

Nature Reserve of Orange County

County of Orange
Central/Coastal NCCP/HCP

2007 ANNUAL REPORT



Orange Throated Whiptail

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The orange-throated whiptail lizard is one of three target species protected by the Orange County Central/Coastal NCCP/HCP and is a California species of concern. It has specific soil requirements and is dependent upon a single species of termite as its principal food source. The whiptail inhabits a variety of plant community types that thrive in loose, well-drained soils including chaparral, coastal sage scrub, and coastal strand vegetation, and oak woodland, grassland and riparian communities in Orange County. They are primarily found at elevations below 850m. Whiptail populations are closely associated with their principal food source, western subterranean termites, and the habitat that supports them. The whiptail relies on its striped color pattern for camouflage, which is particularly effective when the whiptail is motionless in the shade beneath overhead structure. Perennial shrub cover is important for adults, hatchlings, and juveniles. Females deposit their eggs in thick patches of annuals and grasses. This cover type may afford the best protection for hatchlings or provide the structure that supports food of the appropriate size.

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ANNUAL REPORT 2007

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Acknowledgement

With appreciation and thanks to all of the reserve landowners and land managers whose reports made a significant contribution to this NROC Annual Report.

BACKGROUND

The Implementation Agreement for the County of Orange NCCP/HCP Central and Coastal Subregion specifies that an Annual Report be prepared each year to describe activities of the non-profit corporation and activities of land managers within the reserve. The annual report contains a progress report for the preceding year and a work plan for the following year. This report is being submitted to the US Fish & Wildlife Service and California Department of Fish & Game to fulfill that requirement for the year 2007/2008. Guidelines provided by the Wildlife Agencies were used in the preparation of this report.

INTRODUCTION

The Nature Reserve of Orange County (NROC) is the 501(c)(3) non-profit corporation that was formed to manage the Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) for the Central/Coastal Subregion of Orange County. NROC's mission is *"To ensure the persistence of the reserve's natural communities, including the full spectrum of native plant and animal species, through the protection, study and restoration of native habitats and natural processes."* Thirty-nine sensitive species are protected, including nine plant and 30 animal species. The primary vegetation type in the Reserve is coastal sage scrub, coexisting in an intricate mosaic of oak woodland, native grassland, chaparral, tecate cypress and riparian communities.

NROC coordinates the management activities of reserve landowners & managers in the 38,000-acre reserve system, conducts biological research and monitoring, and implements a habitat restoration and enhancement program. The overall biological goal of the Reserve program is to conserve healthy, functioning ecosystems. This is accomplished through adaptive management, a flexible approach that is open to change based on new scientific information.

1.0 ACCOMPLISHMENTS and ACTIONS

- ❖ Because of vacancies in the offices of vice president and treasurer, at the April 13 meeting of the Board of Directors, an election was held. Director Richard Rozzelle of the California Department of Parks was elected vice president, and Director Richard Demerjian of UC Irvine was elected treasurer.
- ❖ Every two years at-large public directors are elected by the board. In April 2007, the board elected: Elisabeth Brown, representing the environmental community; Jim Meyer, representing the recreation community; and Jerry King, representing the business community. Alternate at-large directors were also elected: Tom Larson, environment; Alice Sorenson, recreation; and Cathy Tucker, business.
- ❖ President Jones, representing the board, sent a letter to the U.S. Fish & Wildlife Service expressing concern over possible development in the El Toro reserve, and requesting that the reserve be established as a National Wildlife Refuge as planned in the NCCP/HCP.
- ❖ The 2006 Annual Report to the Wildlife Agencies was approved.
- ❖ Two Minor Amendments to the NCCP/HCP were approved, neither of which resulted in a boundary change.

- ❖ The board approved the annual audited financial statement for fiscal year 2006.
- ❖ Revisions to NROC investment policies were approved at the September 14 meeting.
- ❖ On May 24, NROC held a conservation forum, "Orange County Wildlands: Wildlife Movement and Connectivity." Topics at the forum included the Great Park & Wildlife Corridor, Coastal Reserve Linkages, Central Reserve Linkages, and concluded with identification of planning issues to be considered in the future.
- ❖ As a result of the Santiago Fire, which impacted 65% of the Central Reserve, NROC held a "fire recovery task force" meeting to provide an overview of the fire, assess post-fire conditions, and identify post-fire issues. Fire ecologist Dr. Jon Keeley, NROC Science Advisor, spoke about "Fire Recovery in CSS and Associated Habitats."

2.0 NROC PROGRAMS & PROGRESS REPORT 2007

2.1 NROC 2007 Program Budget

During 2007, NROC conducted a coastal cactus wren juvenile dispersal telemetry study, and continued the cactus wren/ habitat assessment in the coastal reserve. The passive restoration program was continued for the eleventh year, with the goal of eradicating exotic invasive weeds in areas where native plant populations could prevail in the absence of exotics. A research study was initiated to determine the sustainability of the artichoke thistle control program, and to test active restoration in study plots where passive restoration was not taking place. The cowbird-trapping program increased from 10 to 11 traps in 2007, and 109 cowbirds were captured during the season, 11 fewer than in 2006.

NROC 2007 Program Budget

BIOLOGICAL MONITORING	
Cactus Wren Surveys/Habitat Assessment	\$ 29,139
Cactus Wren Telemetry Dispersal Study	54,876
Subtotal	\$ 84,015
HABITAT RESTORATION & ENHANCEMENT	
Artichoke Thistle Control	\$ 145,776
Veldtgrass Control	37,189
Weed Control Management	22,776
CYCA Control Sustainability/Active Restoration	66,644
Subtotal	\$ 272,385
COWBIRD TRAPPING	\$ 22,500
*NROC PROGRAM BUDGET TOTAL 2007	\$ 378,900
<i>*Does not include staff costs for program development & oversight, and other management expenses</i>	

2.2 NROC Progress Report – Biological Monitoring

- **Cactus Wren Surveys and Habitat Assessment** –

In 2006, the Nature Reserve of Orange County completed a census of the coastal cactus wren population, as well as assessed and mapped suitable wren habitat throughout the coastal subregion of the NCCP/HCP. Monitoring efforts, funded by the Nature Reserve of Orange County from 1997 through 2004 identified cactus wrens in the coastal subregion as of potential conservation concern and highlighted the need for a subregion-wide census and habitat assessment. To meet this need, NROC funded two rounds of focused cactus wren surveys in the coastal reserve, including, existing use areas, special linkages, and non-NROC open space areas in 2006. NROC also funded the mapping and classifying of all significant stands of cactus within 20 management areas. In the surveys 65 occupied territories were found within the coastal reserve. Using site occupancy models which take into account detection probabilities, researchers estimated that 71.4 (± 6) territories were present in the surveyed area. Out of 2,323 acres of cactus scrub mapped in 2006, 1,336 acres (58%), mostly within the 1993 Laguna Beach Fire perimeter, appeared to be insufficiently developed for use by cactus wrens. Out of the total mapped acreage, only 187 acres were found to be occupied, whereas estimates based on historic data suggest that approximately 1,473 acres were occupied in 1992, representing an 87% decline. Out of eight management areas with at least 8 territories in 1992, only two areas in Irvine, Sand Canyon and Turtle Rock, did not show significant declines between 1992 and 2006. Portions of the coastal reserve that did not burn in 1993 but still experienced significant losses included the Sycamore Hills and Aliso & Woods management areas. Declines in unburned areas might reflect differences in biological productivity, edge effects, and limitations in dispersal ability. Given the small size of the cactus wren population in the coastal reserve, slow recovery of burned cactus scrub habitat, and significant population declines in areas that have not burned recently, the wren population is considered to warrant further focused study and development of a management program that aims toward stabilizing the population in the short-term.

The program continued in 2007, and 308 cactus scrub sites were assessed including eight new sites that did not contain cactus wrens. Data from the survey will be analyzed in 2008.

- **Cactus Wren 2007 Telemetry Study and the 2007 Monitoring Results of the 2006 Cactus Wren Translocation Study** -- *Dana Kamada, Biologist*

This report documents the 2007 Nature Reserve of Orange County funded study to outfit fledgling cactus wrens with radio transmitters and to use a hand-held receiver and antenna to relocate the juvenile wrens as they attempted to disperse from their natal territories. It was initially planned to radio mark up to 14 juvenile wrens from several study sites located throughout the reserve system. However, the lack of nesting attempts and low productivity, likely due to low precipitation during the previous rainy season, provided few fledglings to radio mark. We radio tracked 7 fledglings and 3 adult males for 3 to 48 days. We also monitored a pair of banded wrens that were relocated

to Upper Newport Bay in 2006. We tracked two hatch-year wrens for more than 45 days. One moved away from its natal territory (area where the parents were located) and roamed the study site, but did not leave it, and the other was not observed to have left its natal territory. Three other young wrens' signals were lost after 14 to 24 days and another lost its transmitter after 10 days. None were ever relocated during the season. Another young wren's partially eaten remains were found after three days of tracking. Two radio marked adult male parents were followed until the batteries failed and a third lost its transmitter after 21 days, but was resighted up to 48 days later. A banded male that was relocated to Upper Newport Back Bay in 2006 made a 0.7 km breeding dispersal and mated with a relocated female producing one fledgling in 2007.

In this report, the wren radio tracking observations from this study are compared to movement records from two multi-year cactus wren banding studies conducted in coastal Southern California. Cactus wrens near or at their adult size initially appear to be robust enough to tolerate having a small radio transmitter temporarily placed on them. They also appear to tolerate the translocation procedure and initially appear to quickly adjust to their new location. These activities do expose the wrens to an increased risk of injury and mortality and it is unknown what the impacts are on their long-term survival and reproductive success; they should be used and conducted judiciously. It is important to understand cactus wren dispersal patterns in a fragmented landscape in order to manage and conserve their populations in the region and further study is encouraged. However, cactus wren habitat and populations in the reserve appear to continue to decline toward critical levels. Action leading towards conservation, protection and enhancement of existing habitat and populations should take priority.

2.3 NROC Progress Report – Habitat Restoration & Enhancement

In 2006, for the eleventh consecutive year, the Nature Reserve of Orange County funded exotic plant control in the coastal reserve. As in previous years, target weeds included artichoke thistle (*Cynara cardunculus*), veldt grass (*Ehrharta calycina*), Italian thistle (*Carduus pycnocephalus*) and garland chrysanthemum (*Chrysanthemum coronarium*). Exotic plant control treatment areas were prioritized in coordination with The Nature Conservancy and Harmsworth, Associates, the program manager. Treatment involved the direct application of herbicide to individual targeted plants. Treatment locations in 2007 included Laguna Coast Wilderness Park, Aliso & Wood Canyons Wilderness Park, Buck Gully, University of California, Irvine Ecological Preserve, City of Irvine Open Space Preserve, and Crystal Cove State Park.

Treatment of exotic plants began in March and lasted through the end of May. In total, exotic plants were treated for 50 days in 2007. The total acreage treated in 2007 was approximately 1,677 acres. Roughly, 1,464 acres of artichoke thistle, 13 acres of garland chrysanthemum and 200 acres of veldtgrass were treated with appropriate herbicides.

Project monitoring data was collected in 2007 across a series of monitoring plots located in the coastal reserve. In addition, spatial distribution of control efforts were captured on maps and subsequently transferred to GIS. The data collected in 2007

adds additional depth to the existing GIS and TNC datasets and allows for improved review of program success and direction.

The long-term goal of treating exotic species on the NROC is to enhance native habitats and biodiversity by reducing cover and density of exotic plant species.

Objectives for reaching this goal include the following:

- ❖ To control priority exotic plants of management & monitoring concern;
- ❖ To reduce exotic plant species of management concern in the coastal subregion from greater than 3,000 acres currently to less than 500 acres with minimal weed maintenance by 2015;
- ❖ To monitor and control new invasions of rapidly spreading exotic species;
- ❖ To monitor populations of targeted exotic plant species over time to assess the effectiveness of treatment methods and inform future control effort.

2.4 Brown-Headed Cowbird Trapping

Cowbird Trapping Program - The brown-headed cowbird (*Molothrus ater*) trapping program serves to reduce the incidence of cowbird parasitism on the nests of sensitive bird species, including the California gnatcatcher (*Polioptila californica californica*) and the least Bell's vireo (*Vireo bellii pusillus*), in coastal areas of the Nature Reserve of Orange County.

Cowbird trapping in the San Joaquin Hills began in 1993, with trapping occurring in the late spring and early summer of each year across a number of coastal sites. NROC began management of the trapping program in 1999 and has continued to fund the control efforts through the present year. In 2007, NROC funded the operation of 11 cowbird traps operated from April 1 to July 1 for a total of 91 days, or 1,001 trap days.

Cowbird Capture Totals

A total of 109 brown-headed cowbirds was captured during the San Joaquin Hills trapping program in 2007 (Table 1; Table 3 of Appendix 1). Trapping totals included 57 male and 52 female cowbirds. Comparisons with the results of previous years are of limited value because of the substantial difference in the number of traps and duration of the trapping season. The 2007 average of cowbirds removed per trap (9.9) was slightly below the annual average of 14.6 since 1993. This was the first year that no juvenile cowbirds were captured in the history of the San Joaquin Hills program (juveniles were captured in other programs within the same region in 2007). The number of cowbirds captured and the absence of juveniles could have been affected by the uncharacteristically dry season. No banded cowbirds were captured.

The four most productive traps were AW14 (21 birds), SDC2 (19 birds), FS20 (13 birds) and AW16 (11 birds). All of the traps captured cowbirds in 2007, with the least productive trap (ET17) capturing two females. Birds were captured throughout the trapping season. The first birds were captured on April 13 when two males were caught in trap SV12. The last birds were captured on July 1 (the last day of trapping) when one female was caught in trap BR5 and one male was caught in trap AW14. More cowbirds (58, or 53.2%) were captured in April than in any other month. Birds were captured in at least one trap on 38 of the 91 days that traps were operated.

The 2007 male to female ratio of total cowbird captures was 1.1:1, which is not significantly different than the assumed at-large cowbird population male to female sex ratio of 1:1 ($\chi^2 = 0.229$, $P > .05$). Although most trapping programs in Orange County capture more males than females (Leatherman BioConsulting, Inc. 2007a,b,c), it is desirable (from a management standpoint) to capture as many females as possible, because they can lay as many as 40 eggs in the nests of other birds in a single season (Scott and Ankney 1980, Jackson and Roby 1992). The removal of 52 females therefore may have precluded parasitism of up to 2,080 nests, and facilitated the production of up to 6,240 native passerine host young (assuming 3 per nest).

Table 1. Summary of Total Brown-headed Cowbirds Captured, 1993 - 2007

Year	No. of Traps	COWBIRDS CAPTURED					
		Male	Female	Juvenile	Total	Per Trap	M:F Ratio
1993	20	106	55	8	169	8.5	1.9
1994	24	217	292	51	560	23.3	0.7
1995	22	229	195	21	445	20.2	1.2
1996	20	235	189	57	481	24.1	1.2
1997	20	112	104	28	244	12.2	1.1
1998	20	132	146	34	312	15.6	0.9
1999	20	174	123	7	304	15.2	1.4
2000	20	123	81	8	212	10.6	1.5
2001	20	159	158	31	348	17.4	1.0
2002	8	35	54	7	96	12.0	0.6
2003	10	58	56	13	127	12.7	1.0
2004	7	37	44	2	83	11.9	0.8
2005	7	45	42	2	89	12.7	1.1
2006	10	58	45	17	120	12.0	1.3
2007	11	57	52	0	109	9.91	1.1
Total		1777	1636	286	3699		
Average	15.9	118.5	109.1	19.1	246.6	14.6	1.1

2.5 Wildland Fire in the Reserve

Laguna Incident, March 8, 2007:

2.8-acre wildland fire affecting Fire Management Unit 4.06, with a probable cause of arson. Sensitive animal species were affected.

Windy Ridge Fire (241 Incident), March 11, 2007

2,036-acre wildland fire affecting Fire Management Units 11.01 through 11.06, with a probable cause of arson. Affected habitats & species included: Cactus Wren, Gnatcatcher, other sensitive animal species, sensitive plant species, sensitive habitat areas and sensitive archeological areas.

Santiago Incident, October 21, 2007

Wildland fire involving 28,517 acres with a confirmed cause of arson. Of the 19,994 acres in the central reserve, 13,348 were burned – approximately 67%, including Limestone Canyon, Whiting Ranch, Loma Ridge, and the El Toro reserve. The fire destroyed much of the habitat and wildlife in the affected area.

2.6 Pacific Pocket Mouse Custodial Fund

Pursuant to a Letter of Agreement between the US Fish & Wildlife Service, the California Department of Fish & Game, and the Nature Reserve of Orange County, a fund was created in 1998 to support research, recovery and enhancement efforts for the Pacific pocket mouse. The agreement obligated Chandis Sherman (now Headlands Reserve LLC) to deposit funds annually for seven years into a segregated custodial account held by NROC, for a total of \$350,000. All funding has been received. Funds are dispersed at the direction of USFWS and CDFG for projects in support of pocket mouse research, recovery and enhancement. The 2007 beginning balance of the Pacific Pocket Mouse Custodial Fund was \$181,256. Interest income accrued in the amount of \$5,744 during the year. The 2007 ending balance was \$187,000. There were no dispersals.

3.0 NROC WORK PLAN 2008

3.1 Program Budget

The NROC Technical Advisory Committee met in November 2007 to determine what projects to recommend for funding in 2008. Recommended projects were included in the NROC budget projection for 2008, and the board of directors approved the TAC recommendations for projects and associated costs. Statistical analysis of vegetation monitoring protocols will continue through 2008. A research project to assess the sustainability of the NROC artichoke thistle eradication program will be continued. The invasive weed eradication program will continue, probably at a higher level of funding due to the Santiago Fire that burned habitat in 65% of the central reserve, and subsequent rains. The NROC-funded cowbird-trapping program will continue with 11 traps fielded. NROC will add two traps to the program, funded by the County of Orange for five years, to carry out OC mitigation. At the recommendation of the executive director, the board left flexibility to fund opportunistic post-fire studies or increase funding for existing projects if circumstances warrant.

NROC 2008 Program Budget Projection

BIOLOGICAL MONITORING & RESEARCH	
Cactus Wren Assessment – Central Reserve	\$ 76,865**
Vegetation Monitoring Strategy	55,000
Subtotal	\$ 131,865
HABITAT RESTORATION/ENHANCEMENT & RESEARCH	
Invasive Control Sustainability Analysis/Active Restoration	\$ 94,683**
Artichoke Thistle Control	180,000
Veldtgrass Control	40,000
Whiting Ranch/El Toro Weed Control	36,000
Weed Control Management	25,000
Subtotal	\$ 375,683
COWBIRD TRAPPING	\$ 29,360***
MISCELLANEOUS PROGRAMS	
Tecate Cypress Management Plan	\$ 36,990**
Cactus Wren Symposium	6,000**
Subtotal	\$ 42,990
*NROC 2007 PROGRAM TOTAL BUDGET PROJECTION	\$ 579,898
<i>*Does not include staff costs for program development & oversight</i>	
<i>**Partial funding projected from CDFG grants</i>	
<i>***Includes two traps for County of Orange</i>	

3.2 Biological Monitoring & Research

- **Cactus Wren/Habitat Assessment**

The coastal cactus wren is one of the three target species covered by the Orange County Central/Coastal NCCP. Annual target bird sampling of the Nature Reserve of Orange County (NROC) from 1999 to 2004 indicated that cactus wren population declined 68% in the Coastal Reserve and 33% in the Central Reserve. The principal contributing factor for the Coastal Reserve's steep population decline is believed to be the 1993 Laguna Fire, which resulted in the temporal loss of mature cactus scrub habitat within the burn area that will likely take decades to recover. In order to verify and better understand this decline and to develop possible management actions, in 2006 NROC completed a focused survey of all cactus scrub habitat in the coastal reserve, including adjacent non-reserve open space. These surveys not only verified the lack of suitable habitat within the burn area but also documented that many areas of suitable habitat outside of the fire's perimeter do not support wrens today. Because a steep decline has been noted in both burned and unburned areas of the Coastal Reserve, managers believe it critical to understand if this same level of decline is occurring also within the Central Reserve. Moreover, in 2007, more than 75 percent of the central reserve lands burned in the Windy Ridge and Santiago Fires, elevating concern regarding the status of the Cactus Wren in the reserve system.

The NROC will conduct a habitat assessment and directed surveys for the Cactus Wren in the 19,400-acre NROC Central Reserve in Spring 2008. Survey methods shall closely follow the methods developed and implemented by Hamilton, et al, for the NROC Coastal Reserve in 2006. The 2006 survey, which focused on cactus dominated scrub to maximize the potential for observing cactus wren territories, has established an updated baseline that can be used to inform a long term monitoring and management program for the cactus wren within the Reserve system. In order to gain the same level of knowledge about the cactus wren population in the Central Reserve, NROC wishes to survey and map the Central Reserve following the same protocols as the 2006 surveys of the Coastal Reserve. Together these data will establish an updated baseline condition for the cactus wren reserve-wide that will also form the basis for a long-term monitoring strategy and management program for the species.

Using methods adapted from the 2006 NROC Coastal Reserve Cactus Wren Study, the contractor will conduct field surveys to map all cactus resources within the 19,400-acre Central Reserve, of which 16,000 acres have burned in the last 12 months, either during the March Windy Ridge Fire, or the October Santiago Fire. A map of the areas to be surveyed, including the 2007 burn areas, is attached. Cactus resources will be qualitatively assessed according to type, height, adjacent habitat, co-dominants, type of cactus, and patch size. Additionally, all documented cactus scrub patches capable of supporting cactus wren will be surveyed a minimum of two times to document the presence and number of cactus wrens. All data associated with the cactus scrub assessment and cactus wren surveys will be input into an Excel spreadsheet, which will be linked to the NROC GIS database. All mapping, surveys, and database format will be modeled after the study performed for the Coastal Reserve in 2006 to achieve consistency and to allow data comparisons. Upon completion of the surveys and data entry, the contractor shall work with NROC to link the data to the NROC GIS database. Contractor will prepare a report of findings, which will include methods, timing, results, discussion, and management recommendations. The results section will provide a summary of findings regarding number of discrete cactus resources documented, number of cactus wren documented, and number of California gnatcatcher documented. Results will be presented separately for 1) Windy Ridge Burn Area, 2) Santiago Burn Area and 3) unburned areas outside of the Windy Ridge and Santiago Burn areas.

