1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333
F 619.308.9334

2033 East Grant Road
Tucson, AZ 85719
P 520.325.9977
F 520.293.3051

2027 Preisker Lane, Ste. G
Santa Maria, CA 93454
P 805.928.7907
F 805.928.9334

www.reconenvironmental.com

RECON

An Employee-Owned Company

July 31, 2014

Mr. Glen Laube
City of Chula Vista
Planning and Building Department
276 Fourth Avenue, MS P-101
Chula Vista, CA 91910

Reference: Year 2 Annual Report for the Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program (SANDAG Grant Number 5001970; RECON Number 6649)

1.0 Introduction

This second annual report provides background information and summarizes the tasks performed during the second year (July 1, 2013 to June 30, 2014) of the coastal cactus wren (*Campylorhynchus brunneicapillus*) habitat restoration and enhancement program located within the Otay Ranch Preserve. Three quarterly reports have previously been prepared by RECON in 2014. Information from those reports is summarized below. This annual report also summarizes the results of the relevé vegetation surveys that were conducted in spring 2014 at the treatment sites, as well as the results of the focused coastal cactus wren surveys.

The target areas for restoration/enhancement within Salt Creek are all located within the Otay Ranch Preserve (Figures 1–2; see Attachment 1 for all figures and photographs). Overall, the Otay Ranch Preserve currently contains 3,208 acres of preserve land established to create an open space system that will protect natural resources and provide a series of interconnected viable habitats to protect Multiple Species Conservation Program (MSCP)-covered species and regional wildlife corridors. Sensitive habitat communities identified within the Preserve include maritime succulent scrub, coastal sage scrub, valley needlegrass grassland, non-native grassland, southern willow scrub, freshwater marsh, cismontane alkali marsh, and Baccharis floodplain scrub. Sensitive species observed on-site include coastal California gnatcatcher (*Polioptila californica californica*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), coast horned lizard (*Phrynosoma blainvillii*), variegated dudleya (*Dudleya variegata*), San Diego barrel cactus (*Ferocactus viridescens*), and snake cholla (*Cylindropuntia californica* var. *californica*).

2.0 Coastal Cactus Wren Status and Conservation

Populations of the coastal cactus wren are in decline throughout much of southern California, including San Diego County. Over the last decade, large, intense fires have damaged coastal cactus wren habitat in the Lake Jennings area (Cedar Fire in 2003), the San Pasqual Valley (Witch Fire in 2007), and the Otay–Sweetwater region, which includes the San Diego National Wildlife Refuge (Harris Fire in 2007). This recent trend of cactus wren population decline has been observed in other regions of southern California. Regional recovery efforts for coastal populations of cactus wrens are intended to stabilize and eventually increase population sizes.

Coast cholla (*Cylindropuntia prolifera*) die-off has likely contributed to a decrease in suitable habitat for coastal cactus wren and the observed population declines. In the Otay Ranch Preserve coast cholla patches have declined in the last 10–15 years due to competition for water resources with weeds and native shrubs. Cactus wrens typically forage on the ground, and thick weed cover can prevent the wrens from finding their prey. In addition, the below-average rainfall during most of the last decade has caused many patches of coast cholla to suffer or die from severe drought stress. The drought conditions have also likely decreased the availability of insect prey for foraging wrens.

Coastal cactus wren surveys performed in 2009–2010 by the Otay Ranch Preserve Steward/Biologist detected 4 pairs, 2 solitary individuals, and 36 nests within Salt Creek. Incidental sightings of coastal cactus wren made on other surveys added an additional 5 pairs and 9 solitary individuals (RECON 2011). One of the pairs was detected with a third—juvenile—wren, indicating a possible family unit.

Salt Creek is identified in the Otay Ranch Resource Management Plan (RMP) as an avian corridor for coastal cactus wren and coastal California gnatcatcher, providing north/south movement from the Otay river valley. Salt Creek connects with the Otay river valley just west of the Lower Otay Reservoir. This corridor system provides a critical linkage to several MSCP-designated biological core areas, including the Otay River, Wolf Canyon, Otay Lakes, Otay Mountain (with connections east toward Tecate Peak), the Jamul Mountains, San Miguel Mountain, and the upper Sweetwater River.

3.0 Project Goals and Habitat Restoration Methods

- Restore/enhance approximately 15 acres of degraded habitat for coastal cactus wrens within Salt Creek.
- Reduce the risk of cactus wren habitat loss from fires.
- Reduce weed infestation.
- Remove invasive seed sources that can migrate to adjacent sensitive habitat areas.
- Benefit other Covered Species by reducing weed competition.
- Revitalize an existing avian wildlife corridor by establishing complementary coastal cactus wren projects in the vicinity (i.e., County of San Diego).

4.0 Year 2 Tasks Performed from July 2013 to June 2014

4.1 Implementation Summary

In August 2012 RECON biologists Anna Bennett and Mark Dodero located and mapped the proposed coast cholla planting areas at Salt Creek (Figure 3). Cactus wren nests had been previously observed in the vicinity of the project site in an existing coast cholla patch at the eastern edge of treatment area 5 (see Figure 3). The selection of the proposed planting areas was intended to mimic the south-facing coast cholla-dominated slopes found farther west in the Otay Valley.

Approximately 15 acres of potential planting area were identified in six habitat patches. The sites selected generally have a southern exposure and range from southwest to south and southeast (Photograph 1). Existing low-density coast cholla was present in these areas, and this enhancement program is intended to create much larger coast cholla patches that will be more attractive to cactus wrens. The areas selected for restoration and enhancement were generally the least weedy available sites with natural openings between existing shrubs.

Once the restoration/enhancement sites were selected and prior to implementation, permanent photo points were established. Planting of coast cholla and shore cactus (*Opuntia littoralis*) occurred in the fall of 2012. Blue elderberry (*Sambucus nigra* ssp. *caerulea*; previously known as Mexican elderberry [*Sambucus mexicana*]) was grown from seed at the RECON Native Plants Nursery for outplanting in the second year of the project.

4.2 Monitoring Methods

Bird Surveys (Task 2f)

A spring survey was conducted at the six restoration areas by RECON biologist Mandy Weston for the coastal cactus wren on May 21, 2014 in order to detect the current status of this species. Survey methods included walking through the designated areas at a slow pace, listening and looking for bird activity for approximately 20–25 minutes per area. All wildlife detected either visually or by call during the survey or incidently were noted and listed in Attachment 2. The results of these surveys are summarized below in Section 4.5, Year 2 Cactus Wren Survey Results.

Vegetation Sampling (Tasks 2e,g)

Vegetation patch sampling was done using the relevé method. All plant species occurring in each patch were recorded, and the cover of each species was estimated. Each of the six vegetation treatment areas was sampled by RECON biologist Anna Bennett on May 5 and May 7, 2014 after weed control efforts had been completed for the season. Each vegetation stand was photographed from the same location as in Year 1. The results of the vegetation sampling efforts are presented in Section 4.6, Year 2 Vegetation Sampling Results , and the plant species list is presented in Attachment 3.

