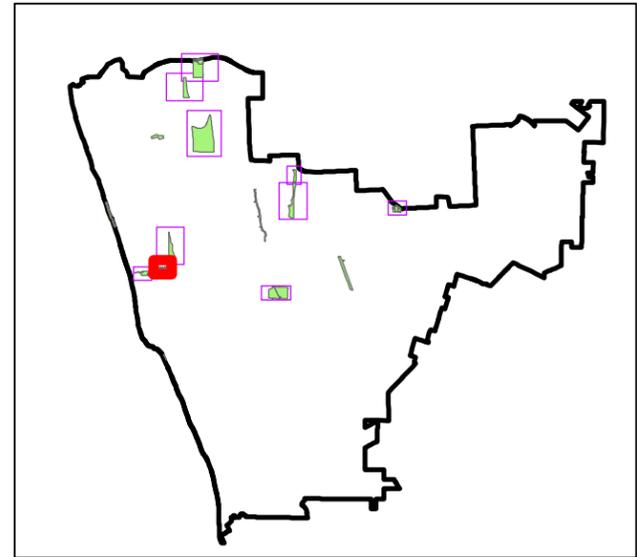
No encampments were observed within Cottonwood Creek Drainage (Areas A, B, C). However, there is trash scattered throughout all three areas. Trash within the open space was characterized by the following:

- Minor items (plastic and glass bottles, food related trash, one tire, clothes, and chain link fence roll).
- There was a higher density of trash observed along the stream course, likely washed into the site from upstream.
- No large trash items were observed that would require the use of heavy machinery for removal.

11.2.4 Fire Abatement

Fire management issues on site include:

- An area along the eastern boundary of Area A is adjacent to commercial structures and should have a fire abatement area established. The fire abatement area shall be conducted to the satisfaction of the Fire Department 100' from the furthest projection of structures.
- An area along the southern edge of Area B is adjacent to commercial structures and should have a fire abatement area established. The fire abatement area shall be conducted to the satisfaction of the Fire Department 100' from the furthest projection of structures.



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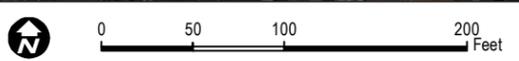
Invasive Plant Species

- BP, Brazilian pepper
- CB, Castor bean
- CW, Coastal wattle
- EU, Red gum
- FG, Fountain grass
- FP, Mexican fan palm
- GN, Garden nasturtium
- IF, Indian fig
- IP, Ice plant
- MY, Myoporum
- PG, Pampas grass
- TT, Tree tobacco

- ▭ City Open Space Area
- ▭ Fire Abatement-100 ft from furthest projection of structure to the satisfaction of Fire Dept.

Vegetation Type/Land Cover:

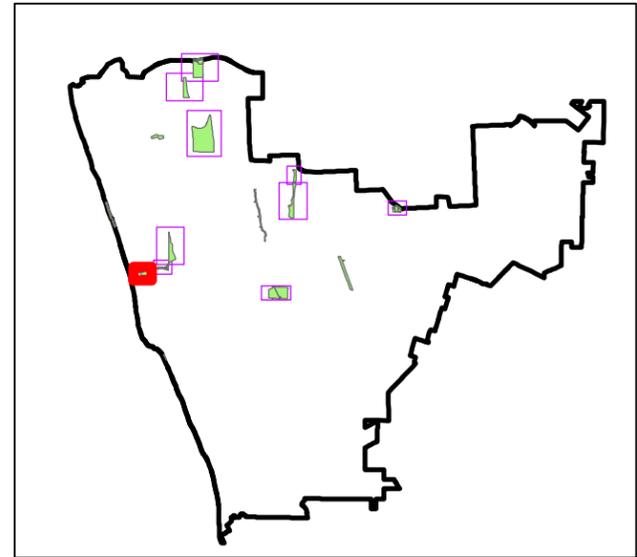
- ▭ CSS, Coastal Sage Scrub
- ▭ DH, Disturbed Habitat
- ▭ FWM, Freshwater Marsh
- ▭ ORN, Ornamental
- ▭ SWS, Southern Willow Scrub



**FIGURE 3H-1
COTTONWOOD CREEK DRAINAGE A**

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Invasive Plant Species

- DP, Canary Island Date Palm
- EU, Red gum
- GN, Garden nasturtium
- IP, Ice plant

- City Open Space Area
- Fire Abatement-100 ft from furthest projection of structure to the satisfaction of Fire Dept.

Vegetation Type/Land Cover:

- DH, Disturbed Habitat
- ORN, Ornamental
- OW, Open Water
- SWS, Southern Willow Scrub
- dFWM, disturbed Freshwater Marsh
- dSCWRF, disturbed Southern Cottonwood-Willow Riparian Forest



**FIGURE 3H-2
COTTONWOOD CREEK DRAINAGES B AND C**

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11.3 Stewardship Recommendations

1. Control targeted invasive perennial plant species for Areas A, B, and C. Prioritization of invasive species control should be based on the City's target species list and Cal-IPC ratings. Cut and remove all large shrub and tree species, with the exception of large canary island date palms in Area B and Eucalyptus in Area A. Area C contains non-native species however no action is recommended because the species will not be able to disperse to other wetland areas since the area is near the end of the drainage and because the plant material is providing erosion control. Removal of the species might also trigger the requirement for wetland permits. Cut the remaining stumps as close to grade as possible and then treat cut stumps with the appropriate herbicide to prevent regrowth. Dispose of all cut material off site. Control herbaceous species, such as ice-plant and garden nasturtium, with a foliar application of the appropriate herbicide and allow to desiccate on-site. Other non-native species listed that are not the prioritized target species should be monitored closely to ensure they are not spreading into native habitat. If it is determined that the non-native species are dispersing throughout the native habitat, additional removal actions may be recommended. If it is determined that permits from the resource agencies would be required in order to remove invasive species from Areas A and B, the removal will not be conducted.
2. Install signage along the trails and accessible perimeter areas to encourage public users of the open space to remain on the trail and out of native habitat in order to help prevent habitat disturbance. The Parks and Recreation Department will continue to maintain the designated trails at Cottonwood Creek Drainage (Areas A and B).
3. Remove trash and landscape debris piles from open space and dispose of off site.
4. Coordinate brush management adjacent to the commercial developments in the east end of Area A and along the southern edge of Area B near the commercial boundary (within 100 feet) to the satisfaction of the Fire Department.

11.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 19. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within Cottonwood Creek Drainage (A, B, C) will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

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Table 19
Cost Estimate For Stewardship Maintenance at Cottonwood Creek Drainage (A, B, C)

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor	Throughout open space as shown on map (Areas A and B)	\$18,000	One time removal invasive perennial plant species. Eucalyptus and palm trees will not be removed.
Control exotic annual weeds in disturbed areas	Landscape contractor	Throughout open space as shown on map	\$2,000	One time control effort in the spring to target annual invasive weeds. Assumes a combination of mechanical and herbicide control.
<i>Access Control</i>				
Install signage	City	Along trail and accessible perimeter areas	\$1,000	Total of 5 signs including installation
<i>Property Trash and Encampments</i>				
Remove trash and debris piles from open space	City	Throughout open space	\$500	Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Conduct brush management for fire abatement in eastern portion of Area A and southern portion of Area B.	Landscape contractor	Approximately 100 feet from the edge of structures	\$2,000	One time weed removal within brush management zones using weed whips and hand tools as appropriate. The fire abatement area shall be maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures and to the satisfaction of the Fire Department.

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Table 19
Cost Estimate For Stewardship Maintenance at Cottonwood Creek Drainage (A, B, C)

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Ongoing Open Space Management Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$2,000	Annual weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$300	Assumes minor repairs to fencing breaks and signage. Does not include replacement of fencing. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$1,000	Assumes semi-annual visits. Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.
<i>Fire Abatement</i>				
Fire Abatement	Landscape Contractor	Eastern side of Area A and southern side of Area B	\$1,000	The fire abatement area shall be addressed annually and maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures.
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$1,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions

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12 SUN VISTA PARK HABITAT AREA

12.1 Site Description

The 4.0 acre Sun Vista Park Habitat Area is located at the southwest corner of the Avenida La Posta and Rancho Santa Fe Road intersection in the City of Encinitas, California. The open space is located within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: latitude 33° 3'37.48"N and longitude 117°14'26.29"W. The land had been in private ownership since before California became a state and is therefore not part of the Township and Range system. The open space is primarily characterized by a relatively level terrain with an average elevation of 181 feet AMSL.

Residential neighborhood surrounds the entire open space (Figure 3I). The open space area is located within the Sun Vista Track and is surrounded by manicured grass with several picnic areas, sidewalks, and a constructed playground. The open space area, which is the subject of the stewardship efforts, includes southern willow scrub and an ephemeral channel, which, runs north to south along the length of the site as well as a sidewalk with a bridge running parallel across it.

12.2 Results of Site Assessment

Results of the Sunset Vista Park Habitat Area field assessment (Figure 3I), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated cost are itemized in order of highest priority to lower priority.

12.2.1 Invasive Plants

Invasive plant species on-site were scattered in low numbers throughout the southern willow scrub habitat in the center of the site, presumably distributed there by the ephemeral stream that flows through the habitat (Table 20). There was another patch of disturbed habitat that had been impacted by erosion on the west side of the southern willow scrub near the center of the site where erosion had caused exposure of new soils.

Table 20
Invasive Plant Species Observed on the Sun Vista Park Habitat Area

Common Name	Scientific Name	Cal-IPC Rating	Presence On Site (mild, moderate, severe)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Bridal creeper ²	<i>Asparagus asparagoides</i> ²	Moderate	Occasional	Scattered within SWS (4-5 patches)	Moderate

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Table 20
Invasive Plant Species Observed on the Sun Vista Park Habitat Area

Common Name	Scientific Name	Cal-IPC Rating	Presence On Site (mild, moderate, severe)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Weeping bottlebrush ²	<i>Callistemon viminalis</i> ²	None	Occasional	Found with SWS (3-4 seedlings)	Low
Garden nasturtium ²	<i>Tropaeolum majus</i> ²	None	Occasional	Scattered around edges of some sidewalks and SWS (<2% total cover)	Low

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

** Refer to section 2.2.1.1 for methods used in priority categorization

Additional non-native species observed that was scattered across the site and which poses limited potential for invasion into established habitats was spiny sowthistle. This species was not mapped as individual occurrences; however, its presence was noted as a component of disturbed habitats or as intermittent occurrences within native habitat.