Detailed data analyses will be performed by NROC to estimate occupancy rates, test models of habitat suitability and to make comparisons between subregions. These analyses will use covariate data collected by the surveyor regarding cactus structure, vegetative composition and size of surveyed cactus scrub patches to assess the importance of these key habitat features in explaining species presence and absence.

- **Vegetation Monitoring Strategy – Douglas Deutschman, Ph.D.**

Monitoring is a required element of all HCP and NCCP permits and is critical to assess whether these large-scale multi-species programs are meeting their stated objectives. Developing effective monitoring programs for conservation plans is scientifically and logistically challenging.

Despite nearly a century of interest in monitoring population dynamics, the process remains challenging. One challenge has been the difficulty in applying traditional

statistical theory and methods to biological monitoring. In addition, ecosystems are structured in complex ways based on genetic factors, habitat quality, environmental variability, and accidents of history.

In 2008, we propose to increase the number of plots that we monitor. In addition, we will establish a small seed addition experiment in a few small areas burned during the Santiago fire.

- I. Overall Monitoring Strategy: We propose to expand our coordinated field sampling, data analysis, and statistical modeling. This is the second year of a planned 3-year project. This year we will increase the number of plots from 8 to 24. We will increase replication by adding 6 to 10 CSS plots, 4 to 6 grassland plots, and 2 to 4 chaparral plots. This allocation of effort reflects the fact that grassland and CSS communities are more open and are likely to have more pronounced inter-annual fluctuations.
- II. Modification of Plots: In year 2, we will decrease the size of our plots from 50m by 20m (1000 m²) to 20m by 20m (400 m²). On these smaller plots, we will establish a third transect down the midline of the plot. In addition, we are adding a 1m belt on either side of the transect. Within the belt, we will record the presence of species that were not captured by the point intercepts.
- III. Method and Observer Comparisons:
Much of the effort in year 1 was spent on comparing the three protocols (visual cover, point intercept, and quadrats) across multiple observers. The variance component analysis resulted in complex, sometimes contradictory conclusions depending on the variable of interest. We will continue to use all three protocols at our sentinel plots established in year 1, but will focus on the belt transects and quadrats at all other plots. To the same end, we will continue to use double sampling to evaluate observer variability, but only as a subset of our plots (20 to 40%).
- IV. Analyze the Data using a Variance Components Approach:
Data from both field seasons will be analyzed using a variance components approach. The analysis will partition observed variance into spatial heterogeneity (site, plot and subplot scales), and temporal variability (inter-annual differences). We will also re-analyze the protocol/observer effects using a 2-way factorial ANOVA within plots (as a blocking factor). This more accurately captures the dependency of inter-observer differences on the protocol used and the variable measured.

In consultation and collaboration with NROC, the grantees will collect and analyze data, make presentations of findings in regularly scheduled meetings or special-focus workshops as required by the various tasks.

3.3 Habitat Restoration & Enhancement

- **Measuring Sustainability of Artichoke Thistle Control Efforts**

Following Suspension of Control Activities - For 12+ years the Nature Reserve of Orange County has worked with The Nature Conservancy to control the invasive artichoke thistle (*Cynara cardunculus*) across 38,000 acres of conservation lands located in coastal and central Orange County, California. Historically, much of these lands were grazed by cattle and sheep. In many areas, overgrazing has resulted in disturbed soils and diminished native grassland and coastal sage scrub (CSS) plant communities. This overgrazing promoted the establishment of artichoke thistle which in turn has led to dramatic changes in floral composition and structure across over 4,000 acres of the 38,000 acre Reserve.

Control efforts for artichoke thistle began in 1994. Since this time, approximately 3,000 acres of artichoke thistle have been controlled. The primary methods of control have almost exclusively involved the direct application of herbicides to individual plants with thousands of acres treated annually. Early on in the control program the distribution of artichoke thistle and other invasive species of management and monitoring concern were mapped across the 38,000 acre Reserve and incorporated into a GIS database. In addition to invasive plant cover, data were also collected on existing native plant cover, if present, within mapped areas. Queries of the database allowed land managers to prioritize treatment areas (e.g. areas with high native vegetation cover and low exotic vegetation cover). In addition to the historic distribution of exotic weed species, annual invasive plant treatment data (i.e. the spatial extent of treatment and herbicide used) for the entire Reserve area have been captured annually in the GIS database.

To improve inference concerning effectiveness of control efforts, forty-two (25mx25m) vegetation monitoring plots were established within treatment areas across the Reserve. Data from these plots allowed Reserve managers to compare the effectiveness of different herbicide treatments and to measure the average amount of effort required to control (i.e. substantially reduce cover) artichoke thistle across multiple sites.

Although analyses of the data collected at the monitoring plots show the program was successful at dramatically reducing artichoke thistle cover following continual application of herbicides, little research has been done describing the sustainability of the program following a major reduction in the amount of effort expended in control. Moreover, while qualitative assessments indicate that native plant recovery may be occurring in many treatment areas, no quantitative data have been collected to document this effect.

The current program is scheduled to be fully funded through the year 2015, with the goal of reducing artichoke thistle cover to less than five percent across the entire Reserve. In subsequent years, a low-cost maintenance program has been proposed as necessary to maintain gains generated by the current program. Unfortunately, we have little data to support this assumption. In addition, much of the research available in the literature reports on results following a single season or multiple seasons of treatment. Rarely is success reviewed multiple years after treatment has been stopped.

In 2008, the Nature Reserve of Orange County will fund the collection and analysis of additional data with the goal of informing science advisors what will happen when treatment at the current level is discontinued. At present, NROC is interested in

understanding the importance of treatment history, soil type (clay vs. loam), aspect (north vs. south facing-slopes), and native cover (high vs. low) in explaining susceptibility of a site where artichoke thistle has been controlled to reinvasion following cessation of control efforts.

NROC is currently looking at two potential approaches to meeting this objective. Both involve querying existing GIS data layers describing treatment history and initial conditions. The first approach involves identifying existing sites that differ in treatment histories (specifically, sites where treatment was initiated but then suspended, and sites where treatment was continuous), but share similar initial conditions, and then comparing differences in thistle cover and native recovery between a subset of the two types of sites that differ by soil types, aspect, and native cover values. The second approach involves establishing several large monitoring plots (100mx100m) across sites with similar treatment histories and initial conditions, stratified across areas of different soil types, aspect, and native cover values. Following plot establishment, NROC would discontinue local treatment at a subset of sites within each category and measure changes in exotic and native cover over several years between and within sites.

Both approaches are amenable to change and specific research questions are open for discussion. In 2008, NROC will continue to work with a qualified, dynamic, and efficient research group to make significant progress towards meeting the general objective of understanding what will happen when control is discontinued and to help plan for continual review of the program in the years that follow.

- **Exotic Plant Control Program in Coastal & Central Reserve –**

This project is a continuation of NROC's weed eradication program that began in the mid 1990's and is scheduled to continue to the year 2015. The project consists of herbicide application to targeted exotic weeds (i.e. artichoke thistle, veldt grass, Italian thistle, and garland chrysanthemum) across approximately 1,200 acres within the coastal subregion. Targeted areas include: Shady and Bommer Canyons; Bommer Ridge; Aliso and Wood Canyons; UC Irvine; Buck Gully; Laguna Canyon, and Crystal Cove State Park. The majority of these areas have been treated in earlier years. NROC will also provide weed control treatment for Whiting Ranch and the El Toro Reserve in the Central Subregion for the first time in 2008 due to post-fire weed proliferation.

3.4 Brown-Headed Cowbird Trapping

The cowbird-trapping program includes operation and maintenance of brown-headed cowbird traps in the vicinity of the San Joaquin Hills Transportation Corridor, Nature Reserve of Orange County, and local Orange County Regional Parks.

Twelve cowbird traps will be operated from March 15 to July 15. Ten of the traps represent those that are operated by the NROC on an annual basis. Two additional traps are being operated for the County of Orange as partial mitigation for their San Diego Creek project. The total number of traps proposed for operation in 2008 is one more than was operated in 2007. The two new traps that would be operated for the County of Orange will be located in Talbert Regional Park and Mason Regional Park. The remaining NROC traps will be located in the same locations as 2007.

4.0 RESERVE MANAGEMENT PLANS & POLICIES

4.1 Fire Management Plan

The short-term Fire Management Plan (FMP) was approved by the NROC board in 1999 and distributed to the US Fish & Wildlife Service and California Department of Fish & Game. Firewise 2000 was engaged in 2001 as a consulting firm to revise the long-term FMP. It was then decided to combine the short-term tactical and long-term strategic plans to for a "Wildland Fire Management Plan" for the NCCP. The board approved an interim long-term strategic FMP in 2003 with the understanding that there would be additional review and changes. The wildlife agencies and fire authority agreed that the Lake Mathews FMP would be used as a model for the NROC plan. Volume I, the text background section, has been completed. The detailed map section that includes access points and roads as well as sensitive species and other resources is in progress.

4.2 Habitat Restoration & Enhancement Plan

The HREP was completed and approved by the board of directors in 2003. TAC members were provided copies to review in 2005, and there were no suggestions for revision. The plan will be reviewed again in 2009.

4.3 Recreation Management Plan

According to the NCCP and Implementation Agreement, resource management plans for parks and other open spaces within the reserve will comprise a recreation management plan. In 2004 it was decided that NROC should establish an overview of NCCP requirements, and keep park resource management plans on file for reference. Currently NROC is acquiring plans as they become available, and may consider developing a reserve-wide recreation guidance document in the future.

4.4 Grazing Management Plan

Though a Grazing Management Plan was adopted, grazing in the reserve by cattle ceased in 2002. A grazing monitoring program has been conducted by The Nature Conservancy for The Irvine Company at 19 permanent vegetation monitoring stations throughout the reserve at the grassland/CSS ecotone. Several of the stations are in areas where grazing did not take place as a control measure.

5.0 IMPACTS TO COASTAL SAGE SCRUB HABITAT IN THE COUNTY OF ORANGE CENTRAL/COASTAL SUBREGION NCCP/HCP 2007

5.1 Authorized Take in the Reserve System by Participating Landowners as Reported to NROC in 2007

IRWD: 12.45 acres of within-reserve Take

IWMD: 19.68 acres of impact for landslide backcut project

NROC continues to have a goal of compiling Take records into a cumulative table that can be updated annually.

5.2 Take by Non-Participating Landowners – Mitigation Fee Option

No in-lieu mitigation fee payments were made in 2007.

6.0 ACCOUNTING OF FUNDS RECEIVED AND DISPERSED BY NROC

In 2007 Headlands Reserve LLC, formerly Chandis Sherman, made the third of five annual \$100,000 payments toward their \$500,000 commitment to the endowment. This restricted contribution was placed in the NROC endowment investment fund at Northern Trust Bank.

No funds were dispersed to NCCP/HCP participants. However, in-kind contributions to reserve landowners in the form of invasive weed eradication on their lands totaled \$209,660.

7.0 BOUNDARY CHANGES/MINOR AMENDMENTS IN THE RESERVE SYSTEM

There were two minor amendments approved by the board of directors in 2007. Neither amendment resulted in a boundary change.

Minor Amendment #07-01, City of Irvine

The City of Irvine prepared a Resource & Recreation Management Plan (RRMP) for open space lands within the NCCP/HCP reserve that includes impacts to native vegetation due to trail alignment and other improvements. Since the City does not have 'take' of coastal sage scrub for these impacts, the Minor Amendment process was adopted to allow the City to make improvements impacting CSS. This Minor Amendment added approximately 21.93 acres of land to the reserve, including 15.45 acres of CSS, 0.33 acre of riparian woodland/scrub, and 6.15 acres of ruderal grassland contiguous to the reserve boundary. Approval of the Minor Amendment was not approval for trail realignment of other impacts within the reserve, which are authorized only through approval by the US Fish & Wildlife Service and California Department of Fish & Game.

Minor Amendment # 07-02, Irvine Ranch Water District

Approximately 13.45 acres of CSS were impacted by a leasee to property subsequently acquired by IRWD. The impact was mitigated by debiting IRWD's within-reserve take by 12.45 acres and paying a mitigation fee of \$65,000 for 1.0 acre of impact. The amendment increased undisturbed acreage within the reserve by reducing IRWD take authorization, thus benefiting the biological value for identified species. The in-lieu mitigation fee will be used to fund valuable habitat restoration activities within the reserve.

8.0 NCCP/HCP RESERVE OWNER/MANAGER PROGRESS REPORTS/ WORK PLANS

8.1 Crystal Cove State Park

2007 NCCP/HCP ANNUAL PROGRESS REPORT CRYSTAL COVE STATE PARK

I. Recreation Use, Monitoring and Management

- A. Crystal Cove State Park (CCSP) includes 2,400 acres of backcountry and 400 acres along the coastal terrace. There are 18 miles of marked backcountry trails, both dirt road and single track, open to all hike, bike and equestrian users. There are 3 environmental campgrounds located from 2 to 3 miles inland. Paved bike/pedestrian paths along the coastal terrace connect with 6 beach parking lots and 10 access ramps. The park's 3 miles of beach is fringed with intertidal reef pools that connect with the 1,140 acre Underwater Park/Marine Life Refuge. The Crystal Cove Historic District is on the National Register of Historic Places and contains 46 beach cottages built in the vernacular style of architecture between 1920 and 1940. General park areas are open every day from 6 AM until dark, while the Historic District welcomes day use fee visitors from 6AM to 10PM daily and hosts registered guests overnight in thirteen of the cottages.
- B. All legal trails are named and found on free maps and at signed trail intersections in the backcountry. Some illegal trails have been marked with signs noting closure/resource impacts, fenced and obscured with cut vegetation. Backcountry trails have been measured using NROC Trail Condition Assessment protocols set by the Recreational Ecology Subcommittee of the TAC. NROC biological monitors have included herpetological/amphibian trap arrays, raptors, cowbird control, focused rare bird surveys, and artichoke thistle measures.

A total of 240 Special Events were permitted in 2007. Weddings, picnics, parties, photo shoots and group gatherings were the most popular events located primarily along the coast. Events are reviewed for potential impacts by the Special Events Program Permit Coordinator and Supervising Park Ranger. A small gathering may need no more than a reminder to haul out trash, whereas larger events may go through the CEQA review process and have assigned patrol officers and resource monitors. All events are allowed with plans for no impact to the resources. Special event program guidelines were updated during 2007

to ensure protection of park resources and to address the park and concession operations at the Historic District.

- C. Park facilities and trails are open daily, but may be closed seasonally due to rain-saturated roads or extreme fire danger.

Several groups have embraced coordination and education of the public within the park, including: Crystal Cove Interpretive Association, Crystal Cove Alliance (focused on preserving the Historic District), SHARE- a biking / conservation group, as well as trained docents to lead tours on the topics of the Historic District, the backcountry, the beach and tide pools, flora, geology, and cycling. The park participates in other area-wide coordinating groups, including: Orange County Wild, South Coast Wilderness Group, Orange County Coastkeeper, and the Marine Life Refuge Committee, a subset of the Orange County Coastal Coalition.

The park has a staff of 9 State Park Peace Officers (three State Park Rangers, five State Park Lifeguards, and a State Park Superintendent). They patrol and monitor all sectors of the park and enforce rules and regulations with warnings, citations, and arrests. The park attracts approximately one and a half million visitors each year and is projected to steadily increase with nearby residential and commercial property development. The beach and Historic District continue to be the major visitation attraction although the backcountry wilderness trails and campsites have experienced steadily increasing visitation as well. 332 swimmer rescues were made during 2007 with an additional 14,114 preventative aquatic actions. 7 boat rescues occurred along with 1 vessel assist and 96 warnings issued. 578 minor medical aids and 32 major medical aids were recorded. State Park law enforcement action included over 2,000 warning of violations, 76 crime reports taken, 110 citations/arrests, and 394 parking citations issued.

- D. Interpretive and educational programs are a core component of the State Park mission of informing the public about natural, cultural, and historic resources. In 2007, 59,619 people attended 405 formal interpretive programs including Historic District tours, tide pools tours, beach processes, gray whales, geology, subtidal life, terrestrial habitats, native flora, Native American culture, raptors, night animals and bats, and mountain biking etiquette. Classes were taught by professional interpreters, park docents, and Orange County Schools (Inside the Outdoors) for a total of over 5,000 participating students. In addition, virtual field trips using online videoconferencing courtesy of PORTS (Parks Online Resources for Teachers and Students) allowed students from as far away as Alaska to visit Crystal Cove State Park remotely and participate in tide pool study. The remaining portion of interpretive activities include contact with visitors through self-guided tours, trails, videos, brochures, or contact with volunteers at the visitor centers. A total of 208,174 hours were logged during the year for combined interpretive/educational programming at the park.

Community outreach efforts include coordination with neighboring homeowners associations on topics of pet and feral cats and dogs in the park, over watering and water quality, exotic invasive plants, enforcement patrols, water safety, fuel modification zones and fire safety. State Parks participated in a multi-agency/organization effort to develop interpretive and informational signage for the Laguna Coast Wilderness park areas which were installed in 2007 at designated backcountry entry/exit points.

II. Recreation Facility Construction and Maintenance

Crystal Cove State Park was purchased in 1979, a General Plan adopted in 1982, and the majority of recreational facilities built by 1985. A General Plan Amendment and EIR were finalized in November 2003 resulting in the Historic District – Preservation and Public Use Plan. The first phase of cottage restoration, a \$14.2 million public works project, was completed on March 29, 2006 and included the restoration of 22 cottages, road and utility improvements, slope stabilization, accessibility improvements, infrastructure upgrades, a new entrance station, accessibility and parking improvements, historic landscape restoration, and water quality measures. On November 16, 2007, the Office of Historic Preservation presented a Governor's Historic Preservation Award to Crystal Cove State Park for the Phase I Restoration of the Historic District cottages.

In March of 2006, State Parks awarded a twenty-year concession contract to the non-profit Crystal Cove Alliance for the management and operation of food and lodging services in the park. These concession amenities include the Crystal Cove Shake Shack located on PCH, the Beachcomber Café, and 13 cottages for overnight lodging. The lodging operation opened to public use on June 26, 2006 and has since enjoyed an astounding 99% occupancy rate. 24,000 overnight guests experienced the charm of the Historic District cottages in 2007. The Beachcomber Café which opened on August 15, 2006 continues to generate favorable reviews and gain in popularity. Over 200,000 meals were served in 2007. The concession operation generated nearly \$4.1 million in gross revenues during 2007 and has proven to be a successful model for partnerships serving the people of California.

Both the park and Southern California Edison, under easement agreement, carry out annual road and trail maintenance. Parks annually address unsafe gullies and rills, excessive weeds, poor drainage, culvert maintenance, brushing back, and single-track repairs, while SCE grades roads to control width and smoothness for equipment access. SCE may also make select cuts to limbs of trees that may impact either their heavy equipment or power lines. This fall, the OCFA Fire Crew hand cut vegetation along El Moro Canyon road to ensure comfortable clearances.

Drainage and seasonal water management is addressed at the time of road grading. Grading produces a berm and can block out sloped drainage. Parks has requested that SCE not produce berms, yet in many cases sheet flow is impacted. We strive for frequent flow-through berm

cuts to keep drainage off the roads. Seasonal ponds are left in place until dry.

III. Infrastructure Construction and Maintenance

Operation and maintenance activities are focused within existing footprints of developed areas, i.e. parking lots, restrooms, operations buildings, and roads and paved paths. The interface of open space with these facilities is controlled along their edges by brushing back to maintain Department standards for safe operations and viewshed. Trails and backcountry roads are also brushed back or weeds mown to maintain Department trail standards. If these activities are conducted during sensitive bird nesting season, a biological monitor will conduct surveys for impact avoidance.

2007 saw the installation of distinctive monument signs at the Pelican Point, Reef Point and Historic District entrances as well as new information signage at the kiosks with the generous assistance of The Irvine Company. The paved portion of the multi-use trail and the parking lots at the Historic District and El Moro Visitor Center were enhanced via the application of slurry coating. Signs indicating “dead end” utility access trails were installed in the back country to ease trail navigation by park visitors.

Plans continue for the installation of a new campground on the site of the former El Morro Trailer Park. This project has generated much excitement, and representatives of many different construction firms registered at the mandatory pre-bid site walk held on December 5, 2007. Construction is anticipated to begin in early summer of 2008.

IV. Habitat Restoration and Enhancement

Since 1982, the park has had continuous restoration efforts in coastal sage scrub, grassland, and riparian habitats. Using Department funding sources during 2007, several hundred acres of weeds were controlled by use of herbicides, mowing, and hand pulling. Artichoke thistle, black mustard, fennel, arundo and hemlock were the primary targets. Approximately 325 acres of artichoke thistle were treated, 83% with NROC contract crews, the remaining by park staff. The majority of the sites were treated with the herbicide Transline at an early growth stage. Treatment with this formulation during a drought year has had a major effect on percent cover of artichoke thistle.

Over two acres of false brome thatch were removed with help from the Irvine Ranch Conservancy using contract crews and park staff. The East Flank area and adjacent the lower leach field were treated. At various locations, a total of over 11,500 container plants were planted throughout the park.

The riparian corridor and slopes surrounding the now-vacant trailer park in El Moro canyon have had all large woody exotic species removed,

especially Brazilian pepper, myoporum, and palms. Fire crew and spray work to control ice plant, English and Cape ivy and other exotics continued. Two retired leach fields totaling two acres were revegetated with approximately 4000 native plants after site and soil preparations.

