APPENDIX H

Salt Creek Preserve Analysis

SALT CREEK PRESERVE ANALYSIS

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SALT CREEK PRESERVE ANALYSIS

Ogden Environmental and Energy Services Co., Inc. (Ogden) has evaluated the City of Chula Vista's proposed alternative preserve design for the Salt Creek watershed and a portion of the Otay River valley. The proposed alternative differs from the design approved as part of the County of San Diego MSCP Subarea Plan. The wildlife agencies (U.S. Fish and Wildlife Service, California Department of Fish and Game) have indicated that the alternative preserve design must provide a net benefit over the existing approved preserve design.

This evaluation compared the existing and proposed preserve design within the area generally bounded on the north by the future Olympic parkway alignment, on the south by the southerly jurisdictional boundary of the City of Chula Vista, on the east by the boundary of the Otay Ranch (west of Wueste Road), and on the west by development proposed on the Otay Ranch General Development Plan. Quantitative analyses were conducted for two areas: (1) the entire acre study area, as defined above, and (2) the Salt Creek area, which is a subset of the larger study area. The analyses for both areas considered the relative amount of conservation and take with respect to:

- vegetation community acres, as mapped for the MSCP
- species locations, including major populations, as mapped for the MSCP
- acres of core habitat, as mapped for the MSCP
- degree of edge effect, assuming impacts of development may indirectly affect up to 150 feet of conserved areas
- acres of potential restoration, based on a cursory site visit
- potential wildlife corridors

In addition, the analyses for the overall study area also considered the general preserve design configuration relative to proposed development and other proposed open space.

Vegetation

Overall Study Area

The existing preserve design encompasses 1,046.7 acres of vegetation. This includes 40.2 acres of sensitive habitats that would be conserved within the proposed recreation area boundaries. In comparison, the alternative preserve design conserves 1,134.9 acres of vegetation, which is an increase of 88.2 acres over the existing design (Table 1).[1] The alternative preserve design conserves less coastal sage scrub than the existing design, but more maritime succulent scrub (11 acres), grassland (68 acres), and field crops (31 acres).

In addition to the acreages above, a 3.8 acre area west of Salt Creek that is within the development area under both preserve scenarios will not be developed under the

[1] Areas mapped as "Developed" on the 1996 MSCP GIS database and that occur within preserve areas are not included in acreage calculations.

alternative preserve design (Figure 1, Area A). This area will, however, be maintained within the development envelope rather than within the preserve area. This area is situated on a lower, east-facing slope adjacent to the unnamed drainage just west of Salt Creek, and includes 0.5 acre of coastal sage scrub and 3.3 acres of grassland.

An assessment of habitat quality within the proposed coastal scrub "take" area for the alternative preserve design (i.e., the new development area along the eastern preserve boundary) (Figure 1) indicates that this area supports several stands of maritime succulent scrub interspersed with disturbed coastal sage scrub. Much of this area has burned in the recent past, but would be expected to recover eventually if protected from disturbance. Maritime succulent scrub conserved under the alternative design is relatively undisturbed and situated along east-facing slopes just west of Salt Creek (Figure 1). Conserved coastal sage scrub in this area includes both disturbed and undisturbed patches of vegetation. Much of the additional grassland and field crop acreage conserved under the alternative design occurs along the Otay River Valley or in the northern portion of the preserve, and is suitable for habitat restoration (see below).

Salt Creek Area

Within the Salt Creek area, the existing preserve design conserves 577.7 acres of vegetation, including 0.1 acre of field crops, while the alternative preserve design conserves 615 acres of vegetation, including 4.7 acres of field crops (Table 1). The difference between the two designs (37 acres) is due to the addition of newly conserved areas along the western preserve boundary under the alternative design scenario. Overall, however, the alternative preserve design conserves approximately 6 acres less of sensitive coastal scrub vegetation types than the existing preserve. Under the alternative design, coastal scrub habitat will be lost in the development area along the eastern preserve boundary and along a roughly east-west oriented road that will transect the preserve (Figure 1). Maritime succulent scrub in the proposed take area supports particularly well-developed stands of cactus.