12.2.2 Erosion and Hydrological Issues

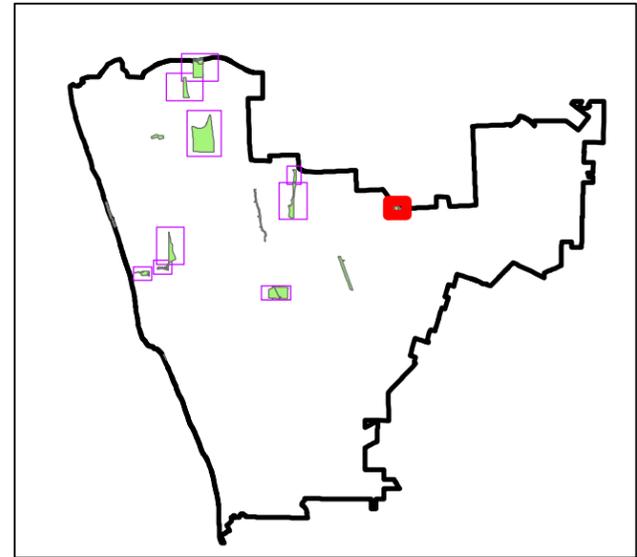
Erosion and hydrological issues on site consist primarily of:

- A section of hillside on the west side of the southern willow scrub habitat, which had been previously cleared of vegetation, is now vulnerable to erosion impacts as well as the invasion from exotic species (Photo 12).
- On the east side of the southern willow scrub habitat, just east of the ephemeral streambed, on the south end of the site (Figure 3I), there is an irrigation line or water line leak that is causing ground saturation in that area.

12.2.3 Access Control

Issues relating to site access control (fencing and signage) include:

Signage gaps along trails



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Invasive Plant Species

- BC, Bridal creeper
- WB, Weeping bottlebrush

- City Open Space Area
- Erosional Feature

Vegetation Type/Land Cover:

- ORN, Ornamental
- SWS, Southern Willow Scrub

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**FIGURE 31
SUN VISTA PARK HABITAT AREA**

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12.2.4 Property Trash and Encampments

Trash on the Sun Vista Park open space was characterized by:

- Minor food related trash
- Other miscellaneous trash items
- No trash on site would require the use of heavy machinery to remove them

There were no encampments observed on site.

12.2.5 Fire Abatement

There are no significant fire abatement issues present on site. All vegetation is properly spaced from the private homes along the west side of the open space.

12.3 Stewardship Recommendations

1. Control exotic species as shown on the map using the methods described in previous sections for these species. If it is determined that permits from the resource agencies would be required in order to remove invasive species, the removal will not be conducted.
2. Re-vegetate cleared area with native species (see Section 12.2.3) to reduce erosion impacts and prevent invasive species recruitment.
3. Install additional signage to encourage public users to stay on designated trails, especially near areas that have the potential to be impacted by erosion.

12.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 21. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided in the table.

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Table 21
Cost Estimate for Stewardship Maintenance at Sun Vista Park Habitat Area

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor	Open space -wide	\$750	One time removal of mapped invasive perennial plant species.
Revegetate bare area	Landscape contractor	Center of open space	\$1,500	Assumes the installation of 150 native 1-gallon container plants and seed. Suitable species should be determined based on the species currently present in the habitat area and availability to the landscape contractor.
<i>Access Control</i>				
Install signage	City	Western boundary of open space	\$1,000	Total of 5 signs including installation
<i>Ongoing Open Space Management Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$500	Annual weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
Maintenance and watering at revegetated area	Landscape contractor	Center of open space	\$5,000	Assume monthly visits to water container plants and control non-native species present in the revegetation area (likely only required for two years).
<i>Access Control</i>				
Fencing and signage repairs	Landscape contractor	Open space -wide	\$300	Assumes minor repairs to fencing and signage on an annual basis. Does not include replacement. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$1,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions

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Photo 12: Area previously cleared of vegetation and now is vulnerable to erosion and invasion by exotics

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13 ENCINITAS SENIOR CENTER

13.1 Site Description

This approximately 9.0 acre open space is located west of Oak Crest Park, east of Balour Drive, south of Encinitas Boulevard and north of Oak Crest Park Drive in the City of Encinitas, California. The open space is located within the Coastal Zone and within the U.S. Geological Survey (USGS) 7.5 minute-map, Encinitas quadrangle: Section 14, Township 13 South, Range 4 West, latitude 33° 2'42.02"N and longitude 117°16'2.13"W. The open space is primarily characterized by relatively level terrain with an approximate elevation of 376.1 feet AMSL.

The open space has open space undeveloped habitat on the eastern portion, which is primarily southern maritime chaparral. This habitat has trails throughout for public use. Trail access to the open space is available from Oak Crest park, the Encinitas Senior Center parking lot, and Oak Crest Park Drive. The western side of the site is developed with the Encinitas Senior Center building, ornamental vegetation (including *Eucalyptus* spp.) and a parking lot with few opportunities for restoration of native vegetation communities.

13.2 Results of Site Assessment

Results of the Encinitas Senior Center field assessment (Figure 3J), including stewardship recommendations and a cost analysis of each item are provided below. The stewardship recommendations and their associated cost are itemized in order of highest priority to lower priority.

13.2.1 Invasive Plants

Invasive plant species on-site consist of annual species, including annual stinging nettle and iceplant, around the edges of the open space and southern maritime chaparral habitat (Figure 3J; Table 22). There is also a small ornamental Eucalyptus grove along the north-facing hillside adjacent to Encinitas Boulevard.

**Table 22
Invasive Plant Species Observed on the Encinitas Senior Center Open space**

Common Name	Scientific name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Iceplant ^{1,2}	* <i>Carpobrotus edulis</i> ^{1,2}	Moderate	Occasional	One patch on south end of site adjacent to Oak Crest Drive (<3% total cover)	High

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**Table 22
Invasive Plant Species Observed on the Encinitas Senior Center Open space**

Common Name	Scientific name	Cal-IPC Rating	Presence on site (occasional, common, abundant)	Notes, including percent cover, approximate area, or point counts (if applicable)	**Priority for Control
Fountain grass ²	<i>Pennisetum setaceum</i> ²	Limited	Common	Scattered within disturbed areas with several bunches around edges of native habitat. (10-15 individuals).	Low
Eucalyptus ²	<i>Eucalyptus</i> spp. ²	None	Common	Spread throughout disturbed habitat in ornamental plantings surrounding parking lot. (4-5 trees <12" DBH, 3-4 trees 12"-24" DBH, and 1 tree >24" DBH)	None

¹ City's target list species

² Water Efficient Landscape Design Manual Invasive Species List

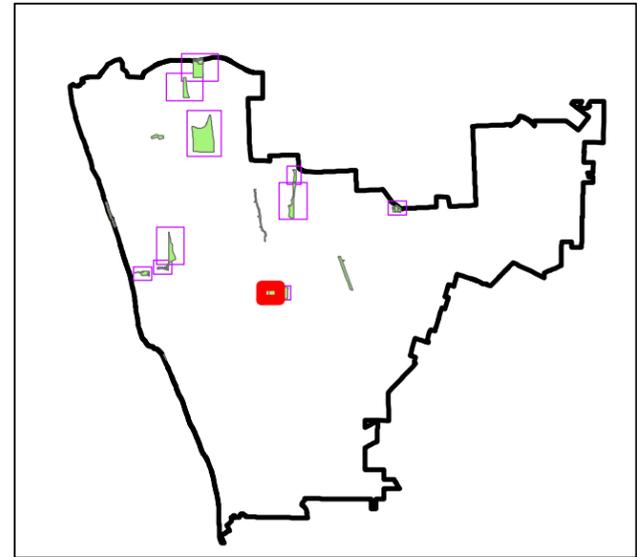
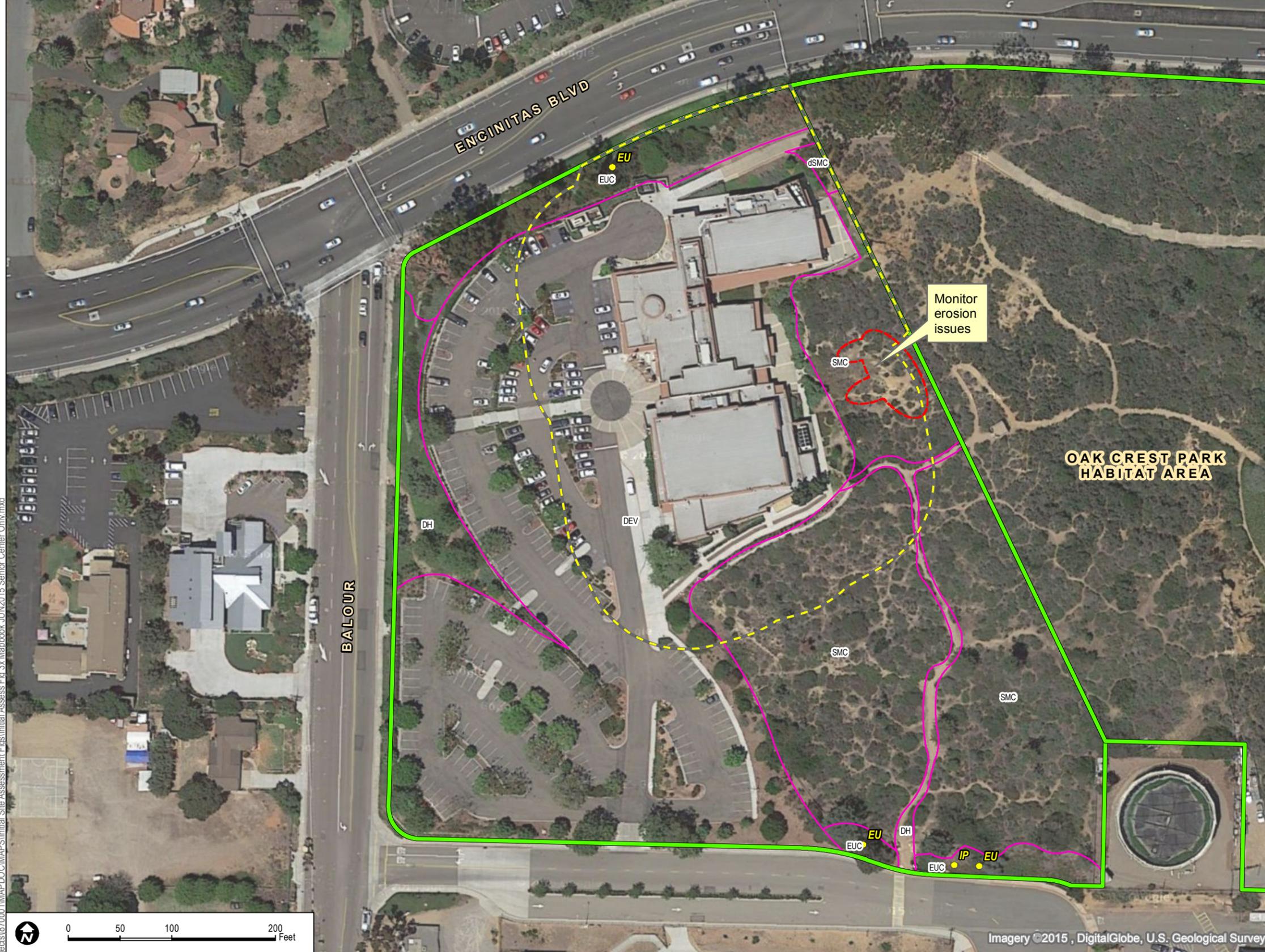
** Refer to section 2.2.1.1 for methods used in priority categorization