Public access enhancements were added at the Pelican Point entrance with the addition of a foot path that connects with the park's trail system. A decomposed granite trail from the corner of PCH and Newport Coast Drive prevents pedestrians from mixing with traffic. Signs, interpretive displays, specimen toyon trees, and landscaping with 3200 natives were installed as part of this project.

Habitat enhancement projects included the capture of 575 African clawed frogs from a pond created by a small landslide. On-going captures will need to continue for the foreseeable future due to the tenacious nature of the amphibian.

V. Fire Management Activities

No controlled burns were conducted at CCSP in 2007 as most of the fire-prepared plots have recently received intense planting and seeding and jeopardy to young plants is thus avoided.

Annual fuel breaks were treated by the Department surrounding the park HQ and above El Morro School. Fuel Modification Zones were cut by contract under existing agreements with Emerald Bay, Irvine Cove Crest, and Phase 1 of Crystal Cove Heights. Pre-maintenance breeding bird surveys were conducted by the Department in coordination with the various homeowner associations.

VI. Miscellaneous Activities

2007 was the 16th year park staff conducted surveys to assess and monitor the California gnatcatcher population along the coastal terrace. Surveys were also conducted to monitor the condition of park tidal pools. State Parks managed 11 biological collection permits during 2007 for a variety of projects including exotic plant removal, restoration of coastal sage scrub, intertidal use surveys, intertidal algae growth, ecological studies, vegetation surveys, California gnatcatchers, cactus wren enhancement, and water quality testing.

8.2 California Department of Fish & Game Ecological Reserves

Coal Canyon Ecological Reserve NCCP/HCP Progress Report 2007

I. Recreational Use, Monitoring and Management

- A. Current Use Policies: Coal Canyon Ecological Reserve is open to unguided public access seven days a week from sunrise to sunset. Upland Game, Deer Hunting, and Hiking are permitted per regulations (see CCR Title 14, Section 630).
Proposed use policy. Allow bicycle and horse access to trails with coordination from Chino Hills State Park and Cleveland National Forest.
- B. Proposed Recreation Monitoring
1. Identification of all Approved Trails: There is one hiking trail that is open to the public. This trail begins near the San Bernardino (91) Freeway, and leaves the reserve at the easterly boundary where it enters the Cleveland National Forest.
 2. Proposed Methods to Document Existing Trail Conditions, and Track Changes: No proposed methods of trail monitoring currently exist other than staff and volunteer observations.
 3. Coordination with NROC Biological Monitoring Program for Tracking of Recreation Impacts to Specific Sensitive Resources: No coordination in place.
 4. Any Other Proposed Monitoring Requirements of the Recreation Management Plan: None
 5. Special Events: Restoration events are welcome. Event organizers must submit an event application, which is reviewed by the CDFG.
- C. User Compliance Programs
1. Access Restrictions: Currently access is restricted from dusk until dawn. Trail is otherwise open.
 2. Coordination with User Groups and Volunteers: Coordination occurs as needs arise.
 3. Patrols/Citation: California Department of Fish and Game Warden and Senior Volunteer Patrol.
- D. Educational Programs/Outreach: None

II. Recreation Facility Construction and Maintenance

- A. Construction of New Recreational Facilities or Expansion of Existing Facilities
1. Project Type: None
 2. Anticipated Impacts and Proposed Minimization Measures: None
 3. Temporary Impacts and Associated Restoration Measures: None
- B. Maintenance of Existing Recreation Facilities
1. Proposed Road and Trail Maintenance: None
 2. Drainage and Seasonal Water Management: None

3. Facility Replacement and Repair: None

III. Infrastructure Construction and Maintenance

- A. Proposed Construction of New Infrastructure: None
 1. Anticipated Implementation Schedule: None
 2. Anticipated Impacts to Vegetation Communities and Sensitive Species: None
- B. Operation and Maintenance: Signage, fencing, trail maintenance. No work plan.

IV. Habitat Restoration and Enhancement

- A. Proposed Landowner/Reserve Manager Funded/Coordinated Restoration Activities
 1. Exotic Plant Eradication: Tree Tobacco and Salt Cedar removal.
 2. Habitat Restoration/Revegetation: Proposed growing of Tecate Cypress from existing seed stock to maintain species viability in case of fires.
 3. Exotic Animal Control: None
- B. Proposed NROC funded Restoration and Enhancement Activities
 1. Exotic Plant Eradication: None
 2. Habitat Restoration/Revegetation: None
 3. Exotic Animal Control: None
- C. Proposed Restoration and Enhancement Activities Funded By Others: None
 1. Exotic Plant Eradication: None
 2. Habitat Restoration/Revegetation: None
 3. Exotic Animal Control: None

V. Fire Management Activities

- A. Proposed Prescribed Burns or other Fuel Management Projects: None
- B. Maintenance of Existing Fuel Breaks or Fuel Modification Zones: None

VI. Miscellaneous Activities and Management Programs: Cooperation with NROC on Fire Management plan and Tecate Cypress Management plan.

Laguna Laurel Ecological Reserve NCCP/HCP Progress Report 2007

I. Recreational Use, Monitoring and Management

- A. Current Use Policies: Laguna Laurel Ecological Reserve is open to unguided public access seven days a week from sunrise to sunset. Hiking is permitted (see CCR, Title 14, Section 630).
- B. Proposed Recreation Monitoring
 1. Identification of all Approved Trails: There is one hiking trail that is open to the public. This trail begins near El Toro Road and the Laguna Canyon Freeway, and leaves the reserve at the westerly boundary.

2. Proposed Methods to Document Existing Trail Conditions, and Track Changes: No proposed methods of trail monitoring currently exist other than staff and volunteer observations.
3. Coordination with NROC Biological Monitoring Program for Tracking of Recreation Impacts to Specific Sensitive Resources: No coordination in place.
4. Any Other Proposed Monitoring Requirements of the Recreation Management Plan: None
5. Special Events: Restoration events are welcome. Event organizers must submit an event application, which is reviewed by the Reserve Manager.

C. User Compliance Programs

1. Access Restrictions: Currently access is restricted from dusk until dawn. Trail is otherwise open. Parking area is operated in conjunction with County Park hours of operation.
2. Coordination with User Groups and Volunteers: Working with mountain bike users to avoid using the trail. Biking is not a permitted use.
3. Patrols/Citation: California Department of Fish and Game Warden and Senior Volunteers patrol on a weekly basis.

D. Educational Programs/Outreach: None

II. Recreation Facility Construction and Maintenance

A. Construction of New Recreational Facilities or Expansion of Existing Facilities

- C. Project Type: Trail construction by Orange County Parks on/adjacent to Reserve.
2. Anticipated Impacts and Proposed Minimization Measures: Weed eradication.
3. Temporary Impacts and Associated Restoration Measures: None, loss of non- native vegetation

B. Maintenance of Existing Recreation Facilities

1. Proposed Road and Trail Maintenance: None
2. Drainage and Seasonal Water Management: None
3. Facility Replacement and Repair: None

III. Infrastructure Construction and Maintenance

D. Proposed Construction of New Infrastructure: None

1. Anticipated Implementation Schedule: None
2. Anticipated Impacts to Vegetation Communities and Sensitive Species: None

E. Operation and Maintenance: Signage, fencing, trail maintenance. No work plan.

IV. Habitat Restoration and Enhancement

B. Proposed Landowner/Reserve Manager Funded/Coordinated Restoration Activities

1. Exotic Plant Eradication: None
 2. Habitat Restoration/Revegetation: None
 - a. Implementation Schedule: None
 - b. Associated monitoring: None
 3. Exotic Animal Control: None
- B. Proposed NROC funded Restoration and Enhancement Activities
1. Exotic Plant Eradication: None
 2. Habitat Restoration/Revegetation: None
 3. Exotic Animal Control: None
- C. Proposed Restoration and Enhancement Activities Funded By Others:
1. Exotic Plant Eradication: None
 2. Habitat Restoration/Revegetation: None
 3. Exotic Animal Control: None

V. Fire Management Activities

- A. Proposed Prescribed Burns or other Fuel Management Projects: None
- B. Maintenance of Existing Fuel Breaks or Fuel Modification Zones: None

VI. Miscellaneous Activities and Management Programs: None

Upper Newport Bay Ecological Reserve NCCP/HCP Progress Report 2007

I. Recreational Use, Monitoring and Management

- A. Current Use Policies: Upper Newport Bay Ecological Reserve (UNBER) is open to unguided public access seven days a week from sunrise to sunset. The public is permitted on designated trails and Back Bay Drive (see CCR Title 14, Section 630).
- B. Proposed Recreation Monitoring
1. Identification of all Approved Trails: There is a paved roadway (Back Bay Drive) operated by the City of Newport Beach which provides access, and is used for biking, walking, and driving. A small trail segment invites users to experience lower Big Canyon.
Boating occurs in the main channel of the Bay.
 2. Proposed Methods to Document Existing Trail Conditions, and Track Changes: No proposed methods of trail monitoring currently exist other than staff and Senior Volunteer observations.
 3. Coordination with NROC Biological Monitoring Program for Tracking of Recreation Impacts to Specific Sensitive Resources: No coordination in place at UNBER.
 4. Any Other Proposed Monitoring Requirements of the Recreation Management Plan: None
 5. Special Events: Restoration events are welcome, and volunteer habitat improvement or restoration occurs on a monthly basis (see IV.A.). Earth Day, Ocean Discovery Day, and several smaller DFG sponsored events are hosted here. Event organizers must submit an event application, which is reviewed by

the Reserve Manager.

C. User Compliance Programs

1. Access Restrictions: Reserve access is restricted from dusk until dawn. However, Back Bay Drive is open 24 hours. Boating is restricted to the main Channel, and closed from the salt dyke to the boundary of the reserve at Jamboree Road.
2. Coordination with User Groups and Volunteers: Coordination occurs at regularly scheduled meetings bringing together agency and Non-Profit organizations. This group is referred to as the Upper Newport Bay Management Coalition.
3. Patrols/Citation: California Department of Fish and Game Warden and Senior Volunteer Patrol.

D. Educational Programs/Outreach: The Department of Fish and Game operates an educational laboratory on-site. The Back Bay Science Center (BBSC) invites children from K-12 to come and learn about marine and estuarine resources. The program features a well equipped wet lab and salt and freshwater aquariums.

II. Recreation Facility Construction and Maintenance

A. Construction of New Recreational Facilities or Expansion of Existing Facilities

1. Project Type: New Back Bay Science Building for Education and Office Space
2. Anticipated Impacts and Proposed Minimization Measures: None
3. Temporary Impacts and Associated Restoration Measures: None

B. Maintenance of Existing Recreation Facilities

1. Proposed Road and Trail Maintenance: Big Canyon loop trail receives regular maintenance.
2. Drainage and Seasonal Water Management: None necessary
3. Facility Replacement and Repair: On-going as needed

III. Infrastructure Construction and Maintenance

F. Construction of New Infrastructure: Back Bay Science Center (BBSC) Building

1. Anticipated Completion Schedule: Completed, Open house expected in May 2008
2. Anticipated Impacts to Vegetation Communities and Sensitive Species: None

G. Operation and Maintenance: Signage, fencing, trail clearing, trash pickup weekly at BBSC and at select locations along Back Bay Drive. No work plan.

IV. Habitat Restoration and Enhancement

C. Proposed Landowner/Reserve Manager Funded/Coordinated Restoration Activities

1. Exotic Plant Eradication: Monthly Restoration Activities: Several sites are being restored in Upper Newport Bay. These sites include low marsh, mid-high marsh, and upland Coastal Sage habitats.
 - a. Implementation Schedule: Monthly
 - b. Associated Monitoring: Monthly

2. Habitat Restoration/Revegetation: Several sites are being restored in Upper Newport Bay. These sites include low marsh, mid-high marsh, and upland Coastal Sage habitats.

- a. Implementation Schedule: Monthly
- b. Associated monitoring: Monthly by volunteers.

3. Exotic Animal Control: Reserve Manager responds to exotics as needed.

B. Proposed NROC funded Restoration and Enhancement Activities

- 1. Exotic Plant Eradication: None
- 2. Habitat Restoration/Revegetation: None
- 3. Exotic Animal Control: None

C. Proposed Restoration and Enhancement Activities Funded By Others:

1. Exotic Plant Eradication: Big Canyon Restoration Project. Planning phase for a large scale restoration project started Spring 2003 with CCI as the principal contractor. Planning funds are from the City of Newport Beach.

- a. Implementation Schedule: 2008-2010
- b. Associated monitoring: To be Determined

2. Habitat Restoration/Revegetation: i). Big Canyon Restoration Project. Planning phase for a large scale restoration started Spring 2003 (see above).

ii). Army Corps of Engineers dredging and restoration project.

a. Implementation Schedule: i). Big Canyon Restoration Project: 2008-2010. ii). ACOE dredging project: EIR/EIS approved in 2001, dredging 2005-2008, MOU 3-5 years. Currently looking for funding for second phase.

b. Associated monitoring: i) Keane and Associates biological monitors. ii) Keane and Associates biological monitors.

3. Exotic Animal Control: None

V. Fire Management Activities

A. Proposed Prescribed Burns or other Fuel Management Projects: None

- 1. Proposed Methods and Implementation Schedule
- 2. Associated Monitoring

B. Maintenance of Existing Fuel Breaks or Fuel Modification Zones: None

- 1. Proposed Methods and Schedule for Maintenance

VI. Miscellaneous Activities and Management Programs: Management Plan will be Updated during 2004-2007 utilizing funds from Proposition 40, administered by the Wildlife Conservation Board. Project on temporary hold.

8.3 Orange County Harbors, Beaches & Parks

**Resources and Development Management Department
Orange County Parks**

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**County of Orange Central and Coastal Subregion
Natural Community Conservation Plan/
Habitat Conservation Plan
**2007 Progress Report
& 2008 Work Program****

Prepared January 2008

**Orange County Parks
NCCP 2007 Progress Report/2008 Work Program**

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Introduction

The Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) Implementation Agreement states that Reservation Owners/Managers are responsible for: 1) Preparing an annual work program for its ownership for the following year's activities, 2) Providing an annual progress report on the current year work program to the Nature Reserve of Orange County (NROC) for inclusion in the Annual Report submitted to the U.S. Fish & Wildlife Service and California Department of Fish and Game, and 3) Coordinating management activities with NROC and assuring that such activities are consistent with the annually approved work program. This report is being submitted to the NROC to fulfill that requirement. At a Reserve landowner coordination meeting in December 2002, the resource agencies were asked to provide guidelines for progress reports and work programs to be included in the NROC Annual Report. The guidelines provided shortly thereafter were used to provide information about activities within County of Orange, RDMD/Orange County Parks reserve lands for this report.

Permitted Recreation Uses:

	Aliso and Wood Canyons Wilderness Park	El Modena Open Space (Santiago Oaks Regional Park)	Irvine Regional Park	Laguna Coast Wilderness Park	Limestone Canyon and Whiting Ranch Wilderness Park	Peters Canyon Regional Park	Santiago Oaks Regional Park	Talbert Nature Preserve	Upper Newport Bay Nature Preserve	Weir Canyon Wilderness Park (Santiago Oaks Regional Park)
Outdoor Recreation Facilities										
Hiking trails	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Multiple-use trails	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Camping										
Fishing			▲							
Scenic view point	▲	▲	▲	▲	▲	▲	▲		▲	▲
Picnic shelters		▲					▲			
Group picnic areas			▲				▲			
Picnic tables	▲		▲		▲	▲	▲	▲		
Barbecues/fire rings			▲				▲			
Ball fields			▲							
Cycling paths	▲				▲				▲	
BMX course								▲		
Fitness/par course										
Disc golf course										
Equestrian arena			▲							
Pony rides			▲							
Restrooms	▲		▲	▲	▲	▲	▲	▲	▲	
Community center							▲			
Model sail boating			▲							
Volleyball courts			▲							
Interpretive programs	▲		▲	▲	▲	▲	▲	▲	▲	▲
Interpretive center	▲		▲	▲	▲		▲		▲	
Interpretive kiosks	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Botanical preserve			▲							
Amphitheatre			▲			▲			▲	
Other										
Leashed dogs	▲	▲	▲			▲	▲	▲	▲	▲

Recreation Monitoring & Management:

All OCP Operational Facilities

Project, Program, Activity	2007 Status	2008 Work Plan
Ranger Citation, Resource Protection Program	Park Rangers authorized to issue civil citations on January 2, 2006. First of three program progress reports filed with BOS in early 2007.	Issue citations as appropriate, monitor program effectiveness; adjust program goals as results are revealed. Return to the BOS annually as directed with citation program progress report and/or request for program modification. The second of three reports to be filed with BOS in February/March 2008.
Park Ranger Level III OCSD Reserve Academy Training Requirement	All Park Rangers meet standards for Peace Officers as defined in the CPC 830.31b and GC 1031.	All new Park Rangers will participate in the OCSD Level III Reserve Academy to meet basic requirements as a Peace Officer as defined in the CPC 830.31b.

Aliso and Wood Canyons Wilderness Park

Project, Program, Activity	2007 Status	2008 Work Plan
Laguna Beach High School Cross Country Team	Continue to monitor the impact cross country meets have on trail system and visitor usage. Course was re-routed and permit changes were addressed and implemented.	West Ridge Trail will be part of the 2008 race course.
Illegal Trail Use/ Unlawful Activity	Monitored with combined "sting" operations, homeowner notifications, perimeter and interior patrols. Several violators cited for illegal trail usage, after-hours closure, and unleashed/dog entering wilderness area. Signs posted, closed trails brushed and blocked, violators log kept by Rangers, fences installed, infrared scope used during night-time "stings", Sheriff notifications and prompt response to reported unlawful activity. Two pot farms destroyed, signed, and patrolled.	Coordination with the City of Aliso Viejo, Laguna Hills, local scout troops, and local visitors/volunteers continuing in 2008.
Trail Assistance Volunteers: Mountain Bike Patrols	On-going with recruitment. Volunteers assist park rangers in monitoring park activities, providing park information, educating park users on park resources	There is the potential to consolidate LCWP and AWCWP trail assistance volunteers to the benefit of both facilities.

	and safety, assisting with trail maintenance and closure of unauthorized trails.	
Mountain Bike Events: County Property Permit Processed	4 Major events completed and controlled with input from Ranger staff.	Event holders stated they will repeat again in 2008.
Saddleback Memorial 5K and Half Marathon: County Property Permit Processed	Course enters park from AWMA cul-de-sac to Ranger station. Input from park staff on avoiding potential harmful impacts to environment.	Anticipated to return Memorial Day 2008.
Educational Outreach	Tours 2 nd and 4 th Saturday at noon, and by appointment. Target audiences vary from families, school groups, and church groups.	Continue program in 2008.
Bird Count	Completed with Audubon Society quarterly and annual bird counts. Christmas 2007 count identified and accounted for 84 species.	Continue program in 2008.

Public Information Board	Information is posted outside the Ranger station. Categories consist of lost/found, wildlife sightings, medical aid and miscellaneous.	Continue posting in 2008.
Resource Management Plan	Draft RMP in development provides recommendations concerning opening of new trails and closure and restoration of unauthorized trails. Several volunteer programs are proposed including a wilderness patrol to assist park rangers in monitoring park activities, providing park information and educating visitors of park resources and safety. Volunteer stewardship crews are also suggested to assist with trail maintenance and restoration of unauthorized trails.	Early in 2008, the Final Draft RMP and associated CEQA documentation will be made available for public and agency review. After completion of the review process, it would be presented to the Coastal Greenbelt Authority, Regional Recreational Trails Advisory Committee, and Orange County Parks Commission for their respective recommendations. In August it is expected to be presented to the Orange County Board of Supervisors for approval.

Irvine Regional Park

Project, Program, Activity	2007 Status	2008 Work Plan
Trail Monitoring	Monitor for damage, erosion or new unauthorized trails.	Ongoing.

Laguna Coast Wilderness Park

Project, Program, Activity	2007 Status	2008 Work Plan
General Public Access	<p>The James and Rosemary Nix Nature Center of Laguna Coast Wilderness Park opened March 17, 2007.</p> <p>The entire park and Nix Center are now open to the public seven days a week: 7 a.m. – sunset.</p> <p>Park visitor use has more than doubled over the previous year (approximately 50,000 annual visitors).</p> <p>Park staffing has increased from three to 7 to handle park expansion and the opening of Nix Center, including</p>	<p>Increase volunteer trail patrols to inform and educate park visitors, including initiating a new mountain bike patrol starting with 12 members. Increase public education programs, including “First Weekend at the Nix” to educate the public about preserving and protecting park resources. Increase educational outreach programs through Laguna Canyon Foundation grants.</p> <p>Park Resource Specialist to expand park public educational outreach activities, including “First Weekend at the Nix”, educational outreach brochures, and classroom workshops.</p>

	addition of a Park Resource Specialist.	
Assess Visitor Sign-In Procedure	All park users are requested to sign-in allowing for accurate counts of visitor trail use.	No change in procedure, however more visitor specifics will be captured in the base data.
User Impact Feedback Loop	The civil citation program has been very well received by park users. There has been some concern expressed by mountain bikers about the hiking only trails within the park, particularly at major trailheads.	Implement a mountain bike trail patrol to 'connect' bikers to the park, provide visitor assistance and resource protection. Initiate assistance of OC deputy sheriff mountain bike patrol to assist with unauthorized after-hours use by bikers.

Limestone Canyon and Whiting Ranch Wilderness Park

Project, Program, Activity	2007 Status	2008 Work Plan
Reduce Off-trail Use in Whiting and Trespassing in Limestone	Park closed following October 2007 Santiago Fire.	Closure and continued monitoring of unauthorized use of fire-damaged area will be focus in 2008, with patrols in problem areas and issuance of citations to gain compliance.

Peters Canyon Regional Park

Project, Program, Activity	2007 Status	2008 Work Plan
Reduce Off Trail Use	No progress due to understaffing.	Install new fencing and signage with County ordinances.