Sensitive Species

Overall Study Area

Based on the 1996 MSCP database, 12 sensitive species (8 animals, 4 plants) have been observed within the overall study area, and all occur within both preserve designs (Table 2, Figure 1). Species occurrences in the GIS database are represented as points, which may or may not correspond to individuals, and which may vary from year to year. The alternative preserve design conserves about the same number of species points as the existing design, with increases in point localities for the California gnatcatcher and coastal cactus wren. The study area includes portions of major or core populations of the gnatcatcher, cactus wren, and San Diego barrel cactus, as identified in the MSCP.

Salt Creek Area

Compared to the existing design, the alternative preserve includes 2 additional point locations for the gnatcatcher, 5 additional locations for the cactus wren, 1 additional point for the San Diego barrel cactus, but 3 fewer points for the southern California rufous-crowned sparrow (Table 2, Figure 1).

Core Habitat

Core habitat is defined as areas generally supporting a high concentration of sensitive biological resources which, if lost or fragmented, could not be replaced or mitigated elsewhere. Although not all areas within a core may be important for preservation, the core configuration provides the framework for a regional preserve system. For the MSCP, core areas were identified in part using a habitat evaluation map. Based on the MSCP habitat evaluation map, habitat quality for the area within both preserve designs was ranked Very High. The areas within both preserve designs are within the Otay Lakes/Otay Mesa/Otay River Valley core biological resource area.

Edge Effects and Configuration

Overall Study Area

Because the preserve will be in proximity or adjacent to development, edge effects (i.e., indirect impacts to biological resources from adjacent development) have the potential to affect the integrity of the preserve design. For the purposes of this comparative analysis, edge effects were calculated for an area within 150 feet of the preserve boundary.

The alternative design results in reduced edge effects in the Otay River Valley, but increased edge effects within the Salt Creek area (Table 3, Figure 2). Overall, the alternative design has fewer acres of disturbed riparian scrub, disturbed streambed, and coastal scrub habitats subject to edge effects, but more acres of grassland subject to edge effects.

Based on this analysis, potential edge effects within the alternative preserve design may be higher for the gnatcatcher, coastal cactus wren, San Diego barrel cactus and snake cholla, and slightly lower for the least Bell's vireo and southern California rufous-crowned sparrow.

Salt Creek Area

Edge effects within the existing preserve design total 69.4 acres versus 105.1 acres of edge effected vegetation within the alternative preserve design (Table 3, Figures 2 and 3). Overall, there is a net increase in edge effects with the alternative design of 35.7 acres, although over 4 acres of this is field crops. This increase in edge effects in the alternative design is due in large part to a proposed road that will transect the preserve.

Within the Salt Creek area, the alternative preserve design may potentially result in indirect impacts to more gnatcatchers, rufous-crowned sparrows, San Diego barrel cactus, and snake cholla than the existing preserve design (Table 4, Figures 2 and 3).

Restoration Potential

A field reconnaissance of the study area was conducted by Ogden biologists to assess the potential for habitat restoration within proposed preserve areas for the alternative design. Potential restoration sites were mapped and assessed as to type of habitat improvement activity that would be appropriate, based on existing vegetation conditions (Figure 4). Restoration areas were thus classified as appropriate for either (1) enhancement or (2) restoration. In addition, 3 cactus salvage areas were delineated within proposed development areas. Areas determined appropriate for cactus salvage support large cactus patches that could be salvaged for use in other parts of the preserve area.

Potential habitat enhancement areas are defined as areas that support both native species and a dense cover of exotic annual grasses and/or broad-leaved weeds. Technically, these areas do not qualify for habitat restoration because they are already considered native habitat. Many of these areas are recovering from disturbance (e.g., fire, overgrazing), and would be expected to support a higher proportion of native species in time if disturbance factors are reduced or eliminated. In these cases, habitat enhancement would expedite the recovery process, resulting in improved habitat quality in a relatively short period of time. Enhancement measures could include one or more of the following: pest control, seeding with native species to increase cover and/or species diversity, planting cactus cuttings and/or transplanting cactus, fertilizing, and access control.