Ubiquitous species observed scattered across the site that pose limited potential for invasion into established habitats and that would be impractical to control on an individual basis were spiny sowthistle (*Sonchus asper*) and annual stinging nettle. These species were not mapped as individual occurrences; however, their presence was noted as components of mapped on site.

13.2.2 Erosion and Hydrological Issues

Erosion issues on site consist primarily of:

- Minor rilling within the dirt trails in the Southern maritime chaparral habitat.
- There were no other major erosion or hydrological issues.
- Some areas show erosion that is part of the natural process within sandstone soils.



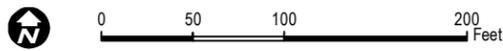
Encinitas Habitat Stewardship Program

Invasive Plant Species

- EU, Red gum
- IP, Ice plant
- ▭ City Open Space Area
- ▭ Erosional Feature
- ▭ Fire Abatement-100 ft from furthest projection of structure to the satisfaction of Fire Dept.

Vegetation Type/Land Cover:

- ▭ DEV, Developed
- ▭ DH, Disturbed Habitat
- ▭ EUC, Eucalyptus Woodland
- ▭ SMC, Southern Maritime Chaparral
- ▭ dSMC, disturbed Southern Maritime Chaparral



Imagery ©2015, DigitalGlobe, U.S. Geological Survey

**FIGURE 3J
ENCINITAS SENIOR CENTER**

**Initial Site Assessment Report
for the Encinitas Habitat Stewardship Program**

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13.2.3 Access Control

Issues relating to regulating access to the site (fencing and signage) include:

- Gaps in the fencing along the perimeter of the native southern maritime chaparral habitat east of the Encinitas Senior Center
- Some new trails have been created that are not likely part of the official trail system.
- Little fencing is present to help curtail or control access into the habitat.
- Additional signage at the access points to the native habitat at the Encinitas Senior Center parking lot is recommended to encourage public users to remain on the designated trails.
- Designated trails will be maintained by the Parks and Recreation Department including trash and fencing in proximity.

13.2.4 Property Trash and Encampments

The trash on the Encinitas Senior Center open space was characterized by:

- Small amount of food related items (plastic bottles and food wrapping paper).
- There were no large trash items that would require heavy machinery to remove

There were no homeless encampments observed on the Encinitas Senior Center open space during the site assessment visits. However, it is known that they occur regularly and likely would require removal approximately once per week.

13.2.5 Fire Abatement

All structures and vegetation have appropriate buffer zones maintained at this time. However, as needed fire abatement areas shall be maintained to the satisfaction of the Encinitas Fire Department. The fire abatement area shall be 100' from the furthest projection of structures.

13.3 Stewardship Recommendations

1. Control targeted invasive plant species noted on map (ice plant) using a foliar herbicide application with the appropriate herbicide. This species will not be removed since it is present on slopes which would be susceptible to erosion if no vegetation was present. Other non-native species listed (Eucalyptus) that are not the prioritized target species will not be controlled at this time but should be monitored closely to ensure they are not

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

spreading. If it is determined that the non-native species are dispersing throughout the native habitat, additional removal actions will be required.

2. The erosion noted in the Southern Maritime Chaparral area is a natural component of this habitat type and soil texture so no repair is recommended at this time. It is advisable to monitor the erosion.
3. The fencing surrounding the site is in good condition and does not require repairs at this time. Off-trail activity should be monitored and additional fencing may be needed along the trails in the future if impacts to habitat are observed. It may be advisable to develop and identify a trail system that connects with the Oak Crest Park. It may be helpful to identify the trail system with fencing similar to that used at Oak Crest Park. This is an option and will be considered based on site conditions in consultation with the city.
4. Additional signage should be installed along the trails and along the native habitat boundary to encourage the public to stay on the trail in order to avoid impacts to sensitive native habitat.
5. Remove anticipated homeless encampments approximately once per week.
6. Remove trash and debris present within the open space. No large items were identified so no heavy equipment usage will be necessary. All small items can be removed by hand crews.

13.4 Cost Estimate

Costs for implementing the stewardship recommendations and providing long-term maintenance are provided in Table 23. While the cost estimate primarily provides one-time costs to remedy observed issues, many of the issues noted within the open space will require a prolonged commitment to maintain the habitat. Therefore, costs for assumed ongoing maintenance and monitoring are provided.

Table 23
Cost Estimate For Stewardship Maintenance at the Encinitas Senior Center

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Initial Open Space Maintenance Actions</i>				
<i>Invasive Plant Management</i>				
Control targeted invasive perennial plant species	Landscape contractor	Throughout open space as shown on map	\$1,000	One time herbicide treatment of mapped invasive perennial plant species. Eucalyptus trees will not be removed.

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

Table 23
Cost Estimate For Stewardship Maintenance at the Encinitas Senior Center

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Access Control</i>				
Install signage	City	Along trail and accessible perimeter areas	\$1,000	Total of 5 signs including installation
<i>Property Trash and Encampments</i>				
Remove trash and debris	Landscape contractor	Throughout the open space	\$500	Assumes that all noted trash and debris can be removed without the use of heavy equipment . Includes removal and off-site disposal.
<i>Ongoing Open Space Maintenance Actions (Annual Costs)</i>				
<i>Invasive Plant Management</i>				
Control invasive weeds	Landscape contractor	Throughout open space	\$1,000	Annual weed control to address perennial and annual invasive weeds. Control methods will be primarily spot treatment of regrowth and newly germinating species.
<i>Access Control</i>				
Signage and fencing repairs	Landscape contractor	Open space -wide	\$500	Assumes minor repairs to fencing breaks and signage. Does not include replacement. Assumes replacement of one sign per year at \$200 (included in this cost).
<i>Property Trash and Encampments</i>				
Encampment removal	City	Not documented during site visits, however it is has been reported that they occur regularly	\$6,000	Assumes that encampments can be removed without the use of heavy equipment. Includes removal and off-site disposal. Assumes that removal is coordinated with the Sheriff's department
Remove trash and debris from open space	Landscape contractor	Open space -wide	\$2,000	Assumes quarterly visits. Assumes that all noted trash and landscape debris can be removed without the use of heavy equipment. Includes removal and off-site disposal.

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

Table 23
Cost Estimate For Stewardship Maintenance at the Encinitas Senior Center

Task	Responsible Party	Location in Open Space	Cost Estimate	Assumptions
<i>Additional Maintenance Cost</i>				
Monitor the open space to address site conditions and necessary stewardship.	Biological consultant	Open space -wide	\$1,000	Assumes twice per year monitoring visits to provide additional recommendations for maintenance actions. Particular attention should be paid to erosion issues.

Initial Site Assessment Report for the Encinitas Habitat Stewardship Program

14 ACKNOWLEDGEMENTS

This report was prepared by Dudek biologists Anita M. Hayworth, PhD., Scott Gressard, Andy Thomson, and habitat restoration specialist Kyle Matthews with Habitat Restoration Sciences. Graphics were provided by Lesley Terry; Devin Brookhart and David Mueller provided formatting.

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for the Encinitas Habitat Stewardship Program**

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APPENDIX A
Site Assessment Reports

June 17, 2015
Diane Langager
Principal Planner
City of Encinitas
505 South Vulcan Avenue
Encinitas, California 92024

8700-01

Subject: Initial Assessment Report for the Encinitas Habitat Stewardship Program – Appendix A

Dear Diane:

Per the City's Early MHCP Implementation Program RFP, Dudek visited the requested list of sites and conducted a site assessment that identified vegetation communities and potential management and stewardship issues for each site. The information that was collected included baseline biological conditions on each property, focusing on sensitive habitat areas including coastal sage scrub, maritime chaparral, riparian and wetland areas, and habitat for special-status plant and wildlife species. During field visits, Dudek habitat management staff used handheld tablets with property boundaries and aerial imagery to conduct the assessment and identify stewardship issue areas on each property. The field team developed a form in order to make sure similar data was collected at each site.