Santiago Oaks Regional Park/Weir Canyon Wilderness Park/EI Modena Open Space

Project, Program, Activity	2007 Status	2008 Work Plan
Post Windy Ridge Fire Trail Assessment and Recreation Access/Interim Operations Plan	New project: Windy Ridge Fire occurred in March 2007, affecting 90% of the park. OC Parks contracted Bell Free Contractors, Inc. to assess trails and make recommendations concerning trail closures, realignments, new trails, and trail maintenance.	Trails Assessment Plan will provide the foundation for development of Recreational Access and Interim Operations Plan for the Barham Ranch portion of the park.
Educational Outreach: Ecosystem/Habitat/Watershed School Programs	No progress to report due to Windy Ridge fire occurring in March 2007 that affected 90% of the park.	Post fire recovery efforts will likely delay programs.
Reduce Off-Trail Use	Access and trail use is being monitored	Park will continue monitoring for unauthorized trail use, increase patrols in problem areas and issue citations to gain compliance.

Talbert Nature Preserve (North Coastal Operations)

Project, Program, Activity	2007 Status	2008 Work Plan
Sign Trails at North and South Talbert	Eagle Scout construction and installation of an information kiosk at S. Talbert was approved. A dog bag dispenser has been added at S. Talbert's Gate #2	Seek an Eagle Scout to construct and install a second information kiosk and trail sign posts at S. Talbert Nature Preserve. Also search for an Eagle Scout to install trail sign posts at the N. Talbert Nature Preserve entrance, gate #1 and Canyon Park entrance.

Upper Newport Bay Nature Preserve

Project, Program, Activity	2007 Status	2008 Work Plan
Enforce Preserve Rules	<u>Increased contact with Preserve visitors through foot and vehicle patrol. Used education and progressive enforcement to gain compliance.</u>	<u>Continue increasing visitor contact and gaining compliance through education and progressive enforcement.</u>
Enhance Park Signage	<u>Ordered signage to replace and update Preserve trail information.</u>	<u>Replace and update park signage throughout Preserve to provide clear, accurate and consistent information to visitors.</u>
Educate Public About Responsible Recreational Use	Created interpretive programs for elementary students focusing on preservation. Doubled amount of interpretive pre-school programs featuring wildlife conservation and habitat preservation. Continued conducting weekly elementary school tours of Preserve. Conducted 238 interpretive programs with 5,250 participants. Annual Special events drew approximately 3,000 participants.	Continue working with new and returning groups and developing additional interpretive programs to advocate responsible recreation.
Close Unauthorized Trails	Worked with County Design, Restoration Team and public to close and reroute unauthorized or poorly designed trails at various locations throughout Preserve.	Continue prioritizing and targeting areas for closure and rehabilitation, incorporating appropriate signage, public input and, where applicable, permits.

Recreation Facility Construction & Maintenance:

Aliso and Wood Canyons Wilderness Park

Project	2007 Status	2008 Work Plan
Trail Construction	Discovery Trail opened (leftover project of OC Natural History Museum; they were supposed to complete, but museum closed).	Expected to be planted, signed, and mapped.
Maintenance of Drainage Facilities	Identification of 16 drainage improvements requiring maintenance.	Identify parties legally responsible for maintenance and require their obtainment of regulatory and county property permits for needed work.
SOCWA Cul-De-Sac Gate	Installed. Entry trail re-routed by staff and signs posted.	Unit is solar powered; to date, it has gone out-of-service two times. Will monitor and make recommendations in 2008.
Wood Canyon Trail Dip Crossing Repair	FEMA Site 5, PW# 2521 Storm Repair Project 2004/05. Bonterra consultants have made on site visits for work/cost estimates.	Remove corrugated pipe, backfill and replace culverts. Obtain regulatory permits and begin construction.
Wood Canyon Trail Bank Erosion Repair	FEMA Site 1, PW# 2918 Storm Repair Project 2004/05. Bonterra consultants have made on site visits for work/cost estimates.	Repair bank erosion by clearing and grubbing interfering debris, vegetation and rock. Installation of gabion baskets high enough to backfill with unclassified fill. Installation of rip rap using 24" stone with smaller 10-12" stone mixed in to lock in place and to fill the voids for a depth of 2' at the bottom of the creek. Obtain regulatory permits and begin construction.
Mathis Canyon Trail Repair	FEMA Site 1, PW# 2922 Storm Repair Project 2004/05. Bonterra consultants have made on site visits for work/cost estimates.	Repair eroded emergency access road. Restore and relocate a portion of service road, install gabion baskets and rip rap material. Obtain regulatory permits and begin construction.
Valido Trail Repair	FEMA Site 1, PW# 2926 Storm Repair Project 2004/05. Bonterra consultants have made on site visits for work/cost estimates.	Concrete spillway undermined and Valido trail eroded. Plan to scour and slope stability analysis, build MSE wall, backfill and compact with structural fill. Obtain regulatory permits and begin construction.
New Ranger Office	Trailer installed in staging area in Non-Reserve Open Space.	Sewer and water connection feasibility study.

Irvine Regional Park

Project	2007 Status	2008 Work Plan
Trail Maintenance	Addressed erosion, tread maintenance, clearance, etc. Provided trail maintenance training to crew.	Trail assessment will be made by staff as needed.
Park Entrance Improvements	The entrance improvements will include a new entrance booth, entry gates, improved traffic flow, gate arm and fee collection boxes, architectural façade renovation to existing ranger/ administration office, landscaping and monument sign. Funding of \$539,000 will be provided by Boy Scouts of America (BSA), per agreement and easement deed approved by the Board of Supervisors in December 2004.	Construction to begin in March 2008 and require about six months to complete.

Laguna Coast Wilderness Park

Project	2007 Status	2008 Work Plan
LCWP Native Plant Nursery	LCWP Nursery supplied 600 plants for 2007 Reserve habitat restoration projects.	Nursery will continue to supply container plants for restoration projects, including installation of 1200 plants in Nix fuel mod zone and Willow Canyon meadow. Addition of 'Tree and Shrub' nursery adjacent to existing one will provide additional stock for park restoration projects. Expected completion by summer.
Emerald Canyon Road Repair	FEMA Site 1, PW# 2932 and 2927 Storm Repair Project 2004/05.	Lower Emerald Canyon remains heavily impacted with erosion damage to the fire access road. Plan to deposit fill material and grade trail. Obtain regulatory permits and begin construction.
Mary's Trail Construction	Mary's Trail constructed and completed. Trail is a .2 mile interpretive trail adjacent to Nix Center.	Interpretive sensory wayside exhibits to be installed on trail. Completion anticipated by late 2008.
Nix Nature Center	Opened to the public March 2007.	Increase public interpretive educational programs coordinated by new Park Resource Specialist.
Laguna Canyon Multi Use Trail	With recently completed realignment of Laguna Canyon Road, continuity of existing multi-use trails was affected. Proposed multi-use trail is to restore recreational, fire and utility access.	Construction to begin February 2008. Anticipated completion May 2008.

	Regulatory agency permits have been obtained, and Habitat Mitigation and Monitoring Plan approved.	
Build Native Plant Shade House	Small structure built on back of maintenance yard storage shed to propagate native plant species for habitat restoration throughout Preserve.	Erect shade cloth roof, enclose structure with chicken wire and begin propagation.
Install New Storage Shed	New exterior shed placed in maintenance yard parking lot. Structure has been painted to blend with landscape.	Project complete.
Improve Visitor Safety Along Interpretive Center Patio and Handicap Parking Space	Obtained permission, specifications and proper flagstone for hard-surface walkway linking parking for handicapped visitors to Interpretive Center entrance.	Install walkway.
Improve/Replace Interpretive Center Exhibits	New project.	Improvements and replacement of exhibits to be completed as required.

Limestone Canyon and Whiting Ranch Wilderness Park

Project	2007 Status	2008 Work Plan
Installation/Replacement of Trail Service Structures	Added two additional "mini-kiosks".	Replace all structures damaged or destroyed in October 2007 fire. Similarly replace all burnt trail posts and markers. Move unused interior gates to park perimeter entries lacking gates.
Cactus Hill Trail Re-route	Trail maintenance due to fire and subsequent wind and rain erosion.	Continued maintenance.
Annual Manual and Mechanized Road/Trail Repairs	Trail work performed outside of nesting season	Re-grade all roads due to fire and subsequent wind and rain erosion.
Annual Mechanized Brushing of Roads and Trails	Throughout year and during nesting season. Exclusion of trails with intermediate mariposa lily through flowering and seeding.	Continued effort, but within the context of damaged roads and trails.
Emergency Road Repair	Graded primary access roads to provide emergency vehicle access.	Grade as needed - primary access roads to provide emergency vehicle access.
FEMA Site 8 PW#2853 Creek Washout at Hangman's Tree	Biological constraints analysis prepared.	Obtain regulatory permits and initiate construction.

Road and parking area		
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Peters Canyon Regional Park

Project	2007 Status	2008 Work Plan
Trail Maintenance	SHARE mountain bike club held two days of trail tread repair work.	No additional work scheduled in 2008, pending assignment of permanent Park Ranger.
Willow Grove Footbridge Repair	No Progress due to understaffing.	Rebuild water damaged bridge as staff becomes available.
Replace Office Wood Deck	No Progress due to understaffing.	Project assigned to an Eagle Scout. Work pending scout's progress.
Restroom Construction	New Project. Contractor hired in December 2007 to develop construction plans and specifications for pre-fabricated two stall flush restroom in parking lot staging area near park office.	Exact location of restroom to be coordinated with NROC and resource agencies. Possibility of installing a self de-composing toilet with no sewer lines.

Santiago Oaks Regional Park/Weir Canyon Wilderness Park/EI Modena Open Space

Project	2007 Status	2008 Work Plan
Trail Maintenance, Re-alignments, Closures, Restoration	Draft Trails Assessment completed.	Implement approved Recreation Access/Interim Operations Plan.
Dip Crossing Repair	FEMA Site 1 PW#2139: Biological constraints analysis prepared.	Repair undermined dip crossing at intersection of Santiago Creek Trail and Wilderness Loop Trail. Obtain regulatory permits and initiate construction.

Talbert Nature Preserve (North Coastal Operations)

Project	2007 Status	2008 Work Plan
Irrigation Use at North Talbert	Irrigation (bubblers) were turned back on for approximately 20 14-year old sycamores suffering from drought and saline soil condition.	Install saline-tolerant plants in grassland restoration area. Ultimately, may not be able to reduce water usage in areas of highly saline soils due to need for periodic flushing.

Upper Newport Bay Nature Preserve

Project	2007 Status	2008 Work Plan
Santa Ana Heights Equestrian Arenas and Trail Connection	City of Newport Beach processing CEQA document.	City of Newport Beach to construct 3 horse riding arenas, a riding and hiking trail and water quality "treatment train" for storm water

(includes removal of unauthorized trails/arena and restoration of damaged coastal sage scrub habitat in the upper mesa area)		runoff (located along easterly bank of the Santa Ana Delhi Flood Control Channel south of Mesa drive). Implementation schedule: coordination with wildlife agencies and NROC, preparation of draft Resource Management Plan (Feb. 2008), revisions to Mitigated Negative Declaration and public review, city certification, city to obtain coastal development permit; city approves use permit and city to obtain county property permit.
Resurface Decomposed Granite Public Parking Lot	Polymer re-applied spring 2006 utilizing a modified method. However, Polymer was not well-integrated into surface material resulting in damage from rain and general use.	Create a new plan for eliminating erosion and lessening dust on decomposed granite parking lot. Applications of Polymer are proving to be insufficient.
Maintain Trails	Placed multiple gravel-sandbags along the trails to decrease erosion during heavy rains. Trail vegetation maintained by County trails crew and City of Newport Beach.	Continue installing/replacing gravel-sand bags to prevent erosion. Schedule trails to be graded and repaired following rainy season.
Improve Trails	Foot bridges completed at Constellation and Marsh Loop as Eagle Scout projects. Scouts installed wood steps on Delhi Channel Trail.	Install foot bridge at Santa Isabel channel and wood steps on steep Overlook 1 Trail.
Remove Bike Jumps	Removed bike jumps over ~1/3 acre area in four different locations.	Monitor and remove any new bike jumps.
Repair East Bluff Sump Hole	Maintained barricades and signage to close public access to potential safety hazard. Filled hole with large-diameter rock in January 2007 and cleared drainage to improve flow.	Continue to monitor sump hole for erosion and/or safety issues.
Address Back Bay Drive Slope Erosion	New project. Repair and stabilize slope.	Located below a developed region, the recurrently tarp-covered slope is full of non-native ground covers, and may in fact only be stable now due to the invasive nature of these plants. If slope stabilized, removal of non-native species, to be replaced with native flora is desired. Obtain regulatory permits.
Determine Management of 23 rd Street Spring	Trail closed for safety due to increased spring activity. Water continuing to increase; met with City of Newport Beach to determine possible causes.	Continue monitoring spring activity. Research storm drain plans with City. Decide long-term trail solution (i.e., reroute/close/build up).

	Storm drain under Irvine Avenue may be broken.	
Westbay Restoration, Trail and Boardwalk Project	No progress on installation of new Boardwalk Trail	No planned action
Upgrade Trail Use Designation Signs	Kiosks used to post enforcement information.	Install new trail designation signage at appropriate locations throughout Preserve.
Bay View Bridge Erosion Repair	FEMA Site 1, PW# 2916 Storm Repair Project 2004/05.	Replace rip rap, saw cut old AC and replace. Obtain regulatory permits and initiate construction.

Infrastructure Construction & Maintenance:

Aliso and Wood Canyons Wilderness Park

Project	2007 Status	2008 Work Plan
Aliso Creek Water Quality "SUPER" Project (County, SOCWA, Moulton Niguel Water District)	Project concept design completed.	Start environmental permitting in January 2008. Complete 65% design by September 2008.
SOCWA Plant Access Bridge Protection	USACOE Final Supplemental Environmental Assessment completed October 2007.	On-hold until Streambed Alteration Agreement and County Public Property Permit obtained. SOCWA and USACOE will implement measures designed to stabilize the SOCWA bridge spanning Aliso Creek to Coastal Treatment Plant. USACOE plans to begin installation in September 2008 to protect the existing SOCWA water treatment access bridge and install a 2.4 meter fish passage channel. See Mitigation Matrix for more information.
SCWD Maintenance of Two Sewer Lines within Laguna Sur property	Mitigated Negative Declaration and Restoration Plan approved and County Property Permit #2007-01857 issued.	Repairs to the St. Tropez to Alta Loma line are anticipated to begin February 2008. See Mitigation Matrix for more information.

Irvine Regional Park

Project	2007 Status	2008 Work Plan
Trail Signage	Began installation/replacement of trail markers.	Continue to install and replace trail marker signs. Install trail closure message boards.

Laguna Coast Wilderness Park

Project	2007 Status	2008 Work Plan
Park Kiosks	Information kiosks constructed at Willow and Little Sycamore staging areas.	Annual kiosk maintenance.

Limestone Canyon and Whiting Ranch Wilderness Park

Project	2007 Status	2008 Work Plan
Whiting Spur Road	Closed due to potential landslide.	Work with Orange County Fire Authority and Southern California Edison to address issues and repair road.
Park Office Sewer System Update	Budgeted	Work to start.

Peters Canyon Regional Park

Project	2007 Status	2008 Work Plan
Remove and Replace Existing Erosion Control Device (V-ditch-located on park property along the western slope of Jamboree road)	Completed by O & M construction crews in 2006. First year restoration monitoring of 1/5 th acre for 3-5 years completed in 2007.	Monitor restoration of 1/5 th acre for 3-5 years. NCCP/construction mitigation measures are being implemented.
Construction and Improvements of Four Channels (northeast corner of park to better convey storm flows from the surrounding area to the Upper Peters Canyon Reservoir)	Obtained regulatory permits.	Not a project at this time. See Mitigation Matrix.
Metropolitan Water Districts Annual Maintenance	Recurring annual project.	Conducts annual maintenance of existing easement along park roads and clearing around MWD manholes.
Santiago Hills Phase II Drainage Improvements	No progress to report; project on hold	Work may now begin in 2012.

Santiago Oaks Regional Park/Weir Canyon Wilderness Park/EI Modena Open Space

Project	2007 Status	2008 Work Plan
V-Ditch Maintenance on EI Modena Open Space	No Progress to report due to Windy Ridge Fire occurring in March 2007 that affected 90% of the park.	Remove debris from v-ditch running parallel to Cannon Street.

Talbert Nature Preserve (North Coastal Operations)

Project	2007 Status	2008 Work Plan
Native Plant Nursery	Discussing the possibility of a plant nursery at North Talbert.	Nursery discussion to continue.

Habitat Restoration & Enhancement:

Aliso and Wood Canyons Wilderness Park

Project	Funding Source	2007 Status	2008 Work Plan
Non Native Plant Removal	OCP	Removed: 89 fan palms, 17 tamarisks, 63 pampas grass, 148 artichoke thistles, 12 full trash bags of artichoke thistle heads, 26 Italian thistles, 23 Russian thistles, 4 castor beans, 56 puncture vines.	Treat & remove Italian thistle from eight acres within Pecten Reef area.
Habitat Restoration	OCP- Tree of Life Contract	55 native plants installed around Park Ranger Station and .5 acre wild-fire site at Wood Cyn/Cave Rock intersection	Installation of plants along Discovery Trail and cactus for trail closures.
NROC Weed Spray Crew	Nakae Contracts	Previous and new sites were targeted/spayed, lack of re-growth noted by staff maybe due to drought of 06-07 rainy season.	Anticipated for Spring/Summer and a written synopsis from the biologist was requested by staff.

Irvine Regional Park

Project	Funding Source	2007 Status	2008 Work Plan
Children's Native Plant Garden	OCP	Installed native plant materials in 0.2 acre site. Eagle Scout completed a Butterfly sanctuary. OC Park Staff removed non-native species.	Continue to enhance the garden as staff and volunteer labor becomes available.
Eradication of <i>Arundo</i> , Tamarisk and Castor Bean in Santiago Creek	Santa Ana Watershed Association Grant	Chemical and manual removal of these species.	Continued chemical and manual removal of these species in the boundaries of Santiago Creek.

Laguna Coast Wilderness Park

Project	Funding Source	2007 Status	2008 Work Plan
Manual Removal of Invasive Species by Staff and/or Laguna Canyon Foundation	OCP/ Volunteers	Continued to monitor and conduct remedial mechanical removal of target species: mustard, filaree, euro grass, pigweed, tocalote,	Continue to monitor and conduct remedial mechanical removals of target species utilizing OC Parks staff and Laguna Canyon Foundation volunteers.

Volunteers		hemlock, russian thistle, lamb's quarters, pampas grass, thistle and arundo. Total: 8.9 acres removed.	
Nix Nature Center Grassland Re-Vegetation Plan	OCP/ LCF	Seeded and installed 600 purple needle grass 4x4 inch container plants in Nix Center fuel modification .75 acre area.	Continue seeding and installation of park's native plant nursery container plants in Nix Center fuel modification area and Willow Canyon meadow 1 acre, 1200 4-inch CSS and grassland container plants. Continue monitoring.
Little Sycamore Canyon and Willow Canyon Staging Area: CSS Re-Vegetation	TNC	Seeded Nix Center fuel modification zones (2 acre) with OCFA approved seed mix.	Continue with Nix Center/Little Sycamore and Willow re-vegetation and monitoring. Continue with planting, cover with rice straw to inhibit non-native growth, weed as needed utilizing County staff and Laguna Canyon Foundation volunteers, 2.0 acres, 1200 4-inch CSS and grassland container plants. Continue monitoring.

Limestone Canyon and Whiting Ranch Wilderness Park

Project	Funding Source	2007 Status	2008 Work Plan
Aliso Creek Bikeway Habitat Enhancement (Approx. 1 acre of native grassland-coastal sage scrub)	OCP	Ongoing control of Artichoke Thistle, mustard, European grasses, etc. with mowing, since 2002.	Photo-monitor, control weed species, and install additional plants, seed and mycorrhizae.
Upper Pond-Stables Habitat Enhancement (Approx. 0.5 acres. native grassland-coastal sage scrub)	OCP	Ongoing control of gazanias, European grasses, mustard, Italian Thistle, etc. with mowing, since 2005.	Photo-monitor, control weed species, replace dead plants and scatter additional seed and mycorrhizae.
Lower Serrano Habitat Enhancement (1 acre of coastal sage scrub, native grassland, riparian woodland)	OCP	Ongoing control of Italian thistle, horehound, mustard and European grasses with mowing, hand pulling and herbicide Rodeo, since 2005.	Continue photo-monitoring. Control weed species. Replace dead plants and install additional plants. Scatter seed and mycorrhizae.
Artichoke Thistle Treatment	OCP	Treated approx. 100 acres of artichoke thistle in May with Transline-Telar or Roundup-Telar herbicide solution in degraded	Submit MIR for continued herbicide treatment with Transline-Telar herbicide solution. Monitor plots to compare with artichoke thistle density and cover from prior years.

		grasslands throughout park. Third year of treatment.	
Pampas Grass, Saltcedar and Palm Tree Treatment (riparian habitat)	OCP	Third year of treatment. Controlled approx. 3 acres of weeds with stump-cut followed by Garlon 4 or Rodeo herbicide application.	Submit MIR to re-treat any individuals that were not successfully eradicated and control any new individuals.
Yellow Starthistle and Italian and Milk Thistle Treatment (oak woodland, disturbed grassland, riparian, sage scrub, chaparral habitats)	OCP	Second year of treatment. Controlled approx. 2 acres by hand-pulling and mowing.	Monitor Yellow Starthistle site for seedlings, which will be hand-pulled. Submit MIR for Artichoke, Italian and Milk Thistle treatment with Transline-Telar herbicide solution for open areas of park. Hand-pull or mow thistles under oak canopy.
Additional Non-native Plant Control	OCP	Controlled 2+ acres of Horehound, Castor Bean, Tree Tobacco, etc. by park staff and JWP crews hand-pulling along park roads and trails.	Hand-pull weeds opportunistically, with JWP crews and organized volunteer days.
Native Seed Collection and Propagation	OCP	Collected seed from grassland, sage scrub and chaparral species, for use in restoration projects.	To be continued, in the context of fire damage.