4.3 2013–14 Rainfall Summary

Between July 1, 2013 and June 30, 2014, rainfall at Brown Field, the closest reporting station, was 4.23 inches (Table 1), which was well below normal (the average annual rainfall is approximately 10 inches). Relatively light rains fell in October and November with very dry conditions continuing in December, January, and most of February. One heavy rain event occurred between February 27 and March 2, 2014, when 1.76 inches of rain fell. Drier than normal conditions returned after early March and persisted the rest of the season.

TABLE 1
SUMMARY OF RAINFALL DATA BY MONTH AT BROWN FIELD
JULY 1, 2013–JUNE 30, 2014

Month	Monthly Rainfall (inches)
July	0.02
August	Trace
September	Trace
October	0.54
November	0.41
December	0.37
January	0.07
February	0.71
March	1.52
April	0.57
May	0.02
June	0.00
Total Precipitation	4.23 inches

4.4 Blue (Mexican) Elderberry Planting (Tasks 1c, d, and f)

Twenty-five blue elderberry plants that were grown from seed at RECON Native Plants, Inc. were transported to High Tech Middle Chula Vista on October 24, 2013. The 25 blue elderberry plants were provided to the students as a way to introduce them to an important native food plant used by coastal cactus wren. These plants did not fair favorably for unknown reasons and the mortality rate was high; however, an additional 80 blue elderberry plants propagated at RECON Native Plants nursery were planted within the preserve.

The 80 blue elderberry from the nursery were outplanted on February 22, 2014 (Photograph 2; see Figure 3) . To give the blue elderberry the best chance of survivorship**,** they were planted adjacent to Salt Creek where better moisture conditions exist. A hole was excavated to accomadate the plants grown in one-gallon containers. A basin was created around each hole to allow for the plants to be watered (Photographs 3**–**6). Within a few days of being planted herbivory was observed on some of the newly planted blue elderberry so dead branches were collected and placed around the plants to provide both a level of protection from herbivores, as well as to act as a mulch to reduce water loss from the soil (Photograph 7). Through the spring and early summer the plants were watered periodically during dry periods to increase survivorship.

4.5 Maintenance

Weed Control (Task 1e)
Early light rains in October and November caused the germination of filaree (*Erodium* spp.) in small numbers (Photograph 8), but the dry weather into February limited their growth. As mentioned above, heavier rain occurred in late February and early March 2014, which caused additional weeds to germinate. Annual weeds were large enough to be sprayed by RECON crews beginning in March and continuing in April. Spraying was done to prevent them from flowering and setting seeds (Photographs 9-10). Glyphosate was used to control non-native annuals in planting areas. Non-native species that were controlled included tocalote (*Centaurea melitensis)*, short-pod mustard (*Hirschfeldia incana)*, filaree, slender wild oat (*Avena barbata)*, and other annual grasses such as red brome (*Bromus madritensis* ssp. *rubens*). Herbicide was applied by licensed applicators under the supervision of RECON Field Crew Director Ruth Vallejo, who is a certified Pest Control Advisor.

4.6 Monitoring Results

Year 2 Cactus Wren Survey
In spring 2014, 27 species of birds were detected within the six restoration areas during the coastal cactus wren survey. The following species of birds were the most commonly observed (in descending order) during the spring 2014 survey. All wildlife detected either visually or by call during the survey were noted and are listed in Attachment 2. No coastal cactus wren were detected during this survey.

- California towhee (*Pipilo crissalis*)
- southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)
- wrentit (*Chamaea fasciata henshawi*)
- mourning dove (*Zenaida macroura*)
- lesser goldfinch (*Carduelis psaltria hesperophilus*)
- house finch (*Carpodacus mexicanus frontalis*)
- spotted towhee (*Pipilo maculatus*)

Year 2 Vegetation Sampling
Attachment 3 lists the plant species observed at the six vegetation treatment areas. The following results are from the six relevé locations:

- Average coast cholla height:
  - Less than 1 foot: 96.50 percent
  - Between 1 and 3 feet in height: 3.50 percent
  - Over 3 feet in height: less than 1 percent
- Average total cover (shrub and herbaceous): 21.34 percent
- Average bare ground: 78.66 percent
- Average total cover of coast cholla: 0.87 percent
- Average percent coast cholla cover out of the total cover: 4.29 percent
- A total of 57 plant species were recorded at the relevé locations: 42 native species and 15 non-native species.
- Average non-native cover: 0.83 percent
- Average non-native cover out of the total cover: 4.19 percent

4.7 Previous Reporting

Quarterly Reports (Task 3a)
Quarterly reports that summarized ongoing tasks for the project were submitted in March (Quarterly Reports I and II) and April 2014 (Quarterly Report III). An additional Statement of Services summary report was submitted in June 2014.

5.0 Discussion

5.1 Weed Control

Because of intensive maintenance efforts and low rainfall, weed cover at the restoration and enhancement sites was very low across the six sites and averaged less than 1 percent. Out of the total vegetation cover (native and non-native) non-native species constituted less than 5 percent absolute cover. Spray visits were effective at controlling weed growth. Spraying was focused around the planted coast cholla patches, but all areas within the six restoration and enhancement sites were treated. By controlling non-native weeds, more water becomes available to the rooted cactus cuttings.

5.2 Cactus and Other Plant Growth

After the light fall rains, the cactus cuttings could be seen to swell with water (Photographs 11–13). Competition for water was relatively low during this time because of the sparse cover of non-natives. Heavier rains that occurred in late February and early March allowed the coast cholla and shore cactus cuttings to imbibe water and show new growth (Photographs 14 and 15). Dry and warmer weather returned in late March and it was especially hot and dry in May. The dry conditions limited the expansion of the new cactus shoots.

Other species of cactus and succulents that are present on the slopes and that benefit from the weeding program include: narrow endemic snake cholla (*Cylindropuntia californica* var. *californica*), narrow endemic variegated dudleya (Photograph 16), MSCP-covered coast barrel cactus (Photograph 17), and non-MSCP-covered fish-hook cactus (*Mammillaria dioica*) (Photograph 18).

The growth of the newly planted blue elderberry was good, aided by periodic watering (Photograph 19) A few of the plants flowered and set fruit in their first season (Photographs 20 and 21). This was very encouraging, considering the extremely dry conditions in the winter-spring of 2014.