The site assessment characterized the current conditions of each individual site, specifically in terms of the following:

- Area of invasive plant infestation. The assessment included a general mapping of location and level of infestation with notation of other invasive species present.
- Property trash. Dudek noted and mapped any trash deposits that require equipment to haul.
- Encampments.
- Erosion and hydrological issues.
- Fire management.
- Access control and signage.
- Observed special status species

The Data forms are assembled and attached to this letter as **Appendix A** of the work effort and are separate from the actual report **Initial Site Assessment Report for the Encinitas Habitat Stewardship Program** due to the length of the appendix.

If you have any questions regarding this letter, please feel free to contact me at 760.479.4239, or ahayworth@dudek.com.

Sincerely,



Anita M. Hayworth, Ph.D.
Principal/Senior Biologist



CITY OF ENCINITAS SITE ASSESSMENT REPORT

605 THIRD STREET
ENCINITAS, CA 92024
T 800.450.1818

F 760.632.0164

Monitor(s) Initials	SG	Temperature:	65
Date:	01/12/15	Wind:	1-4
Time:	8030	Cloud Cover:	50%
Site ID:	Cottonwood Creek		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	Y	Hand					
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembranthemum</i> spp.)	Y	Hand	5-10% total cover				On west side within disturbed css
Giant reed	Y	Hand	<2% total cover				In north section near stormpipe
Castor bean	Y	Hand		3 patches			See map
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	Y	Hand		10-13 trees			A. Cyclops, A. dealbata



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Myoporum	Y	Hand		1 tree (<12" DBH)			In north section
Kikuyu grass	Y	Hand		1 large patch			In north section near storm drain
Encampments onsite? Y / N							
If yes, map and describe: Some signs of use of the ephemeral stream bed (old clothes, bottles, etc...) One encampment and structure on the eastern edge along fence (~70 square feet)							



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Photos taken? Y / N

Trash onsite Y / N

Describe any trash onsite (map large items requiring equipment to remove):

Minor trash items (cans, food-related trash, rain gutter) – some in CSS, but primarily within the SWS (tire, bottles, old chain link fence)

No trash would require machinery to remove

Photos taken? Y / N



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Minor rilling at multiple locations on east facing slope

If iceplant is treated and removed then additional erosion may occur if soil is not stabilized in some manner

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Control annuals in spring

Photos taken? **Y / N**

Fencing/signage issues or needs onsite? **Y / N**



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If yes, describe:

Private property has nursery structure encroaching into preserve as well as several debris piles

Some gaps in fencing along north end of preserve along property line

Signage recommended to keep people on trails as well as fencing along edges of trail to help disturbed css recover

Photos taken? **Y** / N



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Misc. Notes

Ornamental pine trees have been planted along western edge of property

Other Invasive species observed:

Euc spp.	Ero cic
Bra nig	Nic gla
Hir inc	Ric com
Sch ter	Gle cor
Bro mad	Bro dia
Ave fat	Aru don
Oxa pes	Opu fic
Nasturtium spp.	Car edu
Mes cry	Asp asp
Urt ure	Pinus spp.
Rum cri	Pen cla
Sis cri	Was rob
Aca cyc	Pho can
Lily spp.	Rub dis
Pen set	Sal tra
Cen mel	Che mor
Apt cor	Myo lae



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Monitor(s) Initials	KM, SG	Temperature:	68
Date:	01/13/15	Wind:	0-1
Time:	1630	Cloud Cover:	60%
Site ID:	Encinitas Senior Center		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	<5%				Largest patch at southern section adjacent to OakCrest Dr
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	N						



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Minor items, nothing requiring heavy machinery (paper and food-related trash) – very minimal

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Minimal rilling in trails

No repairs recommended at this time

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Photos taken? **Y / N**



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Fencing/signage issues or needs onsite? Y / N

If yes, describe:

Majority of fencing in good condition and signage is posted.

Additional fencing along trails would discourage off trail use of native habitat as well as additional signage especially in southeast section

Photos taken? Y / N



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T 800.450.1818

F 760.632.0164

Misc. Notes

Other Invasive species observed:

Euc spp.

Son asp

Rosemary

Pen set

Car edu

Pinus spp.

Urt ure

Ornamentals



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Monitor(s) Initials	KM, SG	Temperature:	66
Date:	01/13/15	Wind:	0-1
Time:	0815	Cloud Cover:	65%
Site ID:	Indian Head Canyon		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	<1%				Small patch in north end of site – recommend removal while patch is so small
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	Y	Hand		5-7 trees (12-24" DBH;			In center of site disturbed area



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				<12" DBH)			
Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							



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If yes, map and describe:

Photos taken? **Y / N**

Trash onsite **Y / N**



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Describe any trash onsite (map large items requiring equipment to remove):

Pet waste
Old fencing debris
Bottles, cans, food-related trash
Soil piles and asphalt mixed in

Photos taken? **Y** / N

Erosion or hydrology features or issues onsite? **Y** / N



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If yes, describe:

Moderate to severe rilling in trails

Erosion to some banks within channel on west end of site
Soils dumped with no BMPs in place

Photos taken? **Y** / N

Fire management issues onsite? **Y** / N

If yes, describe:

Control annual species in disturbed areas (appears to be happening as there was not significant accumulation of thatch observed)

Photos taken? **Y** / N

Fencing/signage issues or needs onsite? **Y** / N



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If yes, describe:

Additional fencing and signage would discourage off-trail use (esp. on east side where *Plantago erecta* plants were observed)

Photos taken? Y / N



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Misc. Notes

Other Invasive species observed:

Bra nig

Hir inc

Ero cic

Foe vul

Con mal

Opu fic

Cen mel

Sil mar

Euc spp.

Bro mad

Bro dia

Ave fat

Ave bar

Asp asp

Rum cri

Son asp

Sal tra

Oxa pes

Atr semi

Aca lon

Car edu

Mal par

Xan str



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T 800.450.1818

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Pinus spp.

Mar vul



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Monitor(s) Initials	KM, SG	Temperature:	69
Date:	01/13/15	Wind:	0-1
Time:	1520	Cloud Cover:	65%
Site ID:	Oak Crest Park		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	<5%%				Scattered – very low presence
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	N						



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Minor items, nothing requiring heavy machinery (paper and food-related trash) – very minimal

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Minimal rilling in trails
Some steep slopes have gullies that are somewhat stabilized
No repairs recommended

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Photos taken? **Y / N**



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Fencing/signage issues or needs onsite? Y / N

If yes, describe:

Majority of fencing in good condition and signage is posted.

Additional fencing along trails would discourage off trail use of native habitat as well as additional signage especially in southwest section

Photos taken? Y / N



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Misc. Notes

Other Invasive species observed:

Euc spp.

Son asp

Rosemary

Pen set

Car edu

Pinus spp.

Urt ure



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T 800.450.1818

F 760.632.0164

Monitor(s) Initials	SG, KM	Temperature:	70
Date:	01/13/15	Wind:	0-1
Time:	1300	Cloud Cover:	25%
Site ID:	Open Space #1		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	Y	Hand	<3%				Scattered
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	<5%				
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	Y	Hand		5-7 trees	<12" DBH		



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe: No actual encampments seen onsite; however there was a large amount of trash onsite and signs that it was being used as a potential access to other offsite encampment areas (under culvert)							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Large amounts of miscellaneous and food item trash. Shopping carts. Grass clippings thrown over fence adjacent to baseball field

No items would require heavy machinery to remove

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Vegetation thick, but not near any structures so NO fire management issues. Control annual vegetation near CSS in south section.

Photos taken? **Y / N**

Fencing/signage issues or needs onsite? **Y / N**



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If yes, describe:

Fencing broken in some areas, presumably for vagrant access to the site

Photos taken? Y / N



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T 800.450.1818

F 760.632.0164

Misc. Notes

Other Invasive species observed:

Pho can
Euc spp.
Cor sel
Aca cyc
Was rob
Con can
Oxa pes
Son asp
Apt cor
Sch ter
Ero cic
Bro dia
Bro mad
Ave fat
Bra nig
Hir inc



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T 800.450.1818

F 760.632.0164

Monitor(s) Initials	SG, KM	Temperature:	70
Date:	01/13/15	Wind:	0-1
Time:	1500	Cloud Cover:	25%
Site ID:	Open Space #2		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	Y	Hand	<3%				Scattered
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	N						
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	Y	Hand		3-4 trees	<12" DBH		



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe: No actual encampments seen onsite; however there was a large amount of trash onsite and signs that it was being used as a potential access to other offsite encampment areas (under culvert)							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Large amounts of miscellaneous and food item trash. Shopping carts

No items would require heavy machinery to remove

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Vegetation thick, but not near any structures so NO fire management issues

Photos taken? **Y / N**

Fencing/signage issues or needs onsite? **Y / N**



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If yes, describe:

Fencing broken in some areas, presumably for vagrant access to the site

Photos taken? **Y** / N



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T 800.450.1818

F 760.632.0164

Misc. Notes

Other Invasive species observed:

Euc spp. (not recommended for removal based on shade they provide for trail and nesting habitat for raptors – unlikely that they could spread from this location)

Sch ter

Aca cyc

Euc spp.

Was rob

Pho can

Cor sel

Son asp

Pin spp.

Oxa pes



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Monitor(s) Initials	SG, KM	Temperature:	67
Date:	01/13/15	Wind:	0-1
Time:	1020	Cloud Cover:	35%
Site ID:	Open Space #3		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	Y	Hand	<3%				South end
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	5-10%				
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	Y	Hand		1 tree	<12" DBH		



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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T 800.450.1818

F 760.632.0164

Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Minor trash items along road.

No trash would require machinery to remove

Photos taken? **Y / N**



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F 760.632.0164

Erosion or hydrology features or issues onsite? Y / N

If yes, describe:

Channel eroded in some areas, especially in southern section, and the banks are steep making it more vulnerable to erosion issues.