Peters Canyon Regional Park

Project	Funding Source	2007 Status	2008 Work Plan
Chemical Eradication of Non-Native Plants	OCP	No progress to report.	No additional work scheduled in 2008, pending assignment of permanent Park Ranger.
Manual Removal of Non-Native Plants	OCP	No progress to report.	No additional work scheduled in 2008, pending assignment of permanent Park Ranger.
The Nature Conservancy Grassland Restoration Project	The Nature Conservancy	Seed dispersal took place spring of 2005. Monitoring program conducted by the TNC. Monitoring in 2007 not coordinated with OCP.	TNC will continue to monitor and document cover for exotic species.
Butterfly Garden	OCP	Non-native plant removal and area mulching.	Continue garden maintenance.
Creek Trail Exotic Plant Management	OCP	No progress to report.	No additional work scheduled in 2008, pending assignment of permanent Park Ranger.

Eucalyptus Tree Removal	OCP- Contract	New Project.	Professional arborist will remove 30+ Eucalyptus trees at the south end of the park between Overhill Drive and the reservoir.

Santiago Oaks Regional Park/Weir Canyon Wilderness Park/EI Modena Open Space

Project	Funding Source	2007 Status	2008 Work Plan
Santiago Creek Invasive Plant Removal	OCP	No Progress to report due to Windy Ridge Fire occurring in March 2007 that affected 90% of the park.	Monitoring Santiago Creek continues. Removal of other non-natives such as thistle and fennel on trails. O & M spray crews to be requested for some areas in park.
Invasive Plant Removal: Periwinkle (Vinca major) and Ivy (Hedera genus)	OCP	No Progress to report due to Windy Ridge Fire occurring in March 2007 that affected 90% of the park.	Identify areas on hillside and around Nature Center. Remove and monitor area for re-growth. Encourage natural re-seeding and passive restoration.
Oak Restoration	OCP/ Eagle Scout	New project: old interpretive "lucky" oak tree destroyed in 2007 Windy Ridge Fire.	Plan to replace the "lucky" tree with a new oak tree and rehabilitate the immediate area with additional live oak plantings.

Talbert Nature Preserve (North Coastal Operations)

Project	Funding Source	2007 Status	2008 Work Plan
Talbert Nature Preserve Habitat Enhancement Plan	South Talbert –TNPWEP (Wetland Enhancement Project) California Resources Agency, Coastal Impact Assistance Program (CIAP), TNPRP	South Talbert Wetland Enhancement Project. 13 acres of Pampas Grass removal. Replanted a portion of the project site with native wetland and upland plant material. Little re-growth of pampas from roots. 70% success in planted materials. Plants watered in August and mulch added in November.	Continue monitoring.
North Talbert Invasive Plant Removal	OCP	Continued removal of exotics from dune 1 and 2 and continued transplanting to dune 1. 5% success of planting on dune 1 due to water line break.	Continue removal of exotics from dune 1 and 2 and continue transplanting to dune 1.
Monitor Native Grass at North Talbert	OCP	Identified native grass in approx. 1 acre area. Grasses did not survive	Consult native grass specialist to examine the saline/toxic soil. Set up test plots.

		when flooding procedures were halted.	
South Talbert Invasive Plant Removal	OCP	Castor Bean removed when identified.	Begin program to mulch test a 20 acre area of Hemlock infestation.
South Talbert Invasive Plant Removal	OCP	Focused on removal of Pampas Grass and Myoporum, mulching when possible.	Continue effort.
North Talbert Arundo Removal	OCP	Project at 50% of the removal stage, using volunteers only.	Continue to identify, map and remove Arundo and proximate non-native/invasive vegetation. Cut, chip and leave on site. Follow with professional herbicide application.
Weed Reduction at Talbert NP	OCP	Mowing of dead weed material.	Mowing of exotic plants prior to seed and coordinated with nesting bird regulations.
Restoration of Old Santa Ana River Project Staging Areas 1 and 2 in North Talbert	OCP	Developed habitat restoration plan for Staging Areas 1 & 2 consistent with Fairview /Talbert Restoration & Enhancement Plan.	Complete plans and specs for 8 acres of alluvial woodland for Staging Area 1 and 10 acres of grassland and border plantings in Staging Area 2. Project includes service road and trail. Award contract and start construction 3 rd quarter 2008. A maintenance contract will follow plant establishment.

Upper Newport Bay Nature Preserve

Project	Funding Source	2007 Status	2008 Work Plan
Westbay Habitat Restoration: Six-Acre Coastal Sage Scrub and Native Grassland Habitat Restoration	American Oil Trader Spill Settlement (\$400,000)	Contract awarded.	Ultra Systems currently conducting sensitive species surveys. Southern tar plant is present on site. Pre-construction meeting scheduled for January 15, 2008. Construction start date planned for January 20, 2008. Project will take approximately 100 days to complete and includes a 60 day plant establishment period. Contractor scheduled to fence and sign area, install storm drain and stabilize slopes with wattles, sandbags, hydro seeding and planting. No follow up contracted maintenance or monitoring is provided. Staff will set up monitoring to determine success of project.
Re-Vegetate Preserve	OCP, California Coastal	Remove non-native species and	Maintain sites with weed removal and first-year

with Native Plant Species	Commission (ROOTS)	plant ~5acres of coastal sage scrub / estuary species in areas adjacent to existing native habitat (Mansa Meadows, Marsh Loop, Constellation, rooftop).	monthly summer watering. Use volunteers to expand planting sites to an additional 5 acres.
Removal of Invasive Plant Species	Volunteers, OCP, California Coastal Commission (ROOTS)	O&M treated accessible Pampas grass and artichoke thistle throughout the Preserve with foliar herbicide spray in April. County contractor removed ~60 acacia and Brazilian pepper trees from Eastbluff. County and ROOTS staff and volunteers removed ~12 acres of non-native species including ice plant, fennel, castor bean, garland chrysanthemum, mustard, radish, horehound, tocalote, Pampas grass, Spanish sunflower and white bladder-flower.	Follow up with spring treatment of new Pampas grass growth and/or previously missed plants. Use staff and contractor to remove additional 60+ acacia, Brazilian pepper, Peruvian pepper, myoporium and palm trees throughout Preserve. Continue utilizing volunteer events and JWP/CRP crews to remove invasive species. Treat and remove arundo re-invading Westbluff drainage.
<u>Improve Butterfly Garden</u>	Boand Family Foundation, OCP	Installed four benches, second entry sign, puddling area and dry creek bed features and step stones. Improved irrigation, mulched, and created educational handout. Expanded planting palette to Orange County natives and installed ~700 pollination attracting plants. Performed regular weeding and pruning maintenance.	Install botanical markers, interpretive signage and map boxes with handouts. Continue improving irrigation and garden design. Continue mulching and annual maintenance. Recruit Master Gardeners to perform regular maintenance.
Maintain Bay View Watering Experiment	California Coastal Commission (ROOTS)	Plots testing variety of watering methods maintained in final year of experiment; interpretive signage explaining experiment and value of habitat installed.	Analyze data and apply to other restoration sites. Expand plantings throughout site to increase habitat value.
Obtain Tool Trailer Grant	State Street	Received \$10,000 grant for restoration tool trailer as grant co-	Work with NBNF and Coastal Commission to select trailer and stock with tools.

		applicant with NBNF and California Coastal Commission.	
Increase Environmental Outreach Programs	OCP, California Coastal Commission (ROOTS)	Worked with Early College High School freshman on year-long Service Learning Project, performing habitat restoration at Upper Newport Bay. Worked with adjacent Homeowner's Associations (HOAs) on California-friendly planting palette for lands bordering Preserve. Incorporated interpretive component with monthly 2 nd Sundays volunteer events.	Work with new freshman class, presenting in classroom and expanding 2006-07 restoration site. Continue providing input for additional HOAs surrounding Preserve. Continue improving interpretive element of volunteer event.
Increase Volunteer Participation	OCP, California Coastal Commission (ROOTS)	Held monthly volunteer event, 2 nd Sundays, attracting 458 people who contributed 1,400 hours. Worked additional volunteer groups of 467 people with 1,245 hours total. Participated in teach ½-day habitat restoration portion of NBNF volunteer training course with expanded session for "crew leaders" to help handle large volunteer turnouts.	Continue working with Angeline Santiago, CCC and volunteers to improve the quality and productivity of 2 nd Sunday's volunteer events. Continue taking additional volunteer groups when schedule permits. Expand core volunteer group with regularly scheduled training each spring and fall.

Fire Management Activities:

Aliso and Wood Canyons Wilderness Park

Fuel Treatment	Accomplished 2007	Proposed for 2008
Removal of Invasive Species in Fuel Modification Zones	Non-natives removed from below the Ridge View homes with volunteers and Valido Trail with 3 JWP crews. Also, along the Aswut trail with roof-mower.	On-going with a prompt response as needed using various resources.
Laguna Beach Goat Grazing	City of Laguna Beach conducted goat	County issued Permit No. 2006-01614 Rider # 3 which allows City

Fuel Modification	grazing pursuant to County Permit	of LB to conduct goat grazing for fuels management until 12/31/2010 within established NCCP fuel mod zones and along fire access road 200 ft. from road centerline on each side of road from Moulton Meadows Park to Top of the World. Goats are to be managed by City in accordance with Fuel Modification Management Plan defined in Permit. City is to provide Director, OC Parks biological study on biennial basis. City may spend up to \$5,000 per fiscal year on weed eradication and habitat enhancement.
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Irvine Regional Park

Fuel Treatment	Accomplished 2007	Proposed for 2008
Maintain Existing Fuel Breaks in Park	Weed abatement performed along paved roads up to a 5 ft. setback.	Continued fuel break maintenance with no change to current levels.

Laguna Coast Wilderness Park

Fuel Treatment	Accomplished 2007	Proposed for 2008
Laguna Canyon Road Mowing	OC Parks mowing along Laguna Canyon Road; Cal trans easement.	Continuing through 2008.
Nix Nature Center	170 ft. fuel modification zone thinned around Nix Center per OCFA requirements.	Continue selective clearing in Zones C and D through 2008.

Limestone Canyon and Whiting Ranch Wilderness Park

Fuel Treatment	Accomplished 2007	Proposed for 2008
October 21, 2007 Santiago Fire burned 90% of park.	In response to Santiago Fire, County contactor Geosyntec has identified areas susceptible to damage associated with fire impacts; runoff, erosion, and sediment control measures (BMPs) to provide interim protection for burned areas. November 2007 Geosyntec identified BMPs to be implemented at high priority sites. Recommended sand bagging for runoff	Continue implementation of recommended BMPs and monitor channels and slopes after extreme weather events.

	control has been completed. Hydro mulching at Santiago Equestrian Center is 90% complete and debris has been removed from existing v-ditches.	
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Peters Canyon Regional Park

Fuel Treatment	Accomplished 2007	Proposed for 2008
Maintain Various Fuel Modification Zones Along Western Park Property Line	Mowing not needed in 2007 due to drought and reduced vegetation growth. Fuel modification zone was monitored and park staff conducted minor hand clearing wherever needed.	OCP has assumed mowing responsibilities that will be scheduled on a re-occurring basis annually during the early spring season along western park property line.

Santiago Oaks Regional Park/Weir Canyon Wilderness Park/El Modena Open Space

Fuel Treatment	Accomplished 2007	Proposed for 2008
Fuel Modification Zone -1 Cannon & Santiago Canyon Rd. (1.5 acre, non-native weed specie occupied, vacant corner lot)	Windy Ridge Fire occurring in March 2007 affected 90% of the park. OC Parks contracted Geo Syntec to develop a post fire recovery plan.	Annual fuel modification by mowing.
Fuel Modification Zone - 2 El Modena Open Space (1.4 acres behind Santiago Middle School)	Windy Ridge Fire occurring in March 2007 affected 90% of the park. OC Parks contracted Geo Syntec to develop a post fire recovery plan.	Annual fuel modification by mowing.
Fuel Modification Zone -3 El Modena Open Space, Glen Albyn/Capistrano (2 Acres)	Windy Ridge Fire occurring in March 2007 affected 90% of the park. OC Parks contracted Geo Syntec to develop a post fire recovery plan.	Annual fuel modification weed abatement by contracted hand crews.
Fuel Modification Zone -4 El Modena Open Space, Cannon and Patria Court (0.7 acres)	Windy Ridge Fire occurring in March 2007 affected 90% of the park. OC Parks contracted Geo Syntec to develop a post fire recovery plan.	Annual fuel modification weed abatement by contracted hand crews.
Fuel Modification Zone - 5	Windy Ridge Fire occurring in March	Annual fuel modification weed abatement by staff hand crews.

El Modena Open Space, Renee Street (0.5 acres)	2007 affected 90% of the park. OC Parks contracted Geo Syntec to develop a post fire recovery plan.	
Post Windy Ridge Fire Response Plan	Geo Syntec completed Draft Post-Fire Response Plan, September 2007, which identified seven post-fire hazard areas and recommended mitigation measures and practices (BMPs). All of the measures recommended for Area 1- Pacifica Trail and vicinity, have been implemented.	Continue to implement Plan recommendations.

Talbert Nature Preserve (North Coastal Operations)

Fuel Treatment	Accomplished 2007	Proposed for 2008
So. Talbert Removal of Non-Native Plants	Manual and mechanical removal of exotic plant species in specific locations to reduce fire potential.	Continue manual and mechanical removal of exotics.

Upper Newport Bay Nature Preserve

Fuel Treatment	Accomplished 2007	Proposed for 2008
Upper Newport Bay Nature Preserve has no Fuel Modification Zones within Park Boundaries	Closely monitored and removed non-native vegetation in specific locations to reduce fire potential.	Closely monitor and remove non-native vegetation where needed.

Miscellaneous Activities and Management Programs:

Aliso and Wood Canyons Wilderness Park

Project	2007 Status	2008 Plan
Ranger I Recruitment	Park Ranger I Steve Jax hired and reported for duty on 5-5-07. Ranger Jax graduated from OCSD 13R and OCP Module B Academies.	Expected to become trained and demonstrate proficiency in all areas of the Park Ranger classification in 2008.

Laguna Coast Wilderness Park

Project	2007 Status	2008 Plan
Land Acquisitions	No change.	Muddy Canyon 219.02 acres to be added to initial conveyance.
Studies/Research	CSULB Wetlands Study completed.	CSUF Barbara's Lake Sedimentation Study. NROC/TNC Cactus Wren Study. IRC Cactus Wren Artificial Nest Study.

Limestone Canyon and Whiting Ranch Wilderness Park

Project	2007 Status	2008 Plan
Katellaris Encroachment	In 2006, DA issued letter with items that Mr. Katellaris must address. O&M secured gate along property boundary and fence line along boundary has been secured.	Continue to assess the situation, monitor for goat encroachment and respond as needed.
Encroachment on Eastern Limestone Canyon Boundary	This encroachment is new.	Re-survey park boundary.

Peters Canyon Regional Park

Project	2007 Status	2008 Plan
Reclaimed Water Storage in Peters Canyon Reservoir	Agreement was approved December 19, 2006. No progress to report in 2007.	IRWD to submit plans for construction of inlet/outlet line, hookup to sanitary sewer and other infrastructure to support operation of water storage. License, Easement & Agreement for 50 years.

Santiago Oaks Regional Park/Weir Canyon Wilderness Park/EI Modena Open Space

Project	2007 Status	2008 Plan
Chen Encroachment	Removed encroachment from area owned by County in fee title. Encroachment within County's easement title still to be resolved.	County has filed suit.
Gregory Encroachment	On hold due to post fire recovery efforts.	Fencing on park boundary will be installed.

Talbert Nature Preserve (North Coastal Operations)

Project	2007 Status	2008 Plan
Repair Corroded Street and V-Ditch Drain on the South Facing Slope	The drain has been scoped and filmed.	Plan for repair and final management of willow grove that has formed due to the unexpected water supply.

Upper Newport Bay Nature Preserve

Project	2007 Status	2008 Plan
Bobcat Monitoring	Conducted by the USGS. Bobcat monitoring began in late summer 2006. One female, with three kittens was radio collared and tracked by USGS, UNBNF and park staff throughout the year.	Continue to assist with documenting location and behavior of bobcat family. Utilize information for public preservation education.
Bat Monitoring	Conducted by contracted researchers. Bat monitoring began in summer 2006.	Continue to assist with documenting location and behavior of bats located below the Jamboree Bridge. Utilize information for public preservation education.

Contact List

Park Facility	Contact	Phone
General Contact: Orange County RDMD, Orange County Parks, Park Operations Division	Primary: Thomas Klems, Operations Superintendent Secondary: Michael Brajdic, Program Manager	714-973-6860 714-973-6868
Aliso and Wood Canyons Wilderness Park	Primary: Ed Bridges, Senior Ranger Secondary: John Gannaway, Parks District Supervisor	949-923-2201 714-973-6864
Irvine Regional Park	Primary: Michael Miniaci, Supervising Ranger Secondary: Linda Mayer, Parks District Supervisor	714-973-6834 714-973-6861
Laguna Coast Wilderness Park	Primary: Barbara Norton, Senior Ranger Secondary: John Gannaway, Parks District Supervisor	949-923-2233 714-973-6864
Limestone Canyon and Whiting Ranch Wilderness Park	Primary: Vicky Malton, Senior Ranger Secondary: John Gannaway, Parks District Supervisor	949-923-2244 714-973-6864
Peters Canyon Regional Park	Primary: Raul Herrera, Senior Ranger Secondary: Linda Mayer, Parks District Supervisor	714-973-6612 714-973-6861
Santiago Oaks Regional Park/Weir Canyon Wilderness Park/El Modena Open Space	Primary: Jim Simkins, Senior Ranger Secondary: Linda Mayer, Parks District Supervisor	714-973-6621 714-973-6861
Talbert Nature Preserve	Primary: Sara Girard, Senior Ranger Secondary: Leslie Ray, Parks District Supervisor	949-923-2252 714-973-6863
Upper Newport Bay Nature Preserve	Primary: Bill Reiter, Senior Ranger Secondary: Leslie Ray, Parks District Supervisor	949-923-2291 714-973-6863

8.4 The Irvine Company

NOTE: All 2008 research, monitoring, and management projects summarized below that require NCCP compliance determinations (specifically, projects directly related to the conservation and management of NROC Target Habitat and Species, namely, sage scrub (CSS), California Gnatcatcher, Cactus Wren, and Orange-Throated Whiptail) or those projects requested by the NROC Technical Advisory Committee (TAC) for review, will be developed as full proposals using the format recommended by USFWS and CDFG (project justification, methods [hypotheses, approach, methodology, sites, analysis], timeline, project outputs, evaluation of potential impacts, investigators, literature cited & reviewed, tables or figures). These proposals will be submitted for review by the TAC as they are developed prior to the initiation of each project. The NROC review period is 45 days, after which projects may be initiated if no comments are received. All CDFG, USFWS, and NROC nesting bird and exotic species control guidelines will be followed. Highest priority issues include fire prevention and control, rapid landscape-scale restoration of native habitats, and landscape connectivity for wildlife. Projects initiated by NROC on TIC-owned land are not included in this reporting or work plan (e.g., Suding et al. native grassland restoration study, Suding et al. artichoke control program evaluation, NROC cowbird trapping, NROC cactus wren dispersal), although we look forward to continuing to coordinate and collaborate with these efforts.

Recreation Use, Monitoring & Management

Program, Project, Activity	2007 Progress Report	2008 Work Plan
CURRENT USE POLICIES		
	Docent-led hiking, mountain biking, and equestrian tours for the public. Limit is 20 participants with 2 docents.	No change anticipated.

Recreation Use, Monitoring & Management

Program, Project, Activity	2007 Progress Report	2008 Work Plan
RECREATION MONITORING		
<p>Recreational Use & Access</p> <p>Guided Public Access managed by the Irvine Ranch Conservancy, (formerly the Irvine Ranch Land Reserve Trust). April 1, 2007 to December 31, 2007 (Jan-March 2007 data has been requested from TNC).</p>	<p><i>Management</i></p> <p>Total Public Programs offered 168 from April 1 through Dec. 31, 2007 (Jan-March 2007 data requested from TNC, but not yet received). Total implemented 102 (some cancellations occurred due to Windy Ridge & Santiago Fires).</p> <p>Total volunteer hours: 1109 Actual public participants: 913 Number of programs per NCCP Location: Limestone = 68, Weir = 10, Fremont = 24.</p> <p>Limestone Canyon proper area was closed to public tours during the raptor-breeding season (February 15 until May 15).</p> <p>Public access was cancelled for 72 hours following each rainfall greater than 1/2 inch.</p>	<p><i>Management</i></p> <p>Up to 80 guided tours per quarter will be conducted on The Irvine Company-owned NROC lands during 2008, with a total potential of 6,400 visitors.</p> <p>Managed self-guided wilderness access in Limestone and Weir Canyons will be implemented in 2008 following completion of the Resource and Recreation Management Plans.</p> <p>Limestone Canyon proper area will be closed to public tours during the raptor-breeding season. The closure period will extend from February 15 until May 15, or a period based on consultations with raptor specialists.</p> <p>Public access will be cancelled for 72 hours following a rainfall greater than 1/2 inch, or in response to other special conditions.</p> <p>Development and launching of Irvine Ranch Access Website will occur in 2008. This website will provide online, real-time access to information about trail locations, schedules, closures, rules and regulations, and other information for public access.</p>

Recreation Use, Monitoring & Management

Program, Project, Activity	2007 Progress Report	2008 Work Plan
RECREATION MONITORING (cont.)		
<p>Recreational Use & Access (cont.)</p>	<p>Human access management project studies initiated by IRC included: camera trapping surveys, disturbance profile observational studies on target species, and unauthorized human access benchmark assessments.</p> <p>All Weir Canyon public tours were cancelled for 3 months following the March 11 Windy Ridge Fire.</p> <p>A small area of the Fremont Canyon Mouth is within TIC-owned NROC lands. No guided tours were conducted between January 1 and March 5, 2007.</p> <p>All public access was suspended during Red Flag Alert conditions as determined by the Orange County Fire Authority. This occurred five times during 2007.</p>	<p>All public access will be suspended during Red Flag Alert conditions as determined by the OCFA.</p> <p><i>Monitoring & Research</i> Human access management project studies will continue, including: camera trapping surveys for developing disturbance profiles and access landscapes, disturbance profile observational studies on target species, and unauthorized access benchmark assessments.</p>

Recreation Use, Monitoring & Management

Program, Project, Activity	2007 Progress Report	2008 Work Plan
USER COMPLIANCE PROGRAMS		
Access Monitoring Unauthorized Access Monitoring Program	<i>Monitoring, Research & Management</i> Camera traps, video surveillance, trail counters and patrols were conducted to identify and monitor levels of illegal access and illegal trail use. This allowed the Irvine Ranch Conservancy to establish unauthorized use patterns and focus resources to manage the issue. This also allowed the Irvine Ranch Conservancy to get a more accurate count of public use of the wildlands – by combining authorized with unauthorized access.	<i>Monitoring, Research & Management</i> Continued use of camera traps, video surveillance, trail counters and patrols to identify and monitor levels of unauthorized access and trail use. <i>Management</i> Aggressively deter unauthorized access through a number of means and use through closures of unauthorized trails, gate and fence management, increased patrols, and other enforcement activities.
EDUCATIONAL OUTREACH		
Education & Outreach Orange Unified School District participation in the Inside the Outdoors Science Program at Limestone Canyon	<i>Management</i> Cancelled due to the Santiago Fire	<i>Management</i> Reinstate in November 2008 with an estimated 600 students.