5.3 Cactus Wren and Other Wildlife Use

No coastal cactus wrens or nests were detected during the spring 2014 surveys. Cactus wren nests had been incidentally observed in the vicinity of the project during 2009–2010 (see Figure 3). Other sensitive bird species that were recorded during the survey and/or incidentally, included the coastal California gnatcatcher and southern California rufous-crowned sparrow that were both observed at three locations (see Figure 4). Other commonly encountered species that forage in and around the edges of the enhancement sites included the California towhee, house finch, and mourning dove.

Reptiles observed in the cactus wren restoration and enhancment sites include the common western fence lizard (*Sceloporus occidentalis*). Sensitive reptile species also observed include the MSCP-covered coast horned lizard (*Phrynosoma coronatum blainvillii*) (Photograph 22).

Mammal species that were detected at the restoration and enhancment sites include the San Diego black-tailed jackrabbit. The San Diego black-tailed jackrabbit is a California Department of Fish and Wildlife Species of Special Concern.

6.0 Public Outreach/Awareness—High Tech Middle Chula Vista

As part of the scope of work for the cactus wren grant, RECON biologists presented a powerpoint presentation in September 2013 for Ms. Ann McAfee's two seventh grade classes at High Tech Middle Chula Vista (conducted without compensation by RECON).Topics of discussion during the presentation, in addition to coastal cactus wren biology, included general ecology and natural history of the native habitats and species present in the Preserve, as well as the management challenges that invasive species cause.

In December 2013, the students also conducted video interviews with the project biologists and City of Chula Vista MSCP staff. The students developed a list of questions about the biology and natural history of the Otay Ranch Preserve as well as questions about the planning efforts that went into assembling the Preserve.

In the first year of the restoration project, approximately 120 coast cholla cuttings were transported to High Tech Middle Chula Vista and were planted in one-gallon pots by the students (Photograph 23). The coast cholla cuttings will be transplanted to the Preserve in Year 3 of the project. These coast cholla cuttings are being grown to a larger size to provide nesting-sized coast cholla for the cactus wren population at Salt Creek

7.0 Future Restoration and Enhancement Tasks

In Year 3 of the restoration and enhancement program, weeds will continue to be controlled, as needed, to prevent seed set. Vegetation sampling and cactus wren population monitoring will be repeated in the spring of 2015.

If you have any questions regarding the coastal cactus wren habitat restoration and enhancement program, do not hesitate to call.

Sincerely,

Mark W. Dodero

Mark Dodero
Senior Biologist

MWD:sh

Attachments

8.0 References Cited

RECON Environmental, Inc.
2011 2009–2010 Annual Report for Otay Ranch Preserve - Salt Creek and San Ysidro Parcels. March 11.

9.0 Contributors to this Report

RECON biologists that conducted field surveys, analyzed data, and provided photos for the report include Anna Bennett, Mandy Weston, and Mark Dodero.

ATTACHMENTS

ATTACHMENT 1

Figures and Photographs

Otay Ranch Preserve: Salt Creek Parcels

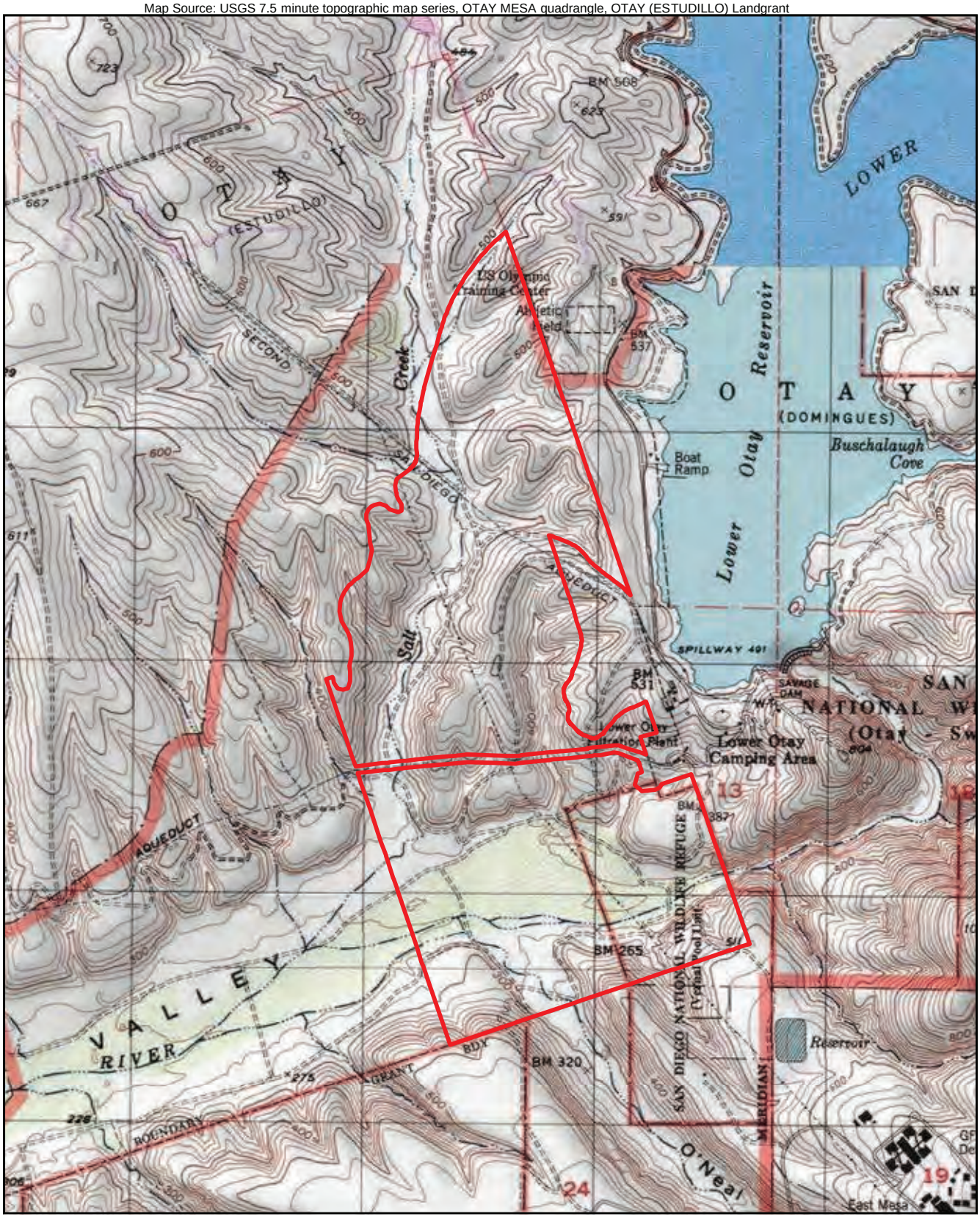
FIGURE 1

Regional Location

RECON

\\server04\gis\JOBS4\6649\common_gis\Fig1_CACW_yr1.mxd 7/29/2013 ccn

Map Source: USGS 7.5 minute topographic map series, OTAY MESA quadrangle, OTAY (ESTUDILLO) Landgrant