Photos taken? Y / N

Fire management issues onsite? Y / N

If yes, describe:

Management of annuals in disturbed css area

Photos taken? Y / N

Fencing/signage issues or needs onsite? Y / N



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If yes, describe:

Fencing and signage would prevent any future use. No sign of current use besides trash from Saxony Road and one set of vehicle tracks near north end.

Photos taken? Y / N



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ENCINITAS, CA 92024
T 800.450.1818

F 760.632.0164

Misc. Notes

Other Invasive species observed:

Nic glau
Gle cor
Ric com
Foe vul
Cor sel
Ero cic
Bra nig
Mal par
Yuc spp.
Son asp
Euc spp.
Sil mar
Was rob
Car edu
Cen mel
Sch mol
Aca cyc
Urt ure
Con mal
Loc ser



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Monitor(s) Initials	SG	Temperature:	65
Date:	01/12/15	Wind:	1-4
Time:	1430	Cloud Cover:	50%
Site ID:	Open Space #4		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	<1%				In northern strip north of La Costa ave
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	N						



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe: Some use of the site to access canyon (cut in fence around basin, trail), but no actual encampments seen on the preserve							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Minor trash items (cans, food-related trash, rain gutter) – all trash primarily in and around NNG area at north end of site

No trash would require machinery to remove

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? Y / N

If yes, describe:

Large drainage down center of canyon that runs into basin. Steep banks along channel.
Rilling in trails at top of hill (moderate-severe)
California ground squirrel burrow complex within sides of basin, could result in erosion issues

Photos taken? Y / N

Fire management issues onsite? Y / N

If yes, describe:

Management of annuals around basin

Photos taken? Y / N

Fencing/signage issues or needs onsite? Y / N



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If yes, describe:

Cuts in fencing around basin allowing access to canyon to south
Signage recommended to keep people on trails as well as fencing along edges of trail to protect native css and smx habitat

Photos taken? Y / N



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T 800.450.1818

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Misc. Notes

Other Invasive species observed:

Ero cic

Bra nig

Oxa cor

Cen mel

Hyp gla

Car edu

Bro dia

Ave fat

Bro mad



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Monitor(s) Initials	SG	Temperature:	68
Date:	01/12/15	Wind:	0-1
Time:	1235	Cloud Cover:	70%
Site ID:	Row #1		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	<1%				Scattered – very few individuals
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	N						



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

No trash items observed. Trash cans along trails and appears to be sponsors for trail maintenance which likely take care of trash.

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Some rilling on trail on south end of site (see map)

Erosion of the bluffs a concern, especially with no fencing to prevent public from using the area. Clear that there is use of bluff edges

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Open understory along track of homes for trails – therefore no fire management issues.

Photos taken? **Y / N**



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Fencing/signage issues or needs onsite? **Y / N**

If yes, describe:

Fencing and signage would be recommended along bluff edge to encourage public to stay off and reduce impacts from erosion.

Photos taken? **Y / N**



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F 760.632.0164

Misc. Notes

Other Invasive species observed:

Euc spp. (not recommended for removal based on shade they provide for trail and nesting habitat for raptors – unlikely that they could spread from this location)

Bra nig

Ero cic

Ana arv

Ave fat

Bro mad

Hyp gla

Car edu



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Monitor(s) Initials	KM, SG, AT	Temperature:	66
Date:	01/07/15	Wind:	0-1
Time:	1530	Cloud Cover:	55%
Site ID:	Row #2		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	15-20%				Large patches along trails
Giant reed	Y	Hand		1 patch			On west side
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	N						



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Pet waste
Bottles, cans, food-related trash
Bark pile at north end

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Moderate to severe rilling in trails

Minor erosional drainages along sides of preserve

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Control annual species in disturbed areas

Photos taken? **Y / N**



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Fencing/signage issues or needs onsite? **Y / N**

If yes, describe:

In good shape, except for a few private residences. Looks to be maintained as the site is used as a dog park.

Additional signage to remind public users to pick up after pets

Photos taken? **Y / N**



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Misc. Notes

Other Invasive species observed:

Car edu

Foe vul

Rum cri

Aga ame

Sch ter

Pinus spp.

Aru don

Opu fic

Asp asp

Ero cic

Cen mel

Urt ure

Euc spp.



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Monitor(s) Initials	SG	Temperature:	65
Date:	01/12/15	Wind:	0-1
Time:	0730	Cloud Cover:	50%
Site ID:	Standard Pacific Park		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	Y	Hand	<1%				
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	5-10%				
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	Y			1 tree	<12"		



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Minor items, nothing requiring heavy machinery

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Minor rilling along north facing slopes adjacent to residential neighborhood.

If in need of repair, map location and photo-document.

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Management of large amount of annual species which could provide a large fuel load for fires when dead and dried out.

Photos taken? **Y / N**



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Fencing/signage issues or needs onsite? Y / N
If yes, describe: No, fencing around site is complete and there are no trespassing signs posted.
Photos taken? Y / N



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F 760.632.0164

Misc. Notes

Other Invasive species observed:

Ero bot

Ave fat

Oxa pes

Bro dia

Bro mad

Sal tra

Urt ure

Bra nig

Cor sel

Aca cyc

Foe vul

Mal par



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Monitor(s) Initials	KM, SG, AT	Temperature:	70
Date:	01/07/15	Wind:	0-1
Time:	1130	Cloud Cover:	30%
Site ID:	Stone steps bluffs		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	<5%				Scattered sparingly along bluff
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	N						



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Potential for erosion issues along bluff face, just by nature of the soils and bluff structure. Residents have supported in certain areas.

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Photos taken? **Y / N**



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Fencing/signage issues or needs onsite? Y / N

If yes, describe:

Photos taken? Y / N



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T 800.450.1818

F 760.632.0164

Misc. Notes

Other Invasive species observed:

Aga ame

Car edu

Lim cal

Cyn dac



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Monitor(s) Initials	KM, SG, AT	Temperature:	69
Date:	01/07/15	Wind:	0-1
Time:	1330	Cloud Cover:	30%
Site ID:	Sun Vista Park		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	N						
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	N						
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	N						



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Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



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Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Minor items, nothing requiring heavy machinery (bottles, cans, bucket, etc...)

Photos taken? **Y / N**



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Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Potential for problems in area that had been cleared recently of vegetation.

Appears to be an irrigation or sewer line leak in southeast section adjacent to southern willow scrub within the bark/ornamental planting that is causing extensive ground saturation.

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Photos taken? **Y / N**



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Misc. Notes

Other Invasive species observed:

Api gra

Cal vim

Son asp

Nas spp.

Asp asp



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F 760.632.0164

Monitor(s) Initials	KM, SG, AT	Temperature:	69
Date:	01/07/15	Wind:	0-1
Time:	1515	Cloud Cover:	70%
Site ID:	Swami's Bluffs		

Weed Species	Present onsite? (Y/N)	Species Mapped with GPS or by hand?	Percent Cover (if relevant)	Quantity (if relevant)	Size (if relevant)	Photo-documented?	Notes (equipment access, potential impacts, etc.)
Pampass grass	Y	Hand		5-6 individuals			Along bluff face
Ice plants (<i>Carpobrotus</i> spp. & <i>Mesembrianthemum</i> spp.)	Y	Hand	40%				Covers a large portion of site
Giant reed	N						
Castor bean	N						
Acacias (<i>A. Cyclops</i> & <i>A. longifolia</i>)	Y	Hand		1 tree 12-14" dbh			Only partially within boundary on south side



CITY OF ENCINITAS SITE ASSESSMENT REPORT

605 THIRD STREET
ENCINITAS, CA 92024
T 800.450.1818
F 760.632.0164

Myoporum	N						
Kikuyu grass	N						
Encampments onsite? Y / N							
If yes, map and describe:							



CITY OF ENCINITAS SITE ASSESSMENT REPORT

605 THIRD STREET
ENCINITAS, CA 92024
T 800.450.1818

F 760.632.0164

Photos taken? **Y / N**

Trash onsite **Y / N**

Describe any trash onsite (map large items requiring equipment to remove):

Minor items, nothing requiring heavy machinery (cup and food-related trash)

Photos taken? **Y / N**



CITY OF ENCINITAS SITE ASSESSMENT REPORT

605 THIRD STREET
ENCINITAS, CA 92024
T 800.450.1818

F 760.632.0164

Erosion or hydrology features or issues onsite? **Y / N**

If yes, describe:

Potential for erosion problems on steep high bluff edge if public use is continued there

Photos taken? **Y / N**

Fire management issues onsite? **Y / N**

If yes, describe:

Photos taken? **Y / N**



CITY OF ENCINITAS SITE ASSESSMENT REPORT

605 THIRD STREET
ENCINITAS, CA 92024
T 800.450.1818

F 760.632.0164

Fencing/signage issues or needs onsite? **Y / N**

If yes, describe:

Fencing along South Coast Highway 101 is recommended to discourage public use and protect bluffs, as well as for safety

Signage is also recommended

Photos taken? **Y / N**



CITY OF ENCINITAS SITE ASSESSMENT REPORT

605 THIRD STREET

ENCINITAS, CA 92024

T 800.450.1818

F 760.632.0164

Misc. Notes

Other Invasive species observed:

Car edu

Atr can

Cor sel

APPENDIX B

Invasive Plant Control: Removal and Maintenance in General

July 28, 2015

8700-01

Diane Langager
Principal Planner
City of Encinitas
505 South Vulcan Avenue
Encinitas, California 92024

Subject: *Initial Assessment Report for the Encinitas Habitat Stewardship Program – Appendix B*

Dear Diane:

Per the City's Early MHCP Implementation Program RFP and in conjunction with the preparation of the Initial Site Assessment Report, Dudek prepared a general invasive plant removal and maintenance cost. The task is itemized as Task 3 of the RFP and includes:

1. An average cost estimate for invasive plant management which includes the cost of invasive species removal per acre and an ongoing maintenance program for the monitoring and removal of invasive plants per acre.