Recreation Use, Monitoring & Management

Program, Project, Activity	2007 Progress Report	2008 Work Plan
EDUCATION OUTREACH (cont.)		
Organized Groups & Patrols	<p><i>Management</i> Total organized group programs offered 44 Total organized group programs implemented 44 Actual group participants 445 Number of group programs per NCCP Location: Limestone = 26, Weir = 13, Fremont = 5.</p>	<p><i>Management</i> Will continue to offer programs to organized groups and volunteer patrols upon request.</p>
Discovery Science Center & Irvine Ranch Conservancy Paleontology Program	<p><i>Management</i> Cancelled due to Santiago Fire. Planned to offer to Orange County public schools in fall of 2007. Located at Augustine Staging Area in Limestone Canyon</p>	<p><i>Management</i> Will be offered to Orange County public schools in Spring of 2008. Presented at Augustine Staging Area in Limestone Canyon – inside historic corral – no contact with habitat areas.</p>
<p><i>Citizen Science</i> Irvine Ranch Conservancy Citizen Science Program</p>	<p><i>Research</i> The Irvine Ranch Conservancy developed and deployed a Citizen Science program to implement scientific research by trained and supervised volunteers. Approximately 576 volunteer hours are contributed annually to this program.</p>	<p><i>Research</i> The Irvine Ranch Conservancy will expand the Citizen Science program to include more involvement with studies identified in this document.</p>

Recreation Facility Construction and Maintenance

Project	2007 Progress Report	2008 Work Plan
NEW CONSTRUCTION OR EXPANSION		
N/A	N/A for 2007	N/A for 2008
MAINTENANCE OF EXISTING FACILITIES		
Post-fire maintenance	Minor clearing of trees fallen across the road in Limestone Canyon after the Santiago Fire was conducted by IRC. The material was left in place at the roadside edge.	Minor maintenance of roads damaged by post-fire erosion anticipated within Santiago Fire area by IRC.
FACILITY REPLACEMENT/ REPAIR		
N/A	N/A FOR 2007	N/A FOR 2008

Infrastructure Construction & Maintenance

Project	2007 Progress Report	2008 Work Plan
CONSTRUCTION OF NEW FACILITIES THAT HAVE BEEN COORDINATED WITH RESERVE OWNER/MANAGER		
N/A	N/A for 2007	None anticipated for 2008.
OPERATION & MAINTENANCE		
Post-fire erosion control	<i>Management</i> Limited erosion control along the paved Hicks Haul Road completed after the Santiago Fire. No seeding or mulching conducted and impacts to natural habitat were negligible.	<i>Management</i> Limited erosion control along the paved Hicks Haul Road will continue after the Santiago Fire. No seeding or mulching will be conducted and impacts to natural habitat are negligible.

Habitat Restoration & Enhancement

Project	Funding Source	2007 Progress Report	2008 Work Plan
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EXOTIC PLANT ERADICATION			
Exotic Species Control	IRC	<p><i>Management & Research</i> IRC conducted follow-up monitoring of five artichoke thistle monitoring plots that were established in 2005 to test the effectiveness of herbicide treatment.</p> <p><i>Management</i> The following sites were identified by IRC and sprayed by Pacific Restoration:</p> <ul style="list-style-type: none"> • 150 acres in Weir Canyon for Italian-, milk-, and artichoke thistle. Area had been sprayed previously. • 1000 acres on Loma Ridge E. of SR241 for fennel and artichoke thistle. Portions had been sprayed previously. • 1000 acres on Loma Ridge W. of SR241 for fennel and artichoke thistle. Area had been sprayed previously. 	<p><i>Management</i> A comprehensive priority-setting analysis for identifying invasive species and sites for targeted control will be initiated for TIC-owned wildlands including NCCP lands.</p> <p><i>Management</i> Several of the large areas sprayed in 2007 appear no longer to have extensive artichoke thistle populations. Therefore, 2008 control efforts will focus mainly on the eastern portion of North Ranch. Due to the high apparency and rapid re-emergence of artichoke thistle after the Santiago Fire, exotic species herbicide control will occur in two phases in 2008:</p> <ul style="list-style-type: none"> • Phase 1. 340 acres distributed across 18 burned sites (including Shoestring Canyon, and isolated patches along East Lomas Ridge, Hicks Haul Rd., Limestone Canyon, Agua Chinon, and Bolero Springs) has been targeted for early season artichoke thistle control. These sites contain dense, yet relatively isolated populations that present a threat of being foci for new local invasions. IRC is coordinating with Pacific Restoration to spray these areas before February 18th, the earliest recorded nesting date for sensitive

Habitat Restoration & Enhancement

Project	Funding Source	2007 Progress Report	2008 Work Plan
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EXOTIC PLANT ERADICATION (cont.)			
<p>Exotic Species Control (cont.)</p>	<p>IRC</p>	<ul style="list-style-type: none"> • 1000 acres on Loma Ridge W. of SR241 for fennel and artichoke thistle. Area had been sprayed previously. • 25 acres in Rifle Range Canyon and along the MWD road for artichoke thistle. Area had been sprayed previously. <p><i>Management and Monitoring</i> Two sets of four artichoke thistle treatment plots were established by TNC in 2005 at MWD Road 1 and 2 to test the effectiveness of Roundup and Transline alone and in combination. Treatments were applied yearly through 2007 at MWD1. MWD2 was inadvertently sprayed only with Transline in 2007 and was therefore abandoned. At MWD1 all herbicide applications were effective,</p>	<p>bird species that might occur. Additional isolated plants will be removed by hand by IRC staff or volunteers as they are located and as time permits.</p> <ul style="list-style-type: none"> • Phase 2. Herbicide treatment of fennel and additional stands of artichoke thistle will be implemented in spring/early summer, as needed. Areas may include, but are not limited to, portions of East and West Loma Ridge, Weir Canyon, and Rifle Range. Bird surveys will be conducted before treatment, and spray areas will be modified to avoid nesting sensitive bird species in season (nesting tables from CDFG and USFWS). <p>Small populations of Italian- and milk thistle occurring, e.g., in portions of Weir Canyon and Agua Chinon, will be pulled by hand by IRC staff and/or volunteers. An extensive stand of castor bean at Agua Chinon will be cut back by hand and treated using cut-stump application of herbicide (Transline or Roundup) either as part of a 10-20 member volunteer work day (note: persons with appropriate permits for herbicide application will be on hand) or by a qualified contractor.</p> <p>Riparian areas will be surveyed for high priority invasive species and appropriate control activities taken, if necessary, following relevant riparian control</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Progress Report	2008 Work Plan
EXOTIC PLANT ERADICATION (cont.)			
Exotic Species Control (cont.)	IRC	<p>with only a single live artichoke thistle individual remaining in the plot treated with a mix of both herbicides.</p> <p>Four other previously established artichoke thistle monitoring plots (1 at Irvine Lake and 3 at Shoestring Cyn) were not treated or monitored (see 2008 work plan).</p>	<p>guidelines.</p> <p><i>Monitoring</i> Artichoke thistle study plots at MWD Roads 1 and 2 will not be monitored because study has been completed and control plots are now a seed source for re-establishment. Monitoring of the remaining four permanent thistle plots will be discontinued, as they do not adequately represent the managed area (i.e., three are clustered in Shoestring Canyon and were part of an herbicide treatment study), because much has already been learned about which control methods are most effective, and because untreated sites may become seed sources for reinfestation.</p> <p>IRC plans to establish a long-term GIS-based monitoring database to identify and prioritize specific weed species and populations for removal/ treatment. This database will be updated as weed populations are surveyed, treated, and revisited. To begin, past and present artichoke thistle populations and control measures are being mapped. In 2008, populations of other species, initially including castor bean, fennel, tecolote, tamarisk, Italian thistle, garland chrysanthemum, and persistent mixed non-native annual grass patches will begin to be digitized.</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Progress Report	2008 Work Plan
EXOTIC PLANT ERADICATION (cont.)			
Exotic Species Control (cont.)	IRC		<p>Overlays can be made between these and previously digitized mixed-species weed polygons. Periodic monitoring will allow insight into changes in weed distributions. Ultimately, a comprehensive priority-setting analysis for action on non-native and natural communities highly impacted by invasive species will be initiated for TIC lands, building on previous efforts.</p> <p><i>Research and Monitoring</i> In order to identify efficient control techniques for other invasive species, a short-term trial may be conducted on tecolote and non-native <i>Bromus</i> spp. Treatments will likely include forb- and grass-specific herbicide as well as mowing. Control measures may be coordinated with reseeding of native species occurring in adjacent habitat in the following rainy season.</p> <p>IRC plans to submit a proposal for a weed removal / native plant enhancement study along the eastern slope of Shoestring Canyon, for which initial surveys will begin in 2008 and soil samples will be collected. The future study will compare the effectiveness of weed control methods and reseeding with increasing native sage scrub cover and will likely be established as a series of 10m² plots.</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Progress Report	2008 Work Plan
EXOTIC ANIMAL CONTROL			
		N/A IN 2007.	N/A anticipated for 2008.
HABITAT RESTORATION / VEGETATION			
Habitat Restoration & Enhancement	IRC, TNC	<p><i>Management & Research</i> The CSS plant salvage program from the “Planning Area 6” development in the central Irvine Ranch, initiated by TNC, was completed with topsoil being placed at El Toro Wildlife Refuge (USN contributed funding).</p> <p>IRC studied oak woodland regeneration in Limestone, Gypsum, and Weir Canyons. Seedling and sapling densities and distribution were analyzed, and environmental conditions that are favorable or inhibit recruitment were evaluated.</p>	<p><i>Research, Monitoring & Management</i> Comprehensive priority-setting analysis for habitats, sites for targeted restoration, and priority restoration scenarios will be initiated for TIC NROC lands.</p> <p>Native grassland mapping and characterization will be conducted in recent burn areas.</p> <p>Limited and targeted seed collection by R. Noll will occur for source material for local restoration efforts.</p> <p>IRC will continue studies on oak and sycamore recruitment and environmental factors that determine their distribution and demography over time and space. The studies presently are focused in Weir, Limestone, Gypsum, and Fremont canyons.</p> <p>IRC will initiate a comparative study of different oak restoration techniques in Weir, Limestone, and Fremont Canyons (full proposal currently under review)</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Progress Report	2008 Work Plan
HABITAT RESTORATION / REVEGETATION (cont.)			
Habitat Restoration & Enhancement (cont.)	IRC, TNC	<p>IRC synthesized information on historical land use impacts on oak and sycamore woodlands.</p> <p>Native seed collection by Robert Noll (S&S Seeds) occurred under the agreement developed by TNC.</p>	<p>by TAC).</p> <p>A series of field studies will be initiated comparing landscape-scale methods for restoring non-native annual grasslands to sage scrub or native grasslands. Treatments will only be applied in non-native annual grasslands and extensive pre-planning will be done to avoid populations of sensitive species. Loma Ridge and Weir Canyon are candidate study areas.</p> <p>Seed collection of native plant species will be conducted by Robert Noll for S&S Seeds under the new agreement being developed with IRC. Sensitive species are not collected, low percentages of production is targeted for collection, well-distributed across populations. Seeds become available for TIC, IRC, and NROC, OC, State Parks, COI, etc. restoration projects and conservation efforts throughout area and region.</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Progress Report	2008 Work Plan
HABITAT RESTORATION / REVEGETATION (cont.)			
Habitat Mitigation	TIC	TIC implements and manages several mitigation sites within the NCCP. These mitigation sites compliment the NROC restoration and enhancement program. Annual monitoring reports are submitted to Resource Agencies and NROC describing in detail the progress of habitat restoration. A summary of the mitigation sites within or near the Reserve and Special Linkage areas is provided in Appendix I.	

Fire Management Activities

Project	2007 Progress Report	2008 Work Plan
PRESCRIBED BURNS OR OTHER FUELS MANAGEMENT PROJECTS		
Fire Prevention	<p><i>Management</i> Trained (by OCFA), outfitted and deployed approximately 50 volunteers and staff to monitor “high risk” areas on wildlands edges through Irvine Ranch Conservancy Fire Watch Program. This program was conducted in conjunction with the Greater Laguna Coast Fire Safe Council, Inter-Canyon League Fire Safe Council, Trabuco Canyon Defense Against Wildfire, Modjeska Canyon Fire Watch, and the Orange County Fire Authority to create a network of Fire Watch programs.</p> <p>Meetings and field tours with OCFA, transportation agencies, local communities, Edison, wildlife agencies, Santa Monica NRA, and fire specialists to discuss fire prevention actions and planning.</p>	<p><i>Management</i> Further meetings and field tours with OCFA, state and local transportation agencies, SCE and fire specialists to discuss fire prevention/management actions and planning. Activities to be assessed and potentially initiated include:</p> <ul style="list-style-type: none"> • Removal of exotic trees along wildland edges, including along Santiago Canyon Road when within wildland boundaries. • Low-barriers to prevent fire ignition at strategic locations along transportation corridors, in collaboration with OCFA, Caltrans, TCA, Orange County, CHP. • Re-configuration of low-visibility roadside pullouts to reduce arson and fire ignition risk. • Re-discing of previously disced Santiago Canyon Road-adjacent firebreak within Limestone Canyon wildland area, keeping it to bare ground. • Video-surveillance of Santiago Canyon Road, with associated public awareness program. • Remote camera surveillance of all wildland entry points. • Strategic reduction of fuel on road edges, where feasible and consistent with regulations and mitigation terms. • Fuel reduction in strategic corridors and bottlenecks identified through fire modeling analyses.

Fire Management Activities

Project	2007 Progress Report	2008 Work Plan
PRESCRIBED BURNS OR OTHER FUELS MANAGEMENT PROJECTS		
Fire Prevention (cont.)		<ul style="list-style-type: none"> • Modification of permanent paved and unpaved roads to enhance firebreak and fire control efficacy, where consistent with NCCP guidelines. Possible road closures, where appropriate and possible. • Rapid restoration of fire-prone non-native habitats back to native-habitat structure using native species. • Strategic control of invasive plant species in fire hotspot sites and hotspot conditions. • Strategic fuel reduction around selected, vulnerable habitats and populations. • Enforce strict adherence to Use Policies and Fire Prevention and Response and Entry Permit protocols by all wildland users. • Removal of non-native trees from wildlands. <p>Deployment of volunteers and staff on OCFA-determined Red Flag Alert conditions to deter fire ignition.</p>
Post-Fire Management	<p><i>Management</i> Windy Ridge Fire, Weir Canyon March 11, 2007: Approximately 4 miles of dozer lines and 3.5 acres of safe zones/staging areas were created during fire fighting efforts. Several dozer/track lines encroached oak woodlands (between</p>	<p><i>Management</i> IRC will repair and maintain previously maintained water troughs within the Santiago and Windy Ridge burn areas. Cameras indicate that these are a major source of water for many species.</p> <p>IRC will conduct targeted invasive species control efforts,</p>

trees)

Fire Management Activities

Project	2007 Progress Report	2008 Work Plan
PRESCRIBED BURNS OR OTHER FUELS MANAGEMENT PROJECTS (cont.)		
<p>Post-Fire Management (cont.)</p>	<p>to suppress spot fires; repair efforts included creation of water bars and pulling back of berms along dozer lines, pulling brush back over the control lines, hand raking of tracks and berms caused by bulldozers in the establishment of safe zones and staging areas along Weir Canyon truck trail, wetting down access roads with water trucks, cactus pad distribution on cleared areas, and harvesting cleared brush for placement over dozer lines. Locally-collected seed for the restoration of bulldozer lines within grassland and coastal sage scrub areas was obtained. IRC-OCFA field tours and follow-up repair work was conducted regarding goals and specifications during fire suppression and repair.</p> <p>Santiago Fire, October 21, 2007: IRC has assessed potential erosion issues, evaluated wildlife and habitat impacts, and proposed and initiated a range of post-fire research and management activities.</p>	<p>including, but not limited to, artichoke thistle in good condition native grasslands, control of riparian invasive species in Santiago and Windy Ridge burn areas, assisting OC Parks in castor bean control in Agua Chinon.</p> <p>Post-fire erosion control assessment and management activities will be conducted for Santiago and Windy Ridge fire areas, including, but not limited to, restoration and repair of bulldozer lines and staging areas from fire control efforts and culvert replacement.</p> <p>IRC will evaluate internal preserve infrastructure (e.g., fencing, gates, posts) and research-related debris (markers, flagging) for removal during 2008 and beyond.</p> <p>Some native grassland areas were bulldozed in the Windy Ridge fire, yet seed was not available at the time. Within these areas, local native grass seed will be obtained and the area seeded in the fall of 2008. In addition, 200 transplants of seed collected from a bulldozed population of <i>Nassella cernua</i> will be planted in January 2008.</p>

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Fire Management Activities

Project	2007 Progress Report	2008 Work Plan
PRESCRIBED BURNS OR OTHER FUELS MANAGEMENT PROJECTS (cont.)		
Post-Fire Management (cont.)	IRC and TIC participated in various post-fire activity workshops. Dozer lines will be monitored for recovery and key invasive species. Straw bales were	<i>Management, Monitoring & Research</i> The success of seeding the dozer lines created in the Windy Ridge fire will be monitored as well as the extent to which seeded areas may thwart the establishment of non-native

	<p>placed by OC along the S. side of Santiago Canyon road to limit erosion.</p> <p>USGS conducted a post-fire small mammal and herpetofauna mortality survey at established sample sites.</p> <p>A fire impact study on oak and sycamore trees was conducted by IRC in Limestone Canyon.</p>	<p>species relative to unseeded areas.</p> <p>IRC will initiate a project to assess oak woodland habitat restoration methods. The proposal is currently under review by the wildlife agencies and submitted to NROC in December, 2007.</p> <p>A study on fire-impacts and recovery on larger vertebrates will be conducted using camera trap data.</p> <p>A study on fire-impact on unauthorized access will be conducted using camera trap data.</p> <p>A study on post-fire mortality of small mammals and herpetofauna will be conducted together with USGS.</p> <p>A study on the fire-impact to grassland-specialist bird species will be conducted in Weir, Limestone, and Fremont Canyons.</p>
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Fire Management Activities

Project	2007 Progress Report	2008 Work Plan
PRESCRIBED BURNS OR OTHER FUELS MANAGEMENT PROJECTS (cont.)		
Post-Fire Management (cont.)		<p>Post-fire impact, recovery, and monitoring of small mammals will be initiated for Limestone, Weir, and Fremont Canyons (San Diego Natural History Museum).</p> <p>Post-fire rare plant and community surveys will be</p>

		<p>conducted by Fred Roberts group for Santiago and Windy Ridge Fire areas.</p> <p>Oak and sycamore woodland fire impact surveys will be conducted in Limestone Canyon.</p> <p>Post-fire mapping of native grasslands will be conducted in the Santiago and Windy Ridge Fire burn areas.</p> <p>Post-fire surveys for Cactus Wren and California Gnatcatcher within Santiago and Windy Ridge Fire areas, in collaboration with NROC, CDFG, USFWS, Audubon, Sea & Sage, and others.</p> <p>Post-fire cactus restoration activities in Santiago Fire and Windy Ridge Fire area, focusing on enhancing habitat for cactus wren throughout the burn area.</p> <p>Post-fire study on mortality of trapdoor spider is being considered. No disturbance to spiders will occur.</p>
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Fire Management Activities

Project	2007 Progress Report	2008 Work Plan
PRESCRIBED BURNS OR OTHER FUELS MANAGEMENT PROJECTS (cont.)		
Fire Research	<i>Research & Management</i> IRC, in collaboration with OCFA, UCLA, Santa Monica NRA, and other partners, initiated analyses of fire frequencies,	<i>Research & Management</i> IRC will continue analyses of fire and its impact on ecosystems from 2007. Natural community surveys will be conducted for a project to understand the impact of fire

	fire ignition and spread patterns, and impact on the ecology of the wildlands.	frequency on ecosystems throughout the northern Santa Ana Mountains, including NROC lands owned by TIC. IRC will initiate a study, with several partners, on the long-term influence of fire frequency on the ecology and composition of natural communities within the wildlands.
MAINTENANCE OF FUEL BREAKS OR FUEL MODIFICATION ZONES		
	None in 2007.	Re-discing of previously disced Santiago Canyon Road-adjacent firebreak within Limestone Canyon wildland area, keeping it to bare ground, will be evaluated and implemented if warranted. This would be coordinated with Orange County, Edison, and OCFA.