Otay Ranch Preserve: Salt Creek Parcels

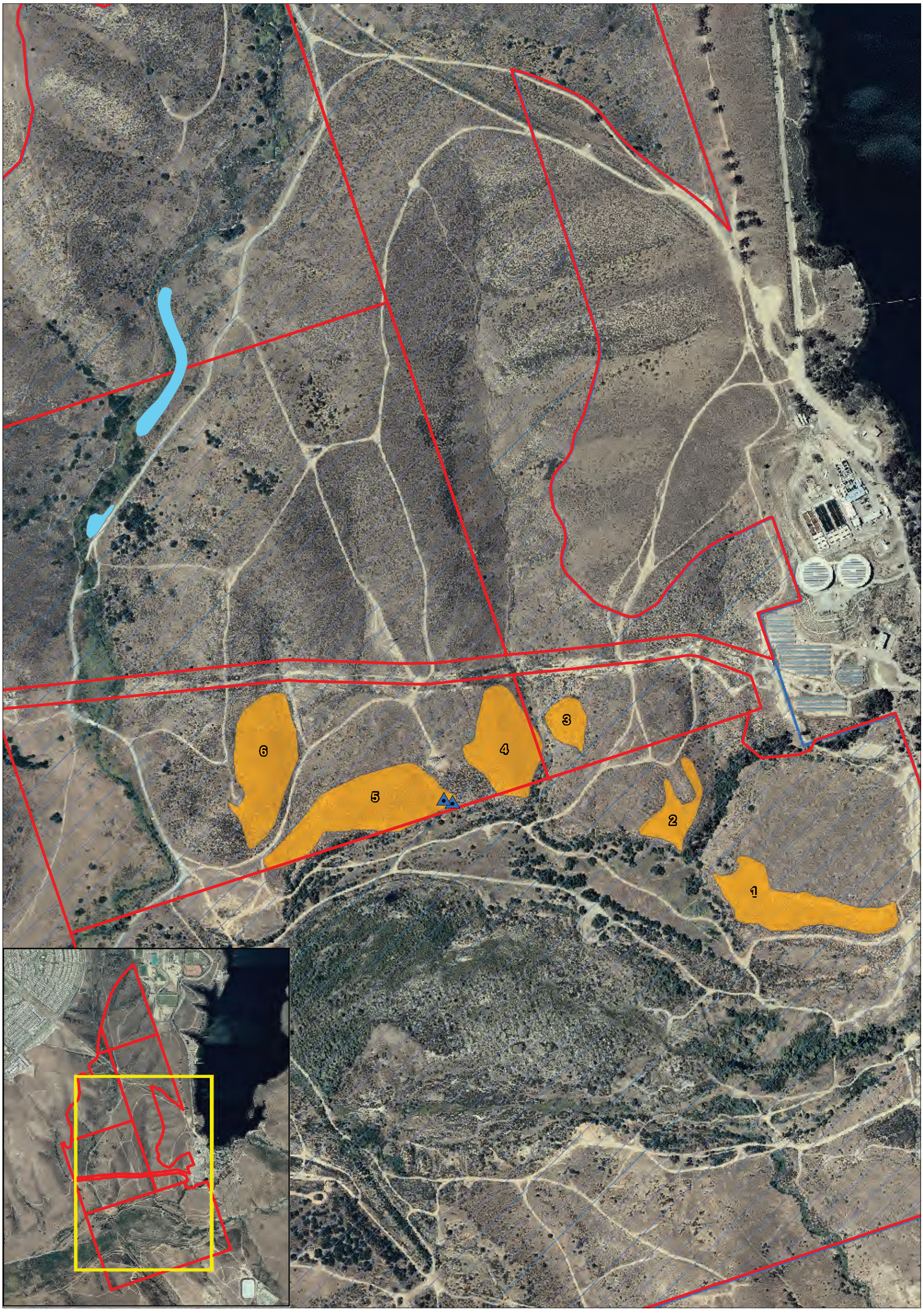
FIGURE 2

Project Location on USGS Map

RECON

\\server04\gis\JOBS4\6649\common_gis\Fig2_CACW_yr1.mxd 7/29/2013 ccn

Image source: SanGIS (flown May 2012)



Preserve Boundary

City of Chula Vista MSCP

Blue Elderberry Planting Area

Cactus Wren Habitat Restoration Area

Sensitive Wildlife Species

Coastal Cactus Wren (***Campylorhynchus brunneicapillus***) Nests, Observed in 2009