Dudek and our construction division, HRS, regularly implement invasive plant maintenance in habitat preserves and open space properties, and we have the experience to provide the City with a well-informed and accurate estimate of the costs for invasive plant maintenance in Encinitas. We prepared a thorough analysis of the removal costs based on the type of species and the condition (age and density) and method of removal.

The cost for invasive plant management is attached to this letter as ***Appendix B*** of the work effort and is separate from the actual report ***Initial Site Assessment Report for the Encinitas Habitat Stewardship Program*** for ease of review.

If you have any questions regarding this letter, please feel free to contact me at 760.479.4239, or ahayworth@dudek.com.

Sincerely,



Anita M. Hayworth, Ph.D
Principal/Senior Biologist

APPENDIX B

Task 3 - Invasive Plant Control: Removal and Maintenance in General

INVASIVE PLANT MAINTENANCE IN GENERAL

Invasive Plant Removal and Initial Effort

The initial effort for invasive plant removal per acre will be highly variable depending on a number of factors such as method of removal, access to the site and to the area, species being treated, specific location and density of the populations, and the size of the vegetation being controlled. The cost range per acre represents controlling the target species within a given continuous acre with the low end of the cost range representing a low percent cover of the target species and the high end of the cost range assuming a higher percent cover of the target species.

The cost range for the initial invasive plant removal task per acre of the invasive plant was concluded to be between \$150 and \$50,000 (dependent on species controlled and method of removal as well as the density of the invasive plant patch). The range for invasive plant removal per acre is relatively large and is due to the species and condition of the patch of invasive plants. Table B-1 provides detail on control. The cost range for conducting an on-going maintenance program for monitoring and control of herbaceous and semi-woody invasive plants was estimated to be between \$150 and \$500 per acre and per year. Shrub thinning is estimated to range from \$1,250 to \$2,000 per acre assuming that it is hand work.

Mowing control generally assumes there is good equipment access. The method is assumed to not be weed whipping but rather a tractor pulling a mower as a more efficient method. Periodically, shrub thinning is required for maintenance.

Table B-1 provides a range of costs per acre for the different methods that could potentially be used for controlling the target species in different size classifications. For lower stature or diameter vegetation the cost range is relatively small since a portion of the cost is mobilization of equipment and crews and the duration of work for controlling vegetation that is two feet tall versus four feet tall is not that variable. When species such as giant reed, pampas grass and castor bean are taller than four feet tall they are likely very densely populated as well which results in a greater variability in the cost range for the removal and/or treatment at this size. The mass of the vegetation that requires removal for this larger stature vegetation can lead to higher costs for removal.

Table B-1
Initial Removal Effort

Treatment Type	Target Species	Description of Vegetation	Cost Range per acre
Mowing	Kikuyu grass, castor bean, pampas grass	<2' in height	\$150-\$500
Hand mowing (weed whips)	Kikuyu grass, castor bean, pampas grass	<2' in height	\$1,250-\$2,000

APPENDIX B (Continued)

**Table B-1
Initial Removal Effort**

Treatment Type	Target Species	Description of Vegetation	Cost Range per acre
Removal /w equipment	Pampas grass, giant reed, ice-plant and castor bean	<4' in height	\$500-\$3,500
Removal /w equipment	Pampas grass, giant reed and castor bean	4'-8' in height	\$3,500-\$5,000
Removal /w equipment	Pampas grass, giant reed and castor bean	>8' in height	\$5,000-\$25,000
Removal by hand	Pampas grass, giant reed and castor bean, ice plant	<4' in height	\$5,000-\$7,500
Removal by hand	Pampas grass, giant reed and castor bean	4'-8' in height	\$7,500-\$15,000
Removal by hand	Pampas grass, giant reed and castor bean	>8' in height	\$15,000-\$50,000
Foliar Herbicide application	Pampas grass, ice plant, giant reed, castor bean, acacias, <i>Myoporum</i> , kikuyu grass	<2' in height	\$150-\$350
Foliar Herbicide application	Pampas grass, ice plant, giant reed, castor bean, acacias, <i>Myoporum</i> , kikuyu grass	2'-4' in height	\$350-\$600
Foliar Herbicide application	Pampas grass, ice plant, giant reed, castor bean, acacias, <i>Myoporum</i> , kikuyu grass	>4' in height	\$600-\$900
Treatment Type	Target Species	DBH	Cost Per Tree
Tree removal	Acacias, <i>Myoporum</i>	<8" DBH	\$500-\$900
Tree removal	Acacias, <i>Myoporum</i>	8"-17" DBH	\$900-\$1,300
Tree removal	Acacias, <i>Myoporum</i>	>18" DBH	\$1,300-\$2,500

The plant removal cost for acacia and *Myoporum* are presented on a per tree basis since providing a per acre cost would have been highly variable due to the same factors described above. In addition, dealing with woody trees often means there is a greater variability in size. The cost for tree removal would include cutting the stump as close to grade as possible and treating the remaining stump with herbicide to prevent regrowth. Stump removal is not recommended due to the undesirable soil disturbance that would be created within the preserve areas.

INVASIVE PLANT ONGOING MAINTENANCE

The on-going maintenance costs for removal of these species will be substantially lower than the initial removal effort (Table B-2). If managed properly, all target species can be controlled with timely follow-up applications of herbicide when they are newly germinating. The herbicide to be used will be selected in accordance with the City's Integrated Pest Management policy (IPM). Using this method, the invasive species will be allowed to desiccate and removal will not be necessary. Should a target species reach maturity, the cost for removal will fall into one of the categories listed on Table B-1.

APPENDIX B (Continued)

Table B-2
Ongoing Maintenance

Treatment Type	Target Species	Description of Vegetation	Cost Range per Acre
Foliar Herbicide application	Pampas, ice plant, giant reed, castor bean, acacias, <i>Myoporum</i> , kikuyu grass	<2' in height	\$150-\$500

APPENDIX C

Habitat Restoration Sciences Qualifications

June 17, 2015
Diane Langager
Principal Planner
City of Encinitas
505 South Vulcan Avenue
Encinitas, California 92024

8700-01

Subject: Initial Assessment Report for the Encinitas Habitat Stewardship Program – Appendix C

Dear Diane:

Per the City's Early MHCP Implementation Program RFP and in conjunction with the preparation of the Initial Site Assessment Report, Dudek prepared an overview of our firm qualifications for the actions listed in the Site Assessment Report.

Dudek and our construction division, HRS, regularly implement invasive plant maintenance in habitat preserves and open space properties, and we have the experience to provide the City with qualified land managers and habitat maintenance personnel.

The overview of HRS is attached to this letter as *Appendix C* of the work effort and is separate from the actual report *Initial Site Assessment Report for the Encinitas Habitat Stewardship Program* for ease of review.

If you have any questions regarding this letter, please feel free to contact me at 760.479.4239, or ahayworth@dudek.com.

Sincerely,



Anita M. Hayworth, Ph.D.
Principal/Senior Biologist

DUDEK/HRS: HABITAT RESTORATION EXPERTS

MANAGEMENT & MAINTENANCE

Firm Organization

- Dudek has provided localized knowledge and practical solutions for California counties and cities for over 32 years. Our midsized, 300-person structure allows us to be nimble problem solvers with project managers who stay involved in clients' projects from start to finish while offering a depth and variety of services. Dudek is a profitable, employee-owned California corporation with a solid history of sound fiscal management. We have performed over 60 on-call contracts for California public agencies and prepared over 1,500 legally defensible environmental documents statewide. Our environmental team focuses on the following services:

- **Resource Management.** We provide science-based analysis for various environmental issues including biological resources. We accurately define existing conditions, assess a project's potential effects, and develop practical, feasible, and effective mitigation measures.
- **Development and Mitigation.** We have in-depth experience managing projects where science, regulatory requirements, and community and stakeholder interests converge. Our specialists integrate ecology, conservation planning, restoration, and horticulture expertise to satisfy mitigation goals.
- **Conservation.** We plan and design practical, sustainable approaches for land management, habitat protection, and species biodiversity.

- Habitat restoration construction/maintenance capabilities are provided through our wholly owned subsidiary, Habitat Restoration Sciences Inc. (HRS). HRS staff members successfully perform habitat restoration installation and long-term maintenance services. We have obtained agency sign-off on hundreds of projects and our crews are well trained and experienced with native species as well as controlling invasive, non-native plant species. Between Dudek and HRS, we are able to provide extensive technical and field staff who are available to perform all requested work. We offer a broad array of in-house services to address land management issues.

DUDEK AT A GLANCE

- California corporation
- Founded in 1980
- 300 employees
- Nine offices statewide, including offices in Sacramento, San Francisco, and Auburn
- Work will be performed from our Sacramento office:
980 9th Street, Suite 1750
Sacramento, California 95814
916.443.8335

HRS SERVICES

- Restoration and mitigation installation
- Native habitat maintenance
- Design/build capabilities
- Landscape maintenance
- Preserve management
- Plant salvage, transplantation, and propagation
- General engineering/construction services

DUDEK/HRS: HABITAT RESTORATION EXPERTS

MANAGEMENT & MAINTENANCE

Habitat Restoration Sciences Inc. (HRS) is a full service, A-General Engineering, C-27 Landscaping, native habitat restoration firm specializing in natural areas.

For over 20 years, HRS staff has successfully performed habitat restoration installation and long-term maintenance services. We have obtained agency sign off on hundreds of projects. Our crews are well trained and experienced with native species and controlling invasive exotic weeds.

Sustainable, Innovative Solutions. We take an Integrated Pest Management (IPM) approach to weed control, and use the most effective, economical, and environmentally friendly methods and materials. Our flexible and adaptive approach helps to restore healthy and vibrant native habitats that meet success standards as quickly and economically as feasible.

Qualified Professionals. Our team provides two licensed pesticide applicators and a staff of habitat restoration specialists and staff biologists who have worked together on numerous restoration projects to create positive results for our clients.

Depth of Resources. HRS is a Dudek company. Dudek is a leading California engineering and environmental firm with over 30 years' experience. The combined HRS/Dudek team is able to offer our clients the highest level of habitat construction, monitoring, and maintenance services through our experienced team of habitat restoration specialists, biological monitors, and arborists.