Miscellaneous Activities and Management Programs

Project	2007 Progress Report	2008 Work Plan
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Species Restoration	<p><i>Management, Research & Monitoring</i> IRC participated in planning meetings of the Tecate Cypress working Group</p>	<p><i>Research & Management</i> In collaboration with USGS and wildlife agencies, IRC will expand the spadefoot toad habitat enhancement program, with a focus on creation of breeding habitat and reduction in road-based depressions.</p> <p>Placement of artificial nest structures for cactus wren in key locations. San Joaquin Hills study on optimal prototypes will start in 2008 to guide placement in North Ranch (this proposal has already been reviewed by NROC/TAC).</p> <p>IRC will coordinate with the Tecate Cypress Working Group for activities related to this species. IRC will work with partners to initiate genetic resource management, post-fire recruitment studies, fire prevention actions, and fire refugia studies for Tecate cypress.</p> <p>Hotspots for Coast Horned Lizard roadkill will be assessed to determine if road and trail closures are warranted for this species.</p>
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Miscellaneous Activities and Management Programs

Project	2007 Progress Report	2008 Work Plan
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<p>Miscellaneous Scientific Research & Monitoring</p>	<p><i>Research & Monitoring</i> Large vertebrate monitoring via camera trap surveys: IRC set up approximately 40 cameras throughout the north ranch (including NCCP lands owned by TIC) to assess long-term trends in populations in response to drought, public access, fire, and natural variation. A subset of these cameras was used to monitor managed and unauthorized access preserves.</p> <p>Continued raptor monitoring and banding was conducted by Pete Bloom and Scott Thomas.</p> <p>Christmas Bird Counts and Point Counts by Audubon and Sea & Sage</p> <p>A 'forbland' study by TNC and Earthworks Ltd. was completed for selected northern Santa Ana Range areas including Limestone and Weir Canyons (report not yet available pending completion by TNC).</p> <p>UCI study (K Suding, M Goulden) investigating effects of climate change (primarily rainfall) on habitat composition in southern California began at the top of Hicks Canyon on Loma Ridge.</p>	<p><i>Research, Management & Monitoring</i> UCI Climate Change Project will replace materials damaged by the Santiago Fire in October 2007 and continue with their study at the same site. Additional sites may be added, after necessary review.</p> <p>IRC will initiate monitoring and synthesis of information on grassland-specialist birds, herpetofauna, small mammal, and mule deer populations in the northern Santa Ana Range in coordination and collaboration with appropriate agencies.</p> <p>J. Schenk (Cal State Fullerton) will conduct study of plant physiology in Black sage community. Low/no impact research, Proposal will be provided to NROC and TAC.</p> <p>Suding-Larios (UCI) resource impact study along Loma Ridge will continue through 2008.</p> <p>Christmas Bird Count and quarterly Point Count surveys will be conducted by Sea and Sage Audubon. Audubon making current and historical data available to IRC for integration into its management planning.</p> <p>Continuation of Pete Bloom, Scott Thomas raptor research. onduct a mule deer population estimate for northern Santa Ana Range (IRC in collaboration with USGS, USFWS, CDFG, USFS).</p>
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Miscellaneous Activities and Management Programs

Project	2007 Progress Report	2008 Work Plan
Miscellaneous Scientific Research & Monitoring	<p>Treatments included seed addition, rainfall addition, rainfall exclusion, and fire. The size of the study plot is approximately ten acres. A prescribed burn treatment was conducted in coordination with OCFA on Feb 5, 2007. Three California gnatcatcher protocol surveys were conducted prior to burn. The October 2007 Santiago Fire burned the entire study plot, and destroyed much of the infrastructure for the study.</p> <p>Katie Suding and Lorelee Larios initiated a study on resource impacts in exotic and native grasslands along Loma Ridge. The sites for this study are located adjacent to the ridge road paralleling the east side of the 241.</p>	<p>Northern Santa Ana Range wildlife crossing study by USGS and IRC, in collaboration with TAC, Caltrans, Orange County, wildlife agencies, Colorado State): identification of short and long-term actions; priority areas, species, and activities; initiation of roadkill mortality monitoring program; field studies on wildlife movement; evaluation of transportation corridor mitigations and technologies.</p> <p>IRC study using remote sensing cameras to evaluate impact of drought and seasons on water source use by wildlife will continue.</p> <p>Camera trap monitoring of large vertebrates will continue through 2008.</p>
Conservation Capacity	<p>Management, Monitoring & Research IRC completed several activities intended to enhance the collaboration of the management community, including:</p> <ol style="list-style-type: none"> 1. Developing a central repository for information, data, and spatial data to be accessible to all interested parties. 2. Standardized research, monitoring regulations, guidelines, application & 	<p>Management, Monitoring, & Research IRC will continue to enhance the collaboration of the management community identified in 2007 (see left).</p> <p>Resource Management Plans for Limestone and Weir Canyon NCCP lands will be completed and submitted for consistency determination by USFWS and CDFG.</p>

Miscellaneous Activities and Management Programs

Project	2007 Progress Report	2008 Work Plan
Conservation Capacity (cont.)	<p>tracking system for all IRC managed lands.</p> <p>3. Clarification & formalization of review and consultation protocols</p> <p>4. Coordination of research, monitoring & management activities among local land managers, researchers, and conservation practitioners. Promoting and supporting a landscape-level Conservation Action Plan.</p> <p>5. Providing opportunities for collaboration, internships, scholarships & research grants.</p> <p>6. Resource Management Plans for Limestone and Weir Canyon NCCP areas</p>	
Map Corrections or Adjustments	None to report.	None planned at this time.
Coastal Sage Scrub (CSS) Take Activity	None to report.	None planned at this time.

8.5 City of Irvine Open Space

The City of Irvine 2007 NCCP Annual Report & 2008 Work Plan Central & Coastal NCCP Wildlands



The City of Irvine (COI) received ownership of 2,144 acres comprised of Bommer Canyon and the eastern portion of Shady Canyon on May 18, 2002. The land was transferred by Deed from The Irvine Company to COI as part of the Open Space Ballot initiative and the Memorandum of Understanding established in 1988. With this transfer, the City became the land owner/manager and is required to submit an annual report to the Nature Reserve of Orange County (NROC). Through a phased land dedication process, COI has assumed ownership of additional land in 2007, including 202 acres in Preservation Area H - Quail Hill and 594 acres in Preservation Area P in the north. Eventually, there will be approximately 4,100 acres in the Open Space Preserve - South and approximately 2,700 acres for the Open Space Preserve - North in the northern Foothills of Irvine.

The following information reflects the activities for the City of Irvine's Open Space Preserve for the 2007 calendar year and the work plan activities for the 2008 calendar year.

Recreation Use, Monitoring & Management

Project, Program, Activity	2007 Status	2008 Work Plan
<p>Recreational Use & Access January 1, 2007 to December 31, 2007</p>	<p>Management Managed recreational use and public access programs are operated and monitored by COI's Community Services Department; COI's contracted Land Manager, Irvine Ranch Conservancy (IRC); and COI's Public Safety Department. Permitted uses are passive recreation including hiking, mountain biking, and equestrian uses on open space trails, as well as activities, camps and events at Bommer Canyon Cattle Camp and Turtle Rock Nature Center.</p> <p>Public trail access was cancelled for a minimum of 72 hours following a rainfall event greater than one-half inch. Prolonged rainfall periods or major rainfall events in excess of one inch canceled access for extended periods of time.</p> <p>Signage for management of the open space was installed at all perimeter entry points to educate the public on the managed access status.</p> <p>COI and IRC require program participant registration and waivers, and a staff person(s) and/or trained volunteer(s) in attendance at all times. Programs are designed to provide participants with the best possible experience and minimize the overall impact on the habitat.</p>	<p>Management The COI plans to continue to manage and offer the same recreational use and access programs through COI and IRC with the addition of IRC docent-led trail running programs.</p> <p>COI approved their Open Space Ordinances in 2007 that will assist Open Space Patrol Rangers with citation authority to help protect against unauthorized use and improve user compliance. The Irvine Police Open Space Patrol is a group of non-sworn officers that patrol the open space during scheduled programs and other times of need (when possible).</p> <p>Per the approved Recreation and Resource Management Plan, the existing Ridge Route Trail will be re-established as an authorized multi-use trail for monitored public access programs.</p> <p>Per the approved Recreation and Resource Management Plan, approved signage will be procured and placed at the respective trailheads throughout the City of Irvine Open Space Preserve – South, and maps will be made available for public program participants.</p>

Recreation Use, Monitoring & Management

Project, Program, Activity	2007 Status	2008 Work Plan
<p>PROGRAMS OFFERED BY IRVINE RANCH CONSERVANCY</p> <p><i>Offered in the Irvine Open Space Preserve</i></p>	<p>IRC's public access programs included: interpretive hikes, full moon hikes, mountain bike rides, equestrian rides, specialized theme walks and wilderness access days.</p> <p>Total public programs offered: 159 Total implemented: 137 Total volunteer hours: 1811.5 Actual participants: 2023</p> <p>Hicks Canyon Wilderness Walk Total programs offered: 4 Total implemented: 4 Actual attendance: 79 Volunteer hours: 30</p> <p>Citizen Scientist Volunteer hours: 38</p> <p>IRC also offers a minimum of 12 stewardship volunteer work days per year, which include invasive species removal, restoration planting and maintenance, and trail maintenance activities.</p> <p>Hick's Canyon Sunday Morning Wilderness Walk trail was photo monitored before, during, and will be monitored by the IRC field ecologist after the conclusion of access for the year. This area is closed to public programs from February-August each year for California gnatcatcher and cactus wren breeding season. Walks were cancelled for a period of time due to the Santiago Fire.</p> <p>Spring Volunteer Appreciation Event –</p>	<p>IRC anticipates offering the same types of open space programs with the addition of docent-led trail-running programs.</p>

Recreation Use, Monitoring & Management

Project, Program, Activity	2007 Status	2008 Work Plan
	<p>Approximately 30 people, including volunteers and staff, attended a catered lunch in Bommer Canyon's Cattle Camp.</p> <p>Earth Day Event – Approximately 120 participants attended the 2007 Earth Day event in Bommer Canyon. Self-guided hiking was suspended due to rain. Themed displays were featured at this event.</p>	
<p><i>PROGRAMS OFFERED BY CITY OF IRVINE</i></p> <p><i>Offered at the Nature Center and Bommer Canyon Cattle Camp</i></p>	<p>COI offered a number of programs in 2007. Programs included: classes, summer camps, badge programs, family campouts, and outreach. These Open Space programs offered opportunities for participants of all age levels to learn about and experience nature.</p> <p>Total public programs offered: 199 Total implemented: 99 Actual participants: 2287</p> <p>Youth Day Camps provided themed activity weeks such as "Insect Safari," "Jr. Naturalist," and "Animal Science Investigator."</p> <p>In addition, the Kids and Nature nine-month kindergarten education and enrichment program was once again offered in 2007. This program meets during the school year, five days a week, two hours a day, and serves a full class of twenty-four children.</p>	<p>COI anticipates offering the same types and numbers of general open space programs in 2008 as well as continued group reservations at Bommer Canyon Cattle Camp picnic/event site under COI staff supervision for group picnics, weddings, and special events as permitted use under the Natural Community Conservation Plan (NCCP).</p>

2007 General Open Space Programs offered by City of Irvine			
Activity	Program	# Sessions Offered (<i>Sessions Implemented</i>)	Total Participants
Bommer Canyon	Jammin in the Canyon	5 (5)	22
	Buggy Brigade	10 (9)	27
	Bommer Canyon Campout	4 (4)	337
	Summer Camp Eco- Explorers	35 Days (35)	205
	Summer Camp Jr. Naturalists	25 Days (25)	70
	Lounge Chair Theater	1 (1)	200
	Starry Nights	2 (2)	245
	Bommer Canyon Trail Tours	3 (3)	93
	Leaders In Training	35 Days (35)	13
Nature Center	Scouts Badge Programs	2 (2)	21
	Early Childhood Classes	8(8)	67
	Nature Center Tours	11 (11)	227
	Birds of a Feather	3 (3)	15
	For the Love of Snakes	1 (1)	3
	Critter Crafts	1 (1)	3
	Fall Season Science	1 (1)	6
	Kids Only Night Hikes	10 (10)	132
	Open Space 101	11 (11)	137
	Solstice Night Hike	1 (1)	27
	Nature Notes	1 (1)	4
	Fire Ring Extravaganza	11(11)	258
	Second Saturdays	12 (12)	143
	Animals on our Trail	1 (1)	7
	Spectacular Science	1 (1)	4
	Dinner with Nature	2 (1)	12
	Animal Adventures	1 (1)	4
Spectacular Science	1 (1)	5	
Total		199 (98)	2287
Other	Kids and Nature AM	180 days (180)	24 children a day

	Kids and Nature PM	180 days (180)	6 children a day
Total		360 (360)	36
Grand Total		445 (437)	1833

Recreation Use, Monitoring & Management		
Project, Program, Activity	2007 Status	2008 Work Plan
Education & Outreach	<p>Management IRC - Organized groups & patrols Total programs offered 11 Total implemented 11 Actual participants 138</p> <p>COI – various school groups and Boy/Girl Scout educational opportunities.</p>	<p>Management COI and IRC will continue its work to educate the public about stewardship activities, public access opportunities, open space activities and events in Irvine’s open space.</p> <p>COI staff will maintain collaborative efforts and attend regional meetings for: Orange County Wild Land Stewards, Laguna Canyon Foundation, Nature Reserve of Orange County and Coastal Greenbelt Authority.</p>
Monitoring	<p>Monitoring Trail Counter test monitoring. A monitoring site was implemented to test the effectiveness of an electro-magnetic/seismic trail counter to monitor unauthorized use of non-sanctioned trails. A buried trail counter was installed on the non-sanctioned “Reservoir Drop” trail to obtain accurate unauthorized use patterns.</p> <p>Research & Monitoring Camera traps were established in seven sites in the summer of 2007 to monitor human access and wildlife behavior of the Open Space Preserve - South. This project is ongoing.</p>	<p>Monitoring Additional trail counters will be implemented and rotated throughout the Irvine Open Space to compile user pattern data for unauthorized use of both the sanctioned and non-sanctioned trails. Some of these counters may be placed at camera trap sites to obtain the most accurate possible data about unauthorized use.</p> <p>Research & Monitoring IRC will continue to collect camera trap data to monitor human access, assess the type and level of unauthorized access, track trends in wildlife diversity and abundance over time and space, and further develop disturbance profiles for wildlife species in the City of Irvine Open Space. The Land Manager will work with UCLA and Cal State Long Beach to develop disturbance profiles for target wildlife species through literature review and low-impact field studies.</p>

Recreation Facility Construction & Maintenance

Project	2007 Status	2008 Work Plan
<p>New Construction or Expansion (cont'd)</p>	<p>installed at selected locations throughout the trail length.</p> <p>Fox Run Single-Track Trail: Enhancements were performed at the existing Fox Run Trail to prepare the trail for use on public programs. A single 2' wide by 1 mile long, sustainable trail alignment was established by physical closure of multiple unauthorized alignments, and installation of erosion prevention devices installed at selected locations throughout the trail length.</p> <p>Shady Oaks Single-Track Trail: Enhancements were performed at the existing Shady Oaks Trail to prepare the trail for public programs. A single 2' wide by 1 mile long, sustainable trail alignment was established by physical closure of multiple unauthorized alignments, and installation of erosion prevention devices installed at selected locations throughout the trail length.</p> <p>Cattle Crest Trail: Enhancements were performed at the existing Cattle Crest Trail to prepare the trail for public programs. A single 4' wide by 1.2 mile long, sustainable trail alignment was established by physical closure of multiple unauthorized alignments, and installation of erosion prevention devices installed at selected locations throughout the trail length.</p> <p>Ridge Route Trail: Enhancements were performed at the existing Ridge Route Trail to prepare the trail for public programs. A single 4' wide by 3/4 mile long, sustainable trail alignment was established by physical closure of</p>	<p>accommodated via the Cattle Crest, Rabbit Run, Fox Run, and Shady Oaks Single-Track Trails, which bypass the restoration area.</p> <p>Trail and Site Improvements Fabrication and installation of permanent signage, gates, bridges, trail restorations/enhancements (as needed), and outlined in the approved Recreation and Resource Management Plan in relation to the following trails:</p> <ul style="list-style-type: none"> Quail Trail Serrano Ridge Trail Cattle Crest Trail Rabbit Run Trail Fox Run Trail Shady Oaks Trail Ridge Route Trail East Fork Trail West Fork Trail Butterfly Valley Trail Bobcat Spur Trail Monkey Flower Mesa Trail East Canyon Trail (Canyon Loop) West Canyon Trail (Canyon Loop)

Recreation Facility Construction & Maintenance		
Project	2007 Status	2008 Work Plan
	multiple unauthorized alignments, and installation of erosion prevention devices installed at selected locations throughout the trail length.	
Maintenance of Existing Facilities	<p>Management Performed erosion preventative maintenance on all existing drivable natural-surface roads within the COI Open Space Preserve – South.</p> <p>Preventative maintenance included minor grading at locations that were subjected to retaining water. These areas were re-contoured to shed water from the trail-surface, which included the installation of preceding trailing grade dips or water bars as required.</p> <p>Performed routine trail-side abatement of invasive weeds utilizing public stewardship volunteers. Seventeen (17) public stewardship volunteer projects were implemented in 2007.</p>	<p>Management IRC will continue to perform preventative and general maintenance.</p> <p>Begin systematic removal of existing interior strand-wire fencing and posts throughout COI's Open Space Preserve – South. The fence removal shall include only interior non-essential fence lines with the exception of posts and structures that will help maintain the ranch history of the area.</p> <p>Existing perimeter gates deemed structurally sound shall be retained and retrofitted with a multi-padlock gate latch to accommodate the required agency locks while eliminating the typical daisy-chain lock assembly.</p>
Facility Replacement/Repair	N/A	N/A
Removal of Inactive Field Research Materials		<p>Management IRC will evaluate all active and inactive field studies and mitigation sites and remove field markers no longer deemed active or necessary.</p>

Habitat Restoration & Enhancement			
Project	Funding Source	2007 Status	2008 Work Plan
Exotic Species Control	COI, IRC	<p>Management Removal of significant stands of tree tobacco and castor bean in Bommer Canyon, and some artichoke thistle control in Quail Hill, was conducted via Stewardship Days with volunteers under the supervision of IRC. Scattered stands of pampas grass and Russian thistle were removed from Bommer and Shady Canyons by IRC staff.</p> <p>COI contracted IRC to conduct a minimum of 12 stewardship work days per year. Five of these stewardship work days involved exotic plant removal in 2007 with a total of 398 volunteer work hours.</p>	<p>Management IRC plans to coordinate an invasive species control program with NROC, whereby NROC manages control of artichoke thistle, fennel, veldt-grass, and garland chrysanthemum, and IRC will target castor bean, mustard, other exotics, and assist with artichoke thistle removal as needed in Quail Hill area.</p> <p>Targeted control projects are planned to include:</p> <ol style="list-style-type: none"> 1. Using volunteer stewardship workday to manually pull castor bean seedlings in Bommer Canyon, where plants had been sprayed in 2007. Removal work may involve leaving control plots and monitoring re-emergence/vegetation cover to gauge effectiveness of follow-up seedling cleanup. 2. Mowing mustard stands in the vicinity of Rabbit Run trail to reduce seed set and dead standing thatch. Mowing efforts may be implemented as an experiment, in which control plots will be left unmowed and pre- and post- native and non-native vegetation cover will be estimated to measure efficacy of mowing. 3. Small-scale targeted control as needed of miscellaneous potentially noxious invasives, including (but not limited to) castorbean, spanish broom, Italian thistle, arundo, tamarisk, tree tobacco, tecolote, and hottentot fig. Methods used will attempt to maximize effectiveness and minimize environmental impact. Following NCCP guidelines, bird surveys will be conducted prior to any herbicide application to ensure no impacts to sensitive

Habitat Restoration & Enhancement

Project	Funding Source	2007 Status	2008 Work Plan
Exotic Species Control (cont'd)			<p>species. Maintenance and stewardship work days will be used, in part, for the above tasks. In addition, an "Invasive Species Patrol," using trained volunteers, will be initiated to involve the public in understanding land management issues and to find and remove new populations of invasive weeds efficiently.</p> <p>IRC will coordinate with COI Animal Control for removal of feral dogs and other invasive animal species as needed.</p> <p>Management & Monitoring A subset of previously established artichoke thistle monitoring sites with specific control treatments will be monitored and managed by K. Suding, UC Irvine. The small remainder will be disbanded, because: (1) sufficient information about effectiveness of implemented control measures has been gathered from them, (2) sites are clustered in a manner not representative of the managed area, and (3) monitoring sites left untreated may represent unwelcome seed sources.</p> <p>IRC proposes to establish a long-term GIS-based monitoring database to identify and prioritize weed populations for removal/ treatment. This database will be updated as weed populations are surveyed, treated, and revisited upon COI review and approval. In order to identify efficient control techniques for key invasive species, short-term efficacy trials may also be included. Building on</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Status	2008 Work Plan
Exotic Species Control (cont'd)			<p>previous studies, comparisons of herbicide vs. alternative (e.g., manual vs herbicide vs castor oil for artichoke thistle) treatment effectiveness and ecological impacts may be conducted to this end, as needed. Control measures may be coordinated with revegetation efforts in the following rainy season. IRC anticipates coordinating with NROC in regards to data sharing for this purpose.</p> <p>A comprehensive priority-setting analysis for action on non-native and natural communities highly impacted by invasive species will be initiated for COI wildlands, building on previous efforts.</p>
Habitat Restoration/Revegetation/Monitoring	COI, IRC	<p>Management The Missing Link Trail was reseeded with native species post construction. This trail is adjacent to the Nature Reserve of Orange County.</p> <p>Land Manager continued maintenance and monitoring of 2006-2007 restoration projects.</p> <p>Land Manager provided maintenance services for transplanted cholla cactus in Bommer Canyon after consulting with NROC's ecologist.</p>	<p>Management Specific projects* summarized in this section will be developed as full proposals for review and will require COI approval, NCCP compliance, Wildlife Agencies', and NROC approvals as required.</p> <p>Land Manager proposes to close and revegetate/restore portions of the Shady Oaks Trail (pending the completion of a pipeline to the Turtle Pond).</p> <p>Areas of Bommer Canyon where areas with high levels of castor bean cover were removed may be seeded with native species to attempt to re-vegetate and out compete the castor bean.</p> <p>Spadefoot toad habitat enhancement with United States Geological Study (USGS) may be expanded after consultation with specialists. Such efforts may be coordinated with volunteers at Quail Hill.</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Status	2008 Work Plan
<p>Habitat Restoration/ Revegetation/ Monitoring (cont'd)</p>			<p>Maintain or revegetate unsuccessful sites seeded or planted in 2007.</p> <p>Land Manager may assist with additional cholla and prickly pear cactus salvage (if deemed appropriate) and restoration and will continue maintenance, if necessary.</p> <p>*Land Manager proposes to initiate oak woodland restoration program on appropriate non-native habitats and within degraded woodlands.</p> <p>*Land Manager proposes to identify priority restoration areas and make plans to restore these areas to native grassland, Coastal Sage Scrub (CSS), and oak woodlands, as appropriate and approved by COI. Any restoration activities may involve the evaluation of existing habitat and restoration methods through review of technical literature and NROC's Habitat Restoration and Enhancement Plan, discussions with specialists, and field trials</p> <p>Monitoring Land Manager proposes to work with USFW and NROC to obtain existing information on, and if necessary synthesize, update and produce maps for the California Gnatcatcher and Cactus Wren, and for major habitat types.</p> <p>Land Manager proposes to coordinate with NROC,</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Status	2008 Work Plan
<p style="color: #800000; margin: 0;">Habitat Restoration/ Revegetation/ Monitoring (cont'd)</p>			<p>USGS, CDFG, USFWS, County of Orange, and State Parks to implement habitat and species monitoring in the Open Space Preserve.</p> <p>Tracking the success of transplanted cholla should be undertaken, if the Principal Investigators of the previous study effort are interested in collaboration.</p> <p>Land Manager may initiate a long term monitoring study targeted at evaluating passive recruitment in areas previously treated for invasive control and to evaluate the need for active restoration. Areas could include: North Laguna Canyon, 4-corners, Butterfly Valley, and Southwest Bommer Canyon. In addition, a mowing treatment on portions of some of the borders may be applied to evaluate its effect on recruitment.</p> <p>Research</p> <p>*A study of white-tailed kite perching and nesting within Open Space Preserve - South is proposed. Provisioning of perches may be initiated.</p> <p>*If deemed necessary, Bommer Canyon, Quail Hill or an alternative site approved by COI may be included in a restoration study similar to a study initiated by UCI/NROC in January 2008. The focus of this restoration study is to determine the extent and factors important to the recruitment of seeded strips of species commonly found in native coastal</p>

Habitat Restoration & Enhancement

Project	Funding Source	2007 Status	2008 Work Plan
			sage scrub and grasslands. Implementation of such a site would be funded by IRC.