0 Feet 450

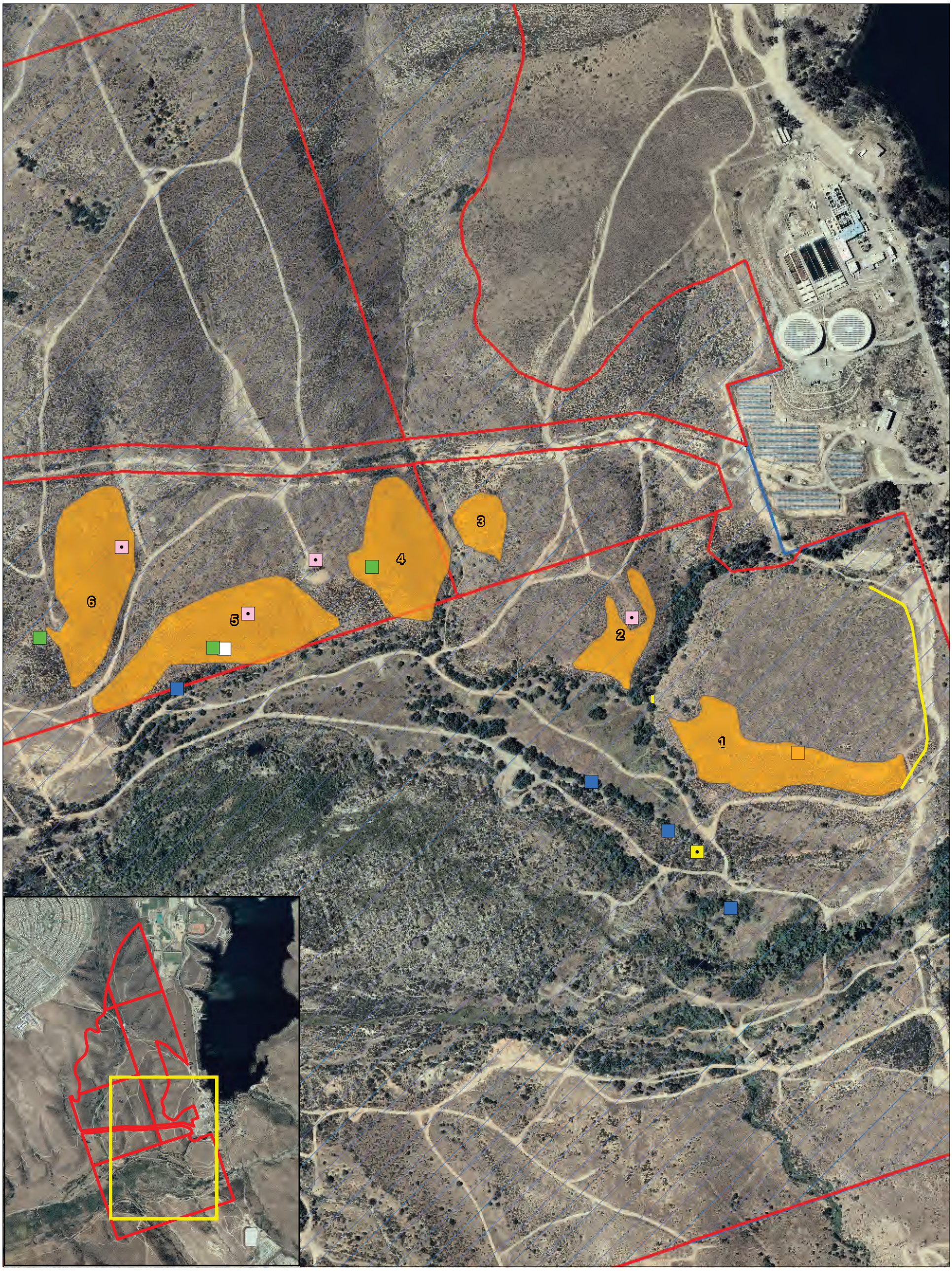
FIGURE 3

Cactus Wren Habitat Restoration and Enhancement Locations

RECON

M:\JOBS4\6649\common_gis\Fig3_CACW_yr2.mxd 7/31/2014 ccn

Image source: SanGIS (flown May 2012)



Preserve Boundary

City of Chula Vista MSCP

Fencing Installed February 2013

Cactus Wren Habitat Restoration Area

Sensitive Wildlife Species

- Coast Horned Lizard (***Phrynosoma coronatum [blainvillii pop.]***)
- Coastal California Gnatcatcher (***Polioptila californica californica***)
- Least Bell's Vireo (***Vireo bellii pusillus***)
- San Diego Black-tailed Jackrabbit (***Lepus californicus bennettii***)
- Southern California Rufous-crowned Sparrow (***Aimophila ruficeps canescens***)
- Yellow warbler (***Dendroica petechial***)

FIGURE 4

Locations of Sensitive Species

RECON

M:\JOBS4\6649\common_gis\Fig4_CACW_yr2.mxd 7/31/2014 ccn

PHOTOGRAPH 1
View Looking West from Restoration Site 4 Prior to Implementation

PHOTOGRAPH 2
Blue Elderberry Containers Prior to Planting

PHOTOGRAPH 3
RECON Crew Excavating Planting Holes for Blue Elderberry

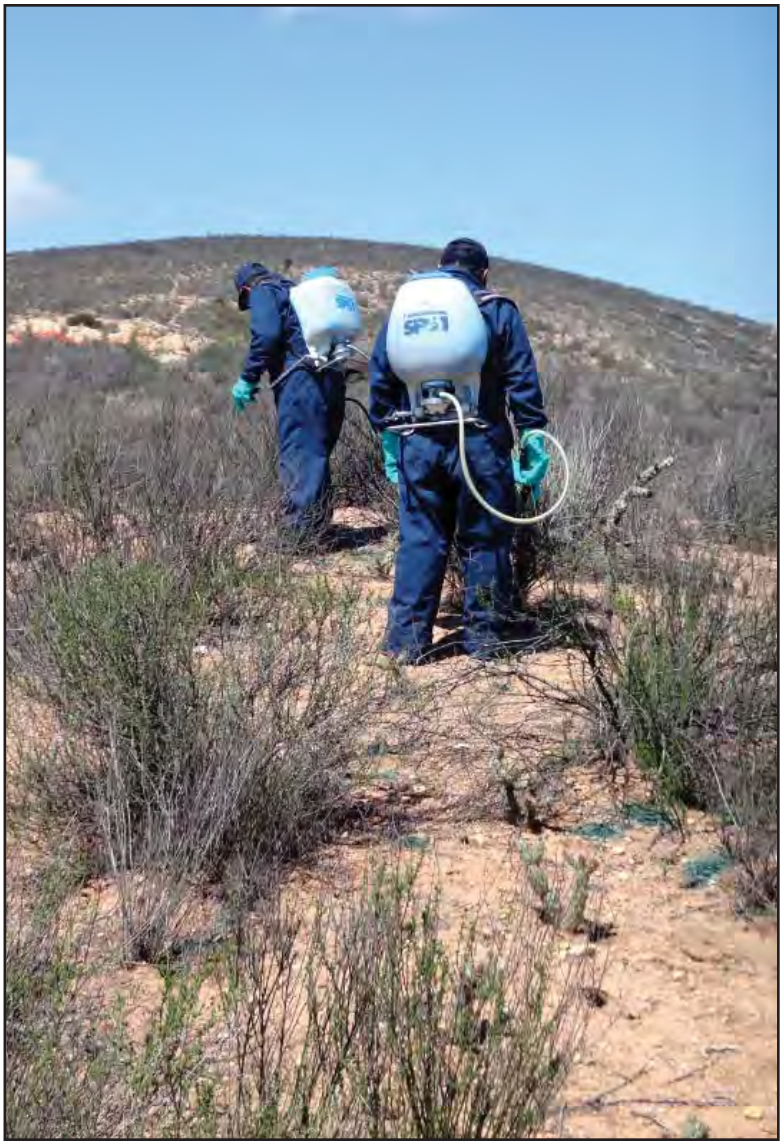
PHOTOGRAPH 4
RECON Crew Adding Water to Planting Holes

PHOTOGRAPH 5
Blue Elderberry Immediately After Planting

PHOTOGRAPH 6
Overview of Blue Elderberry Planting Area

PHOTOGRAPH 7
Branches Placed Around Elderberry Plants for Protection and Mulching