One-Stop Shop. HRS provides a one-stop shop for comprehensive habitat restoration services for all types of habitat in California. Our team communicates fully to understand clients' goals and objectives for each project. We then develop the most practical technical, regulatory, and economically viable project options.

SERVICES

- Restoration & Mitigation Installation
- Native Habitat Maintenance
- Design/Build Capabilities
- Landscape Maintenance
- Preserve Management
- Plant Salvage, Transplantation, & Propagation
- General Engineering/ Construction Services



Comprehensive Habitat Restoration

We provide a one-stop shop from planning and design through construction and monitoring for comprehensive habitat restoration services for all types of habitat in California. Our team communicates fully to understand clients' goals and objectives for each project. We then develop the most practical technical, regulatory, and economically viable project options.

We stay focused on moving projects forward with sustainable, innovative solutions to achieve successful completion. By owning a wide array of specialized equipment, we can provide the highest quality restoration services by having the right equipment on your project when it is needed. Our broad range of experience, expertise and technical capabilities is reflected in the breadth of services we offer our clients.

HRS BUILDS STRONG CLIENT RELATIONSHIPS BY:

- Understanding thoroughly your project's key issues
- Finding practical solutions, not just identifying problems
- Right staff in place to maintain project momentum
- Communicating often and clearly with you throughout the project
- Full range of services offered

Restoration & Mitigation Installation

We take a creative approach catered to the unique character, constraints, and opportunities of each project and implement adaptive management to guide each project to a successful conclusion. Through this approach, we have successfully performed habitat restoration installation and long-term maintenance services and received agency sign-off on hundreds of projects, including projects in chaparral, coastal sage scrub, grasslands, marsh, riparian, wetlands, woodlands, vernal pools and desert ecosystems.



Native Habitat Maintenance

The foundation for successful habitat restoration projects is early implementation of effective habitat maintenance. We get our projects started on the right foot so that nature can take over. By implementing adaptive management, we then guide each project to a successful conclusion.



Design-Build Capabilities

We have an outstanding record designing and implementing habitat restoration plans that are integrated with project-specific construction complexities while at the same time meeting regulatory agency requirements. Our design-build expertise means cost savings and worry-free implementation of habitat restoration projects.

Design-Build

We provide turn-key planning, design, installation and monitoring to ensure projects meet success criteria and achieve agency sign-off.

Landscape Maintenance

While native habitats are our expertise, we are fully qualified and experienced with commercial landscaping maintenance. When the work requires special expertise, particularly when in proximity to sensitive environments, we work with Caltrans, private developers and public municipalities on parks, parkways & medians.

Preserve Management

Mitigation areas and preserves require specialized long-term management focused on rare species, native habitats, weeds, trash and trespass. HRS habitat managers provide the tools and expertise to maintain mitigation lands in perpetuity.

Plant Salvage, Transplantation & Propagation

Our crews have extensive experience salvaging and transplanting special-status plant species, including bulbs (e.g., brodiaea, mariposa lily, wild onion), herbs (e.g., clarkia, tarplant), shrubs (e.g., summer holly, cacti), and trees (e.g., Joshua tree). Many transplantation projects have involved maintenance to assure successful establishment.

Construction Services

As a California A-General Engineering licensed contractor we provide full-service engineering and landscape contracting for installation and long-term maintenance of California native habitat and associated public infrastructure installation and repair. This offers a significant advantage for our clients who prefer a licensed contractor paired with the expertise of our specially-trained staff for working in natural ecosystems.

We team with Dudek's habitat designers, landscape architects, engineers and construction professionals to provide turn-key contracting for public and private land and infrastructure development. This includes: heavy equipment for right-of-way underground; storm drain installation; rip rap and beach wall repair; concrete headwalls and catch basins; bioswale installation; and operated equipment rental.



Rare Plant Salvage and Nursery Services

Plant propagation of salvaged materials for bulking or temporary storage can be done at the HRS nursery facility where plants will receive extensive attention to assure success of growth.

SERVICES

Habitat Restoration/Mitigation Installation	
Tree cutting/clearing and brush management	<ul style="list-style-type: none"> • Vermeer Chipper • John Deere mower • Davco Hydro-axe • Fecon Masticator
Irrigation Installation	Skilled irrigation technicians on staff capable of both design and installation of irrigation systems that meet individual project needs
Planting, Seeding, and Hydroseed Installation	<ul style="list-style-type: none"> • Extensive experience with native species in all types of environments allows us to select the proper species to be installed at a given site • Hydroseeding • Hand Seeding • Imprinting
Plant salvaging, seed collection, and specialty plant propagation services	<ul style="list-style-type: none"> • Crews have a widespread experience with native species and are capable of seed collection on any scale • Plant salvaging and propagation can be done at the HRS yard where plants will receive extensive attention to assure success of growth
Long Term Maintenance	
Pest Control Advisory (PCA) Services and Herbicide Treatment Programs	<ul style="list-style-type: none"> • In-house PCA • Nine personnel with a QAL • John Deere Spray Rig • Kawasaki 4-wheel drive mule spray rig • Backpack sprayers/wick applicators
Weed Management Services	Crews with extensive knowledge of non-native species and capability to remove these species without causing any damage to adjacent native species
Construction Services: A–License General Engineering Services	
Clearing	Site Preparation
Grading	<ul style="list-style-type: none"> • Vernal Pool Creation • Wetland Creation • Creek and River Channels • Salt Marsh Creation
Utility Trenching	<ul style="list-style-type: none"> • Electrical • Water • Sewer
Weed Abatement	<ul style="list-style-type: none"> • Mowing • Disking • Crushing • Mastication
Fire Zone Management	<ul style="list-style-type: none"> • Thinning and Fuel Load Reduction

FIRM PROFILE

OUR STAFF

HRS offers our clients the highest quality of locally available habitat construction and maintenance services. We routinely apply a proactive, adaptive management approach to habitat restoration work.

Our team members' collaborative efforts have resulted in more signed-off agency projects than any other firm in California. The HRS team works closely with our clients to ensure all work is performed in compliance with federal, state, and local statutes and in compliance with the regulatory agency permits for the project. We understand the complex issues associated with habitat restoration and know how to bring projects to a successful conclusion.

HRS has a pest control business license and ten (10) employees who hold qualified applicator licenses (QALs). HRS takes an integrated pest management (IPM) approach to weed control and uses the most effective, economical, and environmentally friendly methods and materials to achieve these results. We take a flexible and adaptive management approach to restore healthy, vibrant native habitats that meet success standards as quickly and economically as feasible. In addition, HRS is proud to declare it has maintained a perfect safety record with no accidents and ongoing safety meetings.

THE HRS TEAM

- 2 Licensed Landscape Contractors
- 10 Licensed Pesticide Applicators
- 4 Licensed Landscape Architects
- 2 Pest Control Advisors
- 2 Qualified SWPPP Developers (QSD/QSP)
- 1 Botanist
- 1 Wildlife Biologist Permitted for Conducting Surveys
- 5 Habitat Restoration Specialists



EQUIPMENT

Our equipment is in very good working condition and no equipment is more than 10 years old. HRS owns over \$3 million in specialized equipment that is available for our projects.

Quantity	Type
5	CAT 277, 287, 303, 305, 430 (Attachments: Masticator, mower, buckets, spray rig, etc.)
1	John Deere 510IE (Attachments: mower, spray rig, imprinter)
1	Kubota 4400
1	Vermeer Wood Chipper
1	Davco Hydro-axe
2	Kawasaki Mules (off-road capabilities and can be used as a spray rig)
1	Dingo (Attachment: deck mower)
1	Sterling Roll-off Truck (Multiple bins of multiple sizes available up to 40 cu yds)
2	Ronco Dump Trailers
4	Ronco Utility Trailers
2	Freight Water Truck
17	Fleet Vehicles (Ford Ranger, F-150, F-250, F-350, F-450, E-350)
30	Weed Whips
20	Chainsaws (Various sizes)
8	Hedge Trimmers (Various sizes)
	Traffic Control Equipment (cones, signs, etc)



OUR CLIENTS

HRS provides habitat restoration and landscape services for both public and private clients. These include:

- *Development/Contractors*
- *Transportation*
- *Municipal*
- *Energy*
- *Parks*
- *Military*
- *Education*
- *State/Federal*
- *Non Profit*



REFERENCES

Client	Contact	Project Name	Phone Number
City of Carlsbad, Engineering	Sherri Howard (Associate Engineer), Project Manager	Calavera Lake Imprinting and Maintenance	Ph. (760) 602-2756
OC Waste and Recycling	Weena Dalby	OCW&R Native Plant Habitat Management and Maintenance	Ph. (949) 262-2433
City of Carlsbad	Liz Ketabian	The Crossings at Carlsbad	Ph. (760) 434-2978
LSA Associates, Inc. (Irvine & Carlsbad)	Mike Trotta (Environmental Specialist), Project Manager	Escondido Creek Tree Removal and Enhancement Project	Ph. (760) 931-5471

COMPANY PROFILE

Habitat Restoration Sciences, Inc. (HRS) is a Dudek company. The HRS/Dudek team provides “one stop shop” environmental, engineering and construction services for our clients.

HRS/Dudek Team

HRS has offices in **Carlsbad, Auburn and Sacramento**. When needed, HRS leverages Dudek offices around the state and these include:

- San Diego (North County)
- Los Angeles
- Palm Desert
- Riverside
- San Juan Capistrano
- Santa Barbara



Registered, Licensed & Certified Expertise

Our team of experts provides the breadth of professional skills to match any project need – from complete teams blending multiple disciplines for large, complex projects to individuals solving a specific issue.