Fire Management Activities		
Fire Management	Accomplished 2007	Proposed for 2008
Maintenance of fuel breaks or fuel modification zones	<p>Management A portion of the Serrano Ridge firebreak was re-graded and widened by OCFA.</p> <p>Center lines of roads and trails were mowed to reduce fire risk from vehicles.</p>	<p>Management, Research & Monitoring In collaboration with City agencies, OCFA, transportation agencies, and academic partners, IRC may initiate an evaluation of wildland edges and internal localities for potential actions that may reduce fire ignitions (e.g., roadside barriers, fuel breaks, and removal of non-native plants).</p> <p>Land Manager will conduct fire modeling/GIS mapping for San Joaquin Hills to identify ignition hotspots and fire bottlenecks where fuel modification may reduce fire spread. A similar analysis has been conducted by the Santa Monica Mountains National Recreation Association (South), who will be engaged as partners along with OCFA, UCLA, etc.</p>
Fire Prevention: Irvine Ranch Conservancy Fire Watch Program	<p>Management Trained, outfitted and deployed approximately 50 volunteers and staff to monitor “high risk” areas on the border of the wildlands. This program is performed in conjunction with the Greater Laguna Coast Fire Safety Council, Inter-Canyon League Fire Safe Council, Trabuco Canyon Defense Against Wildfire, Modjeska Canyon Fire Watch, and OCFU.</p>	<p>Management Deployment of volunteers and staff on Red Flag Alert days and or Santa Ana (Santana) wind conditions to deter fire ignition.</p>

Miscellaneous Activities and Management Programs		
Project	2007 Status	2008 Plan
Volunteer Program	<p>Management In 2007, IRC recruited and trained volunteers both in the Spring and in the Fall.</p> <p>The Open Space Preserve South Volunteer Program currently consists of 74 trained volunteers.</p>	<p>Management IRC will continue to recruit and train new volunteers as needed.</p> <p>IRC will continue to supply volunteers with the necessary tools to be successful, knowledgeable and competent volunteers.</p> <p>IRC will offer volunteers new opportunities for training and continuing education.</p>
Scientific Research	<p>Research, Monitoring & Management Surveys for western pond turtles, western spadefoot toads, and removal of African clawed frog. Monitoring of created spadefoot toad breeding depressions (2006 project) in Bommer Canyon by USGS and Harmsworth Associates. Contact: Adam Backlin, USGS</p> <p>USGS study on San Joaquin Hills bobcat abundance, densities, habitat use, mortality, and connectivity completed. Final report is available upon request from TNC.</p>	<p>Research, Monitoring & Management All proposed projects summarized in this section will be developed as full proposals for review and will require COI approval, NCCP compliance, Wildlife Agencies', and NROC approvals as required.</p> <p>COI, as the landowner, will continue to review and support academic research projects that fit the goals of the NCCP/HCP and have received a COI research access permit approved by COI.</p> <p>A Pacific Pocket Mouse survey for San Joaquin Hills (collaboration with State Parks, USFWS and SDNHM) is proposed for Spring 2008. A portion of COI's wild lands will be surveyed.</p> <p>Human access management project studies will continue to be carried out or initiated by IRC Science, including: camera trapping surveys for developing disturbance profiles and access landscapes, disturbance profile observational studies on target species, and unauthorized access benchmark assessments.</p>

Miscellaneous Activities and Management Programs

Project	2007 Status	2008 Plan
<p>Scientific Research (cont'd)</p>		<p>A Cactus Wren artificial nest structure study is proposed for the San Joaquin Hills. This will involve field testing of artificial nest prototypes followed by placement of optimal structures in priority areas.</p> <p>Initiation of small mammal monitoring surveys is proposed for 2008.</p> <p>A mule deer population estimate for the San Joaquin Hills is proposed for 2008, in collaboration with USFWS, CDFG, and USGS.</p> <p>Hotspots for Coast Horned Lizard road kills may be investigated to determine if road and trail closures may be warranted.</p>

8.6 City of Newport Beach

NROC Annual Report 2007

City of Newport Beach Buck Gully

Recreation Use, Monitoring & Management:

Project, Program, Activity	2007 Status	2008 Work Plan
Fire Season Restricted Use	Access restricted during fire season	Access likely to be restricted during fire season

Recreation Facility Construction & Maintenance:

Project	2007 Status	2008 Work Plan
N/A		

Infrastructure Construction & Maintenance:

Project	2007 Status	2008 Work Plan
Maintenance of V-Ditches, Upper Gully area.	Debris cleared from V-ditches, includes trimming of brush that extends into the V-ditches.	More debris clearance from V-ditches planned for 2008, includes trimming of brush that extends into the V-ditches. Less intensive than 2007, because much more work was needed in 2007 due to lack of maintenance in previous years.
Water Quality, Erosion Protection near 5 th Ave (Lower Buck Gully)	Erosion control structure and water quality wetlands construction occurred in 2007	Continuation of construction – likely to be done in mid-2008.

**City of Newport Beach
Buck Gully**

Habitat Restoration & Enhancement:

Project	Funding Source	2007 Status	2008 Work Plan
Some exotic plant eradication, habitat restoration in Lower Gully	Proposition 13, Prop 40 grants	Work awaits completion of erosion control structure.	Possible implementation of some eradication and restoration in 2008.

Fire Management Activities:

Fuel Treatment	Accomplished 2007	Proposed for 2008
Hazard Reduction – West Gully near Spyglass Hill	Contractor completed hazard reduction activities (removal of dead & dying material between structures and 100' from structures) along Sandcastle Drive.	Continued hazard reduction where appropriate. City continues to study whether to incorporate residential properties adjacent to West Gully into Fuel Modification Zones, like the East Gully (Newport Coast)

Miscellaneous Activities and Management Programs:

Project	2007 Status	2008 Plan
Development of a Recreation and Resource Management Plan (RRMP)	Entered into contracts with Dudek (biological studies) and Irvine Ranch Conservancy (RRMP development) in 2007.	RRMP underway.

8.7 University of California, Irvine

January 31, 2008

Ms. Lyndine McAfee, Executive Director
Nature Reserve of Orange County
15600 Sand Canyon Avenue
Irvine, California 92618

RE: Annual Report for the University of California, Irvine to the Nature Reserve of Orange County (NROC) for land enrolled in the Natural Community Conservation Plan (NCCP)

Dear Ms. McAfee:

This is the Fifth Annual Report submitted by The University of California, Irvine (UCI) to the Nature Reserve of Orange County. UCI has lands enrolled in the NCCP including an area on the North Campus that is a closed landfill, the UCI Ecological Preserve on the main campus, and a strip adjacent the San Joaquin Hills Transportation Corridor (SR-73) along the southwestern campus edge from the UCI Ecological Preserve to the terminus of campus lands on the western side of Bison Avenue. This report follows the general guidelines recommended by US Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) (FWS/CDFG-OR-2257.5) where applicable, although these guidelines were intended for much larger areas with different use patterns.

To provide some background about the three areas that compose the UCI NROC lands, I wanted to mention a few features of our enrolled habitats that distinguish them from most of the other NROC lands. The landfill is an historic County landfill that was closed in 1960 and is fenced, posted, and closed to the public. The biological corridor (strip) along the San Joaquin Hills Transportation Corridor consists of a steep slope with no trails or public access. The UCI Ecological Preserve has a trail system and is open to the public. The UCI branch of the University of California Natural Reserve System manages it through the School of Biological Sciences, and UCI's Open Space Committee considers any special uses.

At present, the landfill is still being evaluated for potential methane migration and remediation, therefore no habitat restoration or other activities have occurred on the landfill site. Upon completion of the methane analysis and identification of remediation plans, UCI will develop plans for future restoration of the landfill site. UCI will pursue habitat restoration (creation) to produce coastal sage scrub and perhaps other native habitat to replace the ice plant cover that dominates this disturbed site. UCI will seek partners in funding this endeavor, including the NROC. Significant and successful habitat restoration has occurred on the biological corridor adjacent the Toll Road. The Ecological Preserve has seen extensive habitat restoration efforts, as well as artichoke eradication. The Preserve is a treasured asset, appreciated by the UCI and broader community.

Management strategy and conditions within our enrolled lands have remained the same during the past year and no changes are anticipated during 2008, thus there is

no need to provide work plans for the various categories of NROC concern (Recreation use, monitoring and management; recreation facility construction and maintenance; infrastructure construction and maintenance; habitat restoration and enhancement; fire management activities; and miscellaneous activities and management programs). The following summary addresses the issues identified in the USFWS/CDFG template where applicable to the three UCI areas of NROC:

I. Recreation Use, Monitoring and Management

Current Use Policies

- UCI Ecological Preserve: The UCI Ecological Preserve is open to the public, with five access points through walk-in gates. Access is permitted throughout the year, and the trail system is widely appreciated by the University and surrounding community.
- Biological Corridor: There are no public access, trails or access points on the steep, narrow biological corridor adjacent the SR-73.
- Landfill: Public access is not allowed on the landfill on North Campus. The landfill is fenced and posted.

Proposed Recreation Monitoring

- UCI Ecological Preserve: The access gates are all linked to existing trails and the public stays on them. There is no need to monitor the trails in a formal way, however, if a new trail is detected, it will be closed. Special events are not permitted in the Ecological Preserve. The Open Space or Ecological Preserve Committee, Chaired by Dr. Peter Bowler considers any special uses.
- Biological Corridor and Landfill: This does not apply to the habitat strip along SR-73 or the landfill, neither of which has public access or use.

User Compliance Programs

- This does not apply to the UCI NROC areas. There has been occasional trespass from equestrians and joggers on the landfill. The landfill fencing is repaired and posting re-established following discovery of trespass damage. These areas are not patrolled on a regular basis and no citations are given.

Educational Programs/Outreach

- UCI Ecological Preserve: There are no special outreach or educational programs conducted on the relatively small (60 acre) UCI Ecological Preserve, though some University classes do visit the site.
- Biological Corridor and Landfill: This does not apply to the strip along the SR-73 or the landfill on North Campus.

II. Recreation Facility Construction and Maintenance

Construction of New Recreational Facilities or Expansion of Existing Facilities

- This does not apply to UCI's three sites, none of which has existing or planned recreational facilities.

Maintenance of Existing Recreation Facilities

- This does not apply to UCI NPPC lands.

III. Infrastructure Construction and Maintenance

- Methane remediation on the UCI landfill site will likely require the installation of a methane venting system.

IV. Habitat Restoration and Enhancement

Proposed Landowner/Reserve Manager funded/coordinated restoration and enhancement activities

Exotic Plant Eradication

- UCI Ecological Preserve: Over the past eight years extensive artichoke eradication using sprayer-applied Roundup has reduced *Cynara cardunculus* from a severe problem to a minor one in the UCI Ecological Preserve. These efforts have been funded by grants and by the NROC/CDFG grants to The Nature Conservancy.
- Biological Corridor: The biological corridor restoration along SR-73 has been spot treated for artichoke each spring since the site's creation, and artichoke is not a problem.
- Landfill: The landfill has a dense population of ice plant, which should be eradicated as a part of future habitat restoration (creation).

Habitat Restoration/Revegetation

- UCI Ecological Preserve: Restoration has been underway on the UCI Ecological Preserve for many years. Several acres of sage scrub have been created, replacing dense artichoke. It is anticipated that additional sage scrub restoration will be undertaken in future years. There was no restoration activity during 2007.
- Biological Corridor: Nine acres of coastal sage scrub have been created in the biological corridor, and the primary activity on this strip along the 73 is spot treatment of artichoke when plants are discovered.
- Landfill: The University anticipates creating coastal sage scrub on the landfill, pending the completion of methane remediation activities and securing funding to implement the restoration. Other potential plans will be addressed as the 2008 Long Range Development Plan is implemented in the future.

Proposed NROC funded restoration and enhancement activities

Exotic Plant Eradication

- UCI Ecological Preserve: The UCI Ecological Preserve has a black mustard problem, and UCI would like to work with the NROC in continued weed abatement on the Preserve. In addition, UCI would like to seek funding for artichoke eradication on areas adjacent to the Preserve to avoid reintroduction.
- Biological Corridor: Exotics are not a problem on the biological corridor strip at this time. If a problem emerges, treatment will be incorporated with other eradication efforts on the NCCP lands. It is hoped that the NROC will continue to assist in weed eradication efforts at UCI. UCI requires notification well in advance so that residents can be alerted and educated prior to application of herbicides.
- Landfill: The landfill has a large ice plant problem, and ice plant is the dominant vegetative cover. The ice plant will need to be eradicated prior to creation of coastal sage scrub and UCI would like to coordinate with the NROC on the entire process of exotic removal and creation of native habitat on the landfill.

Exotic Animal Control

- UCI Ecological Preserve and Biological Corridor: The primary potential exotic animal problem for the sage scrub habitats on the UCI Ecological Preserve and the biological corridor is the possible intrusion of brown-headed cowbirds. The TCA has conducted very effective cowbird removal using traps in the San

Joaquin Marsh and Bonita Canyon. It is possible that feral cats could hunt these sites, but none have been seen. The exotic landsnail *Helix aspersa* escapes from irrigated landscaping into both of the sage scrub habitats, but in general this species does not do well far from wet habitats. The Spanish milk snail, *Otala lactea*, occurs on the UCI Ecological Preserve, but does not appear to be a significant problem at this time. This mollusk can tolerate much more xeric conditions than *H. aspersa*. Both of these exotic mollusks seem to inhabit microhabitats different from the native *Helminthoglypta tudiculjata* that is associated with sage scrub.

- **Landfill:** The Spanish milk snail has a very, very large population at the San Diego Creek facing side of the landfill and also on the top of the landfill where there are places where one cannot walk without crushing dozens of these exotic snails. Because there is no native habitat on the landfill, it is nearly devoid of animal life.

Proposed Restoration and Enhancement Activities Funded by Others

- At present there are no proposed exotic plant eradication, habitat/restoration, or exotic animal control programs planned during the next year through extra-mural funding.

V. Fire Management Activities

- **UCI Ecological Preserve:** The UCI Ecological Preserve is surrounded entirely by roads or landscaped areas. At present the eastern side abuts the recently developed Irvine Company Research Park, and there is a cleared break between the urban interface and the habitat. There is a 100-foot zone of thinned vegetation and a cleared break of ca. 15-20 feet between the Ecological Reserve and University Hills, a faculty and staff housing development, that is heavily landscaped with green vegetation. The patchy nature of shrub fuel loads is such that mostly grass and herbaceous exotics abut the housing development. There are no proposed burns or other fuel management projects for the UCI Ecological Preserve.
- **Biological Corridor:** The CSS strip along the 73 lies between the Toll Road and parking lots, greatly reducing any threat a fire along this narrow strip might pose for structures. There is no proposed burn or fuel management proposal for the habitat strip along the Toll Road.
- **Landfill:** There is no fuel load at all on the ice plant covered/barren landfill.

Maintenance of Existing Fuel Breaks or Fuel Modification Zones: This does not apply to UCI NCCP habitats.

VI. Miscellaneous Activities and Management Programs

A list of the published and unpublished studies, including theses, undertaken at the UCI Ecological Preserve and the adjacent UCNRS San Joaquin Freshwater Marsh Reserve may be accessed at <http://nrs.ucop.edu/>. Dr. Peter Bowler has had coastal cactus wren and California gnatcatcher population surveys conducted on the UCI Ecological Preserve and Biological Corridor areas during the past several years, though not in 2007. These surveys are available from Dr. Bowler or my office upon request. All research on the Preserve or other campus lands must be reviewed and approved by the UCI Open Space Committee. The UCI 2008 Long Range Development Plan does not

include an extension of California Drive through the UCI Ecological Preserve, which significantly enhances the longterm ecological integrity of the Preserve.

Thank you for your consideration. If you have any questions regarding activities on UCI's NCCP sites, please do not hesitate to forward them to us.

Sincerely,

Richard Demerjian
Director
Campus and Environmental Planning

Peter A. Bowler
Department of Ecology and Evolutionary Biology

Cc.: Wendell Brase, Vice Chancellor Administrative and Business Services; Tim Bradley, Department of Ecology and Evolutionary Biology and UCI Natural Reserve System Campus Director; W. L. Bretz, Natural Reserve System Manager of the UCI Reserves

8.8 Transportation Corridor Agencies

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Transportation Corridor Agencies

Recreation Use, Monitoring & Management:

Project, Program, Activity	2007 Status	2008 Work Plan
Siphon Reservoir	None.	Spring Tour on burn recovery.
Limestone Canyon	None.	None.
Coyote Canyon Landfill	Invasive weed reconnaissance.	OC Land Stewards Tour
Bonita Channel	Use of public trail; Annual Spring Tour; Developed Bonita Creek Interactive Classroom educational website posted at www.bonitacreekclassroom.com .	Use of public trail; Annual Spring Tour; OC Land Stewards Tour

Recreation Facility Construction & Maintenance:

Project	2007 Status	2008 Work Plan
Siphon Reservoir	None.	None.
Limestone Canyon	None.	None.
Coyote Canyon Landfill	None.	None.
Bonita Channel	Cut saltbush back from bike trail.	Cut saltbush back from bike trail.

Infrastructure Construction & Maintenance:

Project	2007 Status	2008 Work Plan
Siphon Reservoir	Erosion control in runoff basins and burn area.	None.
Limestone Canyon	None.	None.
Coyote Canyon Landfill	None.	None.
Bonita Channel	None.	None.

Transportation Corridor Agencies

Habitat Restoration & Enhancement:

Project	Funding Source	2007 Status	2008 Work Plan
Siphon Reservoir	TCA	None. Site burned in October 2007 fires.	Monitor burn recovery.
Limestone Canyon	TCA	Vegetation monitoring. Site burned in October 2007 fires.	Monitor burn recovery.
Coyote Canyon Landfill	GRS	None.	None.
Bonita Channel	TCA	Removed eucalyptus and pampas grass individuals.	None.

Fire Management Activities:

Fuel Treatment	Accomplished 2007	Proposed for 2008
Siphon Reservoir	None.	None.
Limestone Canyon	None.	None.

Coyote Canyon Landfill	None.	None.
Bonita Channel	None.	None.

Miscellaneous Activities and Management Programs:

Project	2007 Status	2008 Plan
Siphon Reservoir	Cowbird trapping.	Cowbird trapping (in coordination with USFWS for the burn areas).
Limestone Canyon	Cowbird trapping.	Cowbird trapping (in coordination with USFWS for the burn areas).
Coyote Canyon Landfill	None.	None.
Bonita Channel	None.	None.

8.9 Orange County Integrated Waste Management Department

Please see Appendix A for the full IWMD report, which is attached under separate cover.

9.0 CONCLUSION

The many and varied activities being conducted in the Nature Reserve of Orange County reserve system not only serve to protect, preserve and enhance native habitat and wildlife, but also provide an opportunity for the public to enjoy and learn about our natural resources.