PHOTOGRAPH 8
Newly Germinated *Erodium* spp., Early December 2013



PHOTOGRAPH 9
RECON Crews Spraying Non-natives

PHOTOGRAPH 10
RECON Crews Spraying Non-natives

PHOTOGRAPH 11
Cholla Cutting, Fall 2013

PHOTOGRAPH 12
Planted Cholla, Early December 2013

PHOTOGRAPH 13
Planted Cholla, Early December 2013

PHOTOGRAPH 14
Shore Cactus Full with Water After March Rains

PHOTOGRAPH 15
Cholla Cutting with New Growth, March 2014

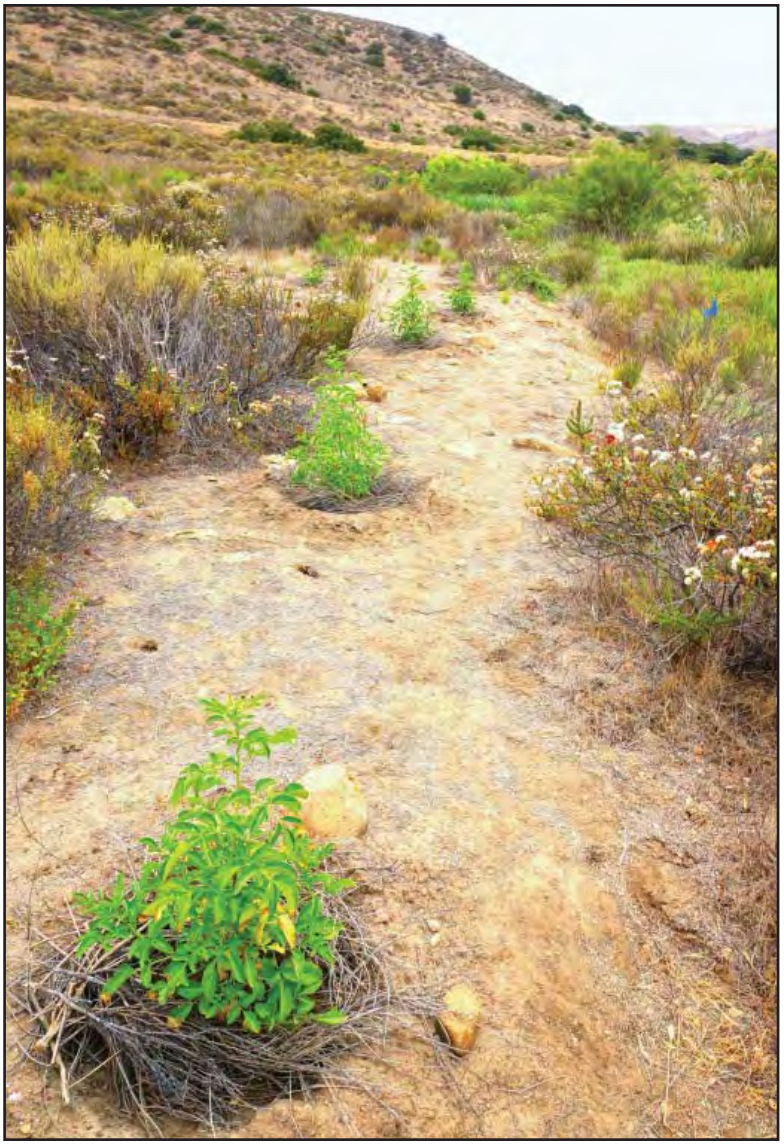
RECON

PHOTOGRAPH 16
Narrow Endemic Variegated Dudleya at Restoration Site 5

PHOTOGRAPH 17
MSCP Covered Coast Barrel
Cactus with Developing Flower Buds

RECON

PHOTOGRAPH 18
Flowering Fish-hook Cactus



PHOTOGRAPH 19
Overview of Elderberry Planting Area, May 2014

RECON

PHOTOGRAPH 20
Blue Elderberry with Flower Buds

PHOTOGRAPH 21
Developing Fruit on Planted Elderberry

PHOTOGRAPH 22
Coast Horned Lizard Buried
in Gravel Restoration Area 1

PHOTOGRAPH 23
Coast Cholla Growing at High Tech Middle Chula Vista

ATTACHMENT 2

Wildlife Species Observed/Detected

ATTACHMENT 2
WILDLIFE SPECIES OBSERVED/DETECTED INCIDENTALLY AND DURING THE SPRING 2014 CACTUS WREN SURVEY AT THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE

Scientific Name	Common Name	Treatment Area Number	On-site Abundance/Seasonality (Birds Only)	Evidence of Occurrence
BIRDS (Nomenclature from American Ornithologists' Union 1998 and Unitt 2004)				
ACCIPITRIDAE	**HAWKS, KITES, & EAGLES**			
Buteo jamaicensis	red-tailed hawk	1	C / Y	O, V
FALCONIDAE	**FALCONS & CARACARAS**			
Falco sparverius sparverius	American kestrel	1	F / Y	O, V
COLUMBIDAE	**PIGEONS & DOVES**			
Zenaida macroura marginella	mourning dove	2, 4, 5	C / Y	O, V
APODIDAE	**SWIFTS**			
Aeronautes saxatalis	white-throated swift	FO 5	C / Y	O, V
TROCHILIDAE	**HUMMINGBIRDS**			
Calypte anna	Anna's hummingbird	5	C / Y	O, V
TYRANNIDAE	**TYRANT FLYCATCHERS**			
Empidonax difficilis	Pacific-slope flycatcher	5		V
Tyrannus vociferans vociferans	Cassin's kingbird	1, 5	C / Y	O, V
VIREONIDAE	**VIREOS**			
Vireo bellii pusillus	least Bell's vireo	1, 5	U / S	V
CORVIDAE	**CROWS, JAYS, & MAGPIES**			
Corvus corax clarionensis	common raven	2, 3, 5, 6	C / Y	O
HIRUNDINIDAE	**SWALLOWS**			
Petrochelidon pyrrhonota tachina	cliff swallow	FO 5	C / S	O

ATTACHMENT 2
WILDLIFE SPECIES OBSERVED/DETECTED INCIDENTALLY AND DURING THE SPRING 2014 CACTUS WREN SURVEY AT THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE
(cont.)

Scientific Name	Common Name	Treatment Area Number	On-site Abundance/Seasonality (Birds Only)	Evidence of Occurrence
AEGITHALIDAE	**BUSHTIT**			
Psaltriparus minimus melanurus	bushtit	1, 5	F / Y	O
TROGLODYTIDAE	**WRENS**			
Thryomanes bewickii	Bewick's wren	5	F / Y	O
Troglodytes aedon parkmanii	house wren	5	F / Y	O
SYLVIIDAE	**GNATCATCHERS**			
Polioptila californica californica	coastal California gnatcatcher	4, 5, 6	F / Y	O, V
TIMALIIDAE	**BABBLERS**			
Chamaea fasciata henshawi	wrentit	1, 4, 5, 6	C / Y	O, V
MIMIDAE	**MOCKINGBIRDS & THRASHERS**			
Mimus polyglottos polyglottos	northern mockingbird	5, 6	C / Y	O, V
PARULIDAE	**WOOD WARBLERS**			
Setophaga [=*Dendroica*] *petechia*	yellow warbler	1	F / S	O, V
Icteria virens auricollis	yellow-breasted chat	1, 5	U / Y	V
EMBERIZIDAE	**EMBERIZIDS**			
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	1, 2, 5	C / Y	O, V
Melospiza melodia	song sparrow	1, 5		V
Pipilo crissalis	California towhee	2, 3, 4	C / Y	O, V
Pipilo maculatus	spotted towhee	1, 5	C / Y	O, V
CARDINALIDAE	**CARDINALS & GROSBEAKS**			
Passerina caerulea salicaria	blue grosbeak	1	F / S	O
Pheucticus melanocephalus maculatus	black-headed grosbeak	5	F / S	V

ATTACHMENT 2
WILDLIFE SPECIES OBSERVED/DETECTED INCIDENTALLY AND DURING THE SPRING 2014 CACTUS WREN SURVEY AT THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE (cont.)