Construction

California licensed contractors (A and C-27)
Pest control advisors (PCA)
Certified arborist

Environmental

American Institute of Certified Planners (AICP)
Registered Landscape Architects (RLA)
Registered Professional Archeologists (RPA)
Registered Professional Foresters (RPF)
Society of American Foresters, certified foresters
International Society of Arboriculture (ISA) certified arborist
U.S. Fish & Wildlife Service permitted biologists
California Department of Fish & Game permitted biologists
GISCI certified analysts
LEED AP accredited professionals

Engineering

Registered Professional Engineers (PE)
Professional Geologists (PG) and California certified hydrogeologists
Registered Environmental Assessor (REA)

CONTACTS

Mark Girard
President
mgirard@hrs.dudek.com

John Zanzi, CA RLA #2933
NV RLA #481
jzanzi@hrs.dudek.com

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4901 El Camino Real, Suite D
Carlsbad, CA 92008
760-479-4210
760-479-4190 (fax)
Information@hrs.dudek.com
HRSRestoration.com

PROJECTS

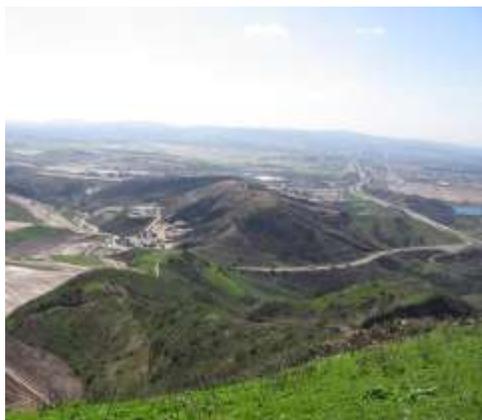
NATIVE PLANT HABITAT MANAGEMENT & MAINTENANCE SERVICES FOR LANDFILLS, COUNTY OF ORANGE WASTE & RECYCLING

Type of Project: Native habitat installation, maintenance, restoration

For (2) consecutive, three-year contracts, HRS provided management and maintenance services for the native plant habitat sites within the FRB and Santiago Canyon landfills. Areas included approximately 60 acres CSS habitat restoration site, 0.14 acres of riparian scrub habitat and 9.0 acres of upland and coast live oak at the FRB site, and 150 acres of CSS habitat at the Santiago Canyon landfill.

Our crews provided the full range of habitat maintenance services for the landfill, including weed abatement services, soil analysis, native seed collection, native plant installation, supplemental irrigation via water truck, hydroseeding, protection of existing native plant habitat resources, and general maintenance.

We worked closely with the client to achieve agency sign-off for several mitigation components of the project.



Native Habitat Maintenance

By implementing adaptive management, we then guide each project to a successful conclusion.

THE CROSSINGS AT CARLSBAD, CITY OF CARLSBAD

Type of Project: Native habitat planting, maintenance, and supplemental irrigation

HRS is currently providing habitat maintenance for the 44 acres of coastal sage scrub (CSS) mitigation, 40 acres of CSS restoration and 7 acres of wetlands. HRS works closely with the project biologist to make sure all areas continue to thrive as habitat.

In 2006, approximately 1,600 non-native trees were removed from the wetland area which required aquatic certification for herbicide application. Additionally, HRS installed over 11,000 native plants in October 2007 in both the wetland and upland areas. At the start of this project, HRS was instrumental in providing Kemper Sports, the golf course management company, a diagnosis of the irrigation controller system.

As a result of the complex restoration project, the golf course exceeds all permit requirements and has created stronger cohesion between HMP land and golf course facilities. *Project received agency sign-off in July 2012, several months ahead of schedule.*



Habitat Installation

HRS worked closely with the project team including the biologists, engineers and architects to make sure the project met all success criteria for successful agency sign-off.

MANZANITA PARTNERS PRESERVE

Type of Project: Management, monitoring and maintenance

Dudek/HRS is currently serving as permanent land manager for the perpetual management of the preserve. The biological resources on the site include a full range, from a number of vernal pools to very rare upland habitat, as well as a number of special-status species including federally listed endangered species. Tasks include trash removal, invasive plant control, monitoring of human use, maintenance of fencing, monitoring of habitat condition and special-status species, and annual reports.



Dudek's Anita Hayworth, PhD, is the habitat manager for this preserve. She helped establish the conservation easement, assisted with the restoration, prepares the annual report, attends meetings with the agencies and the City of Carlsbad, and presents preserve overviews. Most recently, the preserve burned in the Carlsbad fire. As a result, Dr. Hayworth has shifted her habitat review from documenting the continued presence of species to the recovery of the habitat. She has also been active in conducting assessments for this and neighboring properties for the need for invasive species control, trash removal, erosion control, and replacement of fencing and signage. Of critical importance in the next few months is assessing the need to install best management practices (BMPs) to protect the site from erosion. Dr. Hayworth is working closely with HRS SWPPP experts to determine the need for and expense of such action items. Habitat management services for this preserve have been tailored to meet requirements set forth in the Preserve Management Plan and have included the following:

- Qualified biologist/habitat management
- Maintenance and management tasks
- Biological surveys
- Weed control
- Reintroduction of native species
- Outreach and educational programs
- Interactions with agencies and local jurisdictions
- Annual reporting

GREEN HILLS RANCH PRESERVE

Type of Project: Native habitat planting, management, maintenance, and monitoring

Dudek/HRS is currently serving as permanent land manager for the perpetual management of the Green Hills Ranch Preserve in San Diego County (County). The biological resources on the site include a predominance of sage scrub, which provides habitat for California gnatcatcher (*Poliioptila californica*) and cactus wren (*Campylorhynchus brunneicapillus*). The habitat is in juxtaposition with development areas, so preserve management focuses on trespassing issues and invasive species. Tasks include trash removal, invasive plant control, monitoring of human use, and monitoring of habitat condition and special-status species. Reports are submitted annually to the County and resource agencies.

Dr. Hayworth is the habitat manager for this preserve. She helped establish the conservation easement, set up the endowment, and assisted with the restoration described below. She conducts regularly scheduled site assessments as well as focused surveys and evaluates the need for fence repair, erosion control, and weed and trash removal. She also prepares the annual report, attends meetings with the County, and presents preserve overviews.

Dudek also provided environmental restoration services for Green Hills Ranch. Initial services consisted of biological monitoring and habitat restoration maintenance on open space at the ranch property. Based on County requirements, required work tasks for this project included providing a mitigation plan, implementing the installation, and providing the 5-year monitoring and reporting.



AS-NEEDED VEGETATION MANAGEMENT SERVICES, SAN DIEGO COUNTY WATER AUTHORITY

Type of Project: Native habitat planting, exotic plant removal, maintenance and herbicide application

Escondido Creek - HRS has provided brush and weed abatement services for over 50 acres of habitat surrounding Escondido Creek over the last 5 years. At the start of the project, HRS performed the treatment and clearing of over 100 exotic species along the creek to allow for native habitat to thrive. Additionally, HRS planted a number of native container plants in mitigation areas to help this project meet its requirements for agency sign-off.



San Vicente Reservoir In the fall of 2011, HRS performed brush clearance and weed abatement for over 36 acres at the San Vicente Dam on the slopes near the quarry and lake to prevent birds from nesting in the area because the water level will be raised in the summer of 2012. Additionally, this area created a fire buffer zone surrounding the concrete batch plant at the quarry providing a safer work environment for all employees. Due to the terrain of the project area the only mechanical approach HRS could use for the clearance was chain saws, hedgers and weed whips. Despite being unable to use tractors to speed up this work, HRS was able to complete the clearance in less than 4 days and has continued to maintain these areas throughout 2012 using monthly herbicide applications to prevent regrowth.

PETER'S CANYON REGIONAL PARK, ORANGE COUNTY PUBLIC WORKS

Type of Project: Native habitat restoration and exotic plant removal

The park encompasses 354 acres of coastal sage scrub, riparian, freshwater marsh and grassland habitats. In early 2012 HRS was awarded the contract for the restoration of the wetland area at Peter's Canyon Regional Park just south of the dam. The first stage of this project involved clearing over 750 non-native trees throughout the mile long wetland including species such as Eucalyptus, Peruvian Pepper, Chinese Fan Palms, Acacia, and Washington Palms. The size of the trees varied from a DBH of 6" to as large as 75". HRS was able to complete the clearing of all trees in less than two months before the start of the bird nesting season.



WETLAND CREATION AND THREAD-LEAVED BRODIAEA TRANSPLANTATION PROJECT, SAN MARCOS UNIFIED SCHOOL DISTRICT

Type of Project: Native habitat planting, maintenance, and supplemental irrigation, rare plant transplantation

This project includes seven acres of onsite mitigation/revegetation work and one acre of wetland creation. HRS salvaged thread-leaved brodiaea from the project area using the “soil block method” and transplanted to an on-site preserve area. The corms and soil were moved to an on-site preserve where they will be protected and monitored over the long term. HRS is currently maintaining the project during the 7-year maintenance period. Year 4 data collection has shown that the transplantation effort was successful, with more than 30,000 transplanted thread-leaved brodiaea growing in 2010, which exceeds the performance criteria for the project.



ROCK SPRINGS ROAD WETLAND MITIGATION PROJECT, JACKSON PENDO DEVELOPMENT

Type of Project: Native habitat planting, maintenance, and supplemental irrigation, herbicide application

Project included exotic removal and planting services. Work included removal of all exotic vegetation including *Arundo donax* and installation of erosion control including silt fence and fiber rolls. Work also included the installation of approximately 1300 native plants and cuttings. HRS’ sub-consultant, Hydro-Plant, provided hydroseed services for the 0.40 acre section of the 1.55 acre project site. This project successfully met its 120-day plant establishment period and met its success criteria and received sign off in 2011 with the regulatory agencies.



AS NEEDED VEGETATION MANAGEMENT SERVICES, CENTER FOR NATURAL LANDS MANAGEMENT

Type of Project: Native habitat maintenance and herbicide application

HRS is currently providing as needed vegetation management services in the San Diego area in both wetland and riparian habitats. The works includes brush clearance and herbicide treatment at various sites totaling over 50 acres. HRS has coordinated with volunteer groups for planting and invasive removal during volunteer events. HRS has also provided as-needed services for fence repair, habitat management, trash and debris removal, erosion control and BMP installation.