Scientific Name	Common Name	Treatment Area Number	On-site Abundance/Seasonality (Birds Only)	Evidence of Occurrence
ICTERIDAE	**BLACKBIRDS & NEW WORLD ORIOLES**			
Sturnella neglecta	western meadowlark	1	C / Y	O
FRINGILLIDAE	**FINCHES**			
Spinus [=*Carduelis*] *psaltria hesperophilus*	lesser goldfinch	1, 2, 5	C / Y	O, V
Haemorhous [=*Carpodacus*] *mexicanus frontalis*	house finch	1, 5	C / Y	O
MAMMALS (Nomenclature from Baker et al. 2003)				
LEPORIDAE	**RABBITS & HARES**			
Lepus californicus bennettii	San Diego black-tailed jackrabbit	5		O
Sylvilagus audubonii	desert cottontail	2		O
CANIDAE	**CANIDS**			
Canis latrans	coyote	4, 5		S
MURIDAE	**MICE & RATS**			
Neotoma sp.	woodrat	2		D
REPTILES (Nomenclature from Crother 2001 and Crother et al. 2003)				
IGUANIDAE	**IGUANID LIZARDS**			
Sceloporus occidentalis	western fence lizard	1, 2		O
PHRYNOSOMATIDAE	**SPINY LIZARDS**			
Phrynosoma blainvillii	coast horned lizard	1		O
INVERTEBRATES (Nomenclature from Eriksen and Belk 1999; Milne and Milne 1980; Mattoni 1990; and Opler and Wright 1999)				
APIDAE	**HONEY BEES**			
Apis sp.	honey bee	5		O

ATTACHMENT 2
WILDLIFE SPECIES OBSERVED/DETECTED INCIDENTALLY AND DURING THE SPRING 2014 CACTUS WREN SURVEY AT THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE (cont.)

Nomenclature from:

American Ornithologists' Union
1998 *Check-list of North American Birds.* 7th ed. American Ornithologists' Union, Washington, D.C.

Baker, R. J., L. C. Bradley, R. D. Bradley, J. W. Dragoo, M. D. Engstrom, R. S. Hoffmann, C. A. Jones, F. Reid, D. W. Rice, and C. Jones
2003 *Revised Checklist of North American Mammals North of Mexico.* Occasional Papers, Museum of Texas Tech University 229:1-24.

Crother, B. I., editor
2001 Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding. Society for the Study of Amphibians and Reptiles *Herpetological Circular* No. 29.

Crother, B. I., J. Boundy, J. A. Campbell, K. De Quieroz, D. Frost, D. M. Green, R. Highton, J. B. Iverson, R. W. McDiarmid, P. A. Meylan, T. W. Reeder, M. E. Seidel, J. W. Sites, Jr., S. G. Tilley, and D. B. Wake
2003 Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico: Update. *Herpetological Review* 34(3): 196-203.

Garrett, K., and J. Dunn
1981 *Birds of Southern California: Status and Distribution.* Los Angeles Audubon Society, Artisan Press, Los Angeles.

Mattoni, R.
1990 Butterflies of Greater Los Angeles. Center for the Conservation of Biodiversity/ Lepidoptera Research Foundation, Beverly Hills, CA.

Opler, P. A., and A. B. Wright
1999 *A Field Guide to Western Butterflies.* Peterson Field Guides. Houghton Mifflin, Boston.

Unitt, P.
2004 *San Diego County Bird Atlas.* San Diego Natural History Museum and Ibis Publishing, San Diego.

ATTACHMENT 2
WILDLIFE SPECIES OBSERVED/DETECTED INCIDENTALLY AND DURING THE SPRING 2014 CACTUS WREN SURVEY AT THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE
(cont.)

ABUNDANCE (based on Garrett and Dunn 1981)

C = Common to abundant; almost always encountered in proper habitat, usually in moderate to large numbers
F = Fairly common; usually encountered in proper habitat, generally not in large numbers
U = Uncommon; occurs in small numbers or only locally

SEASONALITY (birds only)

A = Accidental; species not known to occur under normal conditions; may be an off-course migrant
M = Migrant; uses site for brief periods of time, primarily during spring and fall months
S = Spring/summer resident; probable breeder on-site or in vicinity
T = Transient; uses site regularly but unlikely to breed on-site
V = Rare vagrant
W = Winter visitor; does not breed locally
Y = Year-round resident; probable breeder on-site or in vicinity

EVIDENCE OF OCCURRENCE

D = Den site
FO = Fly overhead
O = Observed
S = Scat
V = Vocalization

ATTACHMENT 3

Plant Species Observed

ATTACHMENT 3
PLANT SPECIES OBSERVED WITHIN THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE

Scientific Name	Common Name	Treatment Area Number	Origin
LYCOPODS			
SELAGINELLACEAE	**SPIKE-MOSS FAMILY**		
Selaginella bigelovii L. Underw.	Bigelow spike-moss	1-6	N
Selaginella cinerascens A.A. Eaton	ashy spike-moss	1-6	N
ANGIOSPERMS: MONOCOTS			
AGAVACEAE	**AGAVE FAMILY**		
Chlorogalum parviflorum S. Watson	smallflower soap plant	2-6	N
IRIDACEAE	**IRIS FAMILY**		
Sisyrinchium bellum S. Watson	western blue-eyed-grass	6	N
POACEAE (GRAMINEAE)	**GRASS FAMILY**		
Aristida purpurea Nutt.	three-awn	3,4	N
Avena barbata Link	slender wild oat	1,3,4-6	I
Brachypodium distachyon (L.) P. Beauv.	purple falsebrome	4	I
Bromus hordeaceus L.	soft chess	4-6	I
Bromus madritensis L. ssp. *rubens* (L.) Husnot	red brome	1-6	I
Hordeum sp.	barley	6	I
Stipa [=*Nassella*] sp.	needlegrass	1,2,4,5	N
Stipa [=Achnatherum] diegoensis Swallen	San Diego needlegrass	1	N
Stipa [=*Nassella*] *lepida* Hitchc.	foothill needle grass	6	N
Stipa [=*Nassella*] *pulchra* Hitchc.	purple needle grass	3	N
ANGIOSPERMS: DICOTS			
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**		
Malosma laurina Nutt. ex Abrams	laurel sumac	1,2,4-6	N
Rhus integrifolia (Nutt.) Benth. & Hook. f. ex Rothr.	lemonadeberry	5	N
APIACEAE (UMBELLIFERAE)	**CARROT FAMILY**		
Daucus pusillus Michx.	rattlesnake weed	6	N
ASTERACEAE	**SUNFLOWER FAMILY**		
Artemisia californica Less.	California sagebrush	1-6	N

ATTACHMENT 3
PLANT SPECIES OBSERVED PLANT SPECIES OBSERVED WITHIN THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE
(continued)

Scientific Name	Common Name	Treatment Area Number	Origin
Baccharis sarothroides A. Gray	broom baccharis	5,6	N
Bahiopsis [=*Viguiera*] *laciniata* (A. Gray) E.E. Schilling & Panero	San Diego County viguiera	1-6	N
Centaurea melitensis L.	tocalote, Maltese star-thistle	1,3-6	I
Corethrogyne filaginifolia [= all previously known *Lessingia filaginifolia* varieties in California] (Hook. & Arn.) Nutt.	California-aster	4,5	N
Deinandra [=*Hemizonia*] *fasciculata* (DC.) Greene	golden tarplant	1-6	N
Gutierrezia sp.	matchweed	5,6	N
Hypochaeris glabra L.	smooth cat's-ear	2,5	I
Isocoma menziesii (Hook. & Arn.) G.L. Nesom var. *decumbens* (Greene) G.L. Nesom	decumbent goldenbush	1,4-6	N
Lactuca serriola L.	prickly lettuce	6	I
Lasthenia gracilis (DC.) Greene	common goldfields	4,5	N
Logfia [=*Filago*] *gallica* (L.) Cross. & Germ.	narrow-leaf herba impia	2,5	I
Sonchus asper (L.) Hill ssp. *asper*	prickly sow thistle	5,6	I
BORAGINACEAE	**BORAGE FAMILY**		
Cryptantha sp.	cryptantha	2-6	N
BRASSICACEAE (CRUCIFERAE)	**MUSTARD FAMILY**		
Hirschfeldia incana (L.) Lagr.-Fossat	short-pod mustard	3,6	I
Lepidium nitidum Nutt. var. *nitidum*	shining peppergrass	1	N
CACTACEAE	**CACTUS FAMILY**		
Cylindropuntia californica (Torr. & A. Gray) F.M. Knuth var. *californica*	snake cholla	2,5	N
Cylindropuntia [=*Opuntia*] *prolifera* (Engelm.) F.M. Knuth	coast cholla	1-6	N
Ferocactus viridescens (Torr. & A. Gray) Britton & Rose	San Diego barrel cactus	1, 3-6	N
Mammillaria dioica K. Brandegee	fish-hook cactus	4-6	N
Opuntia littoralis (Engelm.) Cockerell.	shore cactus	1,2,5,6	N
CARYOPHYLLACEAE	**PINK FAMILY**		
Silene gallica L.	windmill pink	6	I
CHENOPODIACEAE	**GOOSEFOOT FAMILY**		
Salsola tragus L.	Russian thistle, tumbleweed	4,6	I

ATTACHMENT 3
PLANT SPECIES OBSERVED PLANT SPECIES OBSERVED WITHIN THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE
(continued)

Scientific Name	Common Name	Treatment Area Number	Origin
CLEOMACEAE	**SPIDERFLOWER FAMILY**		
Peritoma [=*Isomeris*] *arborea* (Nutt.) H. H. Iltis	bladderpod	1,5	N
CONVOLVULACEAE	**MORNING-GLORY FAMILY**		
Calystegia macrostegia (Greene) Brummitt	morning-glory	1,3	N
CRASSULACEAE	**STONECROP FAMILY**		
Dudleya pulverulenta (Nutt.) Britton & Rose	chalk lettuce, chalk dudleya	1,2	N
Dudleya variegata (S. Watson) Moran	variegated dudleya	5	N
EUPHORBIACEAE	**SPURGE FAMILY**		
Euphorbia [=*Chamaesyce*] *polycarpa* Benth.	smallseed sandmat	2	N
Croton [=*Eremocarpus*] *setigerus* Hook.	dove weed	1,3-6	N
FABACEAE (LEGUMINOSAE)	**LEGUME FAMILY**		
Acmispon glaber (Vogel) Brouillet [=*Lotus scoparius*]	deerweed	1,4-6	N
Acmispon maritimus (Torr. & A. Gray) D.D. Sokoloff var. *maritimus* [=*Lotus salsuginosus* var. *salsuginosus*]	alkali lotus	2	N
Acmispon micranthus (Torr. & A. Gray) Brouillet [=*Lotus hamatus*]	grab lotus	3,4	N
Acmispon strigosus (Nutt.) Brouillet [=*Lotus strigosus*]	bishop's/strigose lotus	6,2	N
GERANIACEAE	**GERANIUM FAMILY**		
Erodium botrys (Cav.) Bertol.	long-beak filaree	1-6	I
Erodium cicutarium (L.) L'Hér. ex Aiton	redstem filaree	1-6	I
LAMIACEAE	**MINT FAMILY**		
Trichostema lanceolatum Benth.	vinegar weed	6	N
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**		
Mirabilis laevis [=*californica*] (Benth.) Curran var. *crassifolia* (Choisy) Spellenb.	wishbone bush	1,2,6	N
PLANTAGINACEAE	**PLANTAIN FAMILY**		
Plantago erecta E. Morris	dot-seed plantain	4	N

ATTACHMENT 3
PLANT SPECIES OBSERVED PLANT SPECIES OBSERVED WITHIN THE OTAY RANCH CACTUS WREN HABITAT RESTORATION AND ENHANCEMENT SITE
(continued)

Scientific Name	Common Name	Treatment Area Number	Origin
POLYGONACEAE	**BUCKWHEAT FAMILY**		
Eriogonum fasciculatum Benth.	California buckwheat	1-6	N
SIMMONDSIACEAE	**JOJOBA FAMILY**		
Simmondsia chinensis (Link) C.K. Schneid.	jojoba, goat nut	1-6	N

Nomenclature from:

University of California
2013 The Jepson Online Interchange. Accessed from http://ucjeps.berkeley.edu/interchange.html.

Rebman, John P. and Michael G. Simpson
2006 Checklist of the Vascular Plants of San Diego County, 4th edition. San Diego Natural History Museum.

Origin:

N = Native to locality
I = Introduced species from outside locality