Potential habitat restoration areas are defined as areas that are completely or nearly completely dominated by nonnative species. Within the study area, this typically includes lands that were formerly in active agriculture or used for grazing. In these cases, restoration would require a more intensive effort to convert the habitat within a reasonably short timeframe. Restoration measures could include one or more of the following: fairly intensive pest control (at least initially) to establish coastal sage scrub species, seeding, planting cactus cuttings and/or transplanting cactus, container plantings, irrigation, access control, and fertilizing and/or applying other soil amendments.

Overall Study Area

Within the overall study area, potential habitat enhancement areas for the alternative preserve design total 65.5 acres, all within the Salt Creek area, whereas potential habitat restoration areas total 86.8 acres (Table 5). Only restoration areas will result in an increase in acreage of native habitat. Areas mapped as scrub habitat in the 1996 MSCP database and included in restoration areas did not appear to support native habitat during the 1999 field reconnaissance.

Salt Creek Area

Within the Salt Creek area, potential habitat enhancement areas total 65.5 acres, while potential habitat restoration areas total 11.4 acres (Table 5). Enhancement efforts within this area are the same as in the overall study area.

Wildlife Corridors

Overall Study Area

A portion of one major wildlife corridor occurs within the study area: the Otay River Valley. The Otay River Valley is an east-west oriented corridor that connects Jamul and the San Ysidro Mountains to San Diego Bay. This area contains significant wetland habitat on the valley bottom and sensitive scrub habitat on upland slopes. Under the existing preserve design, a portion of the upper terrace of the Otay River floodplain is designated as an active recreation area, although impacts to sensitive habitats within this area will be avoided. Under the alternative preserve design, this area will be conserved, and will function to connect conserved habitat on south-facing slopes north of the Otay River to conserved habitat within the floodplain and at the mouth of Salt Creek. Conservation of this area will also reduce the potential for edge effects to habitat on south-facing slopes and in the floodplain.

The alternative preserve design also includes the addition of a potential wildlife corridor that may provide a link between Salt Creek and the lower Otay Reservoir. This corridor is approximately 400 feet wide, located directly south of the Olympic Training Center, and currently supports an extremely low cover of coastal sage scrub due to habitat disturbance (i.e., fire, overgrazing). This corridor includes slopes and a portion of a swale leading up from the bottom of Salt Creek. It is presumed that vegetation in this area, which is mapped as disturbed coastal sage scrub in the 1996 MSCP database, will eventually recover if disturbance factors are eliminated. The north-south oriented Wueste Road lies between this corridor and habitat to the east that is adjacent to the reservoir.

Salt Creek is a tributary to the Otay River Valley. It potentially provides a conduit for bird dispersal between Otay Valley and the Otay Lakes area. In addition, there is likely some bird movement between Salt Creek and the Otay River Valley, whether it is the dispersal of birds into habitat in Salt Creek or the use of upland habitats in Salt Creek by birds that also utilize riparian habitat in the valley. Much of Salt Creek is included in both preserve designs. The alternative design provides a connection between the valley and the mouth of Salt Creek by including a former recreation area as part of the preserve. The alternative design also proposes a road across Salt Creek. This road would probably not be a major impediment to avian movement, but would result in increased roadkills to wildlife, in general, as well as increased habitat fragmentation and potential indirect effects of noise, lighting, and toxic runoff.

Salt Creek Area

Salt Creek may function as a bird dispersal area between the Otay River Valley and Otay Lakes area. With respect to wildlife movement, the primary difference between the existing and alternative preserve designs is the addition of a proposed road in the alternative design that would transect the preserve. As discussed above, this road would probably not be a major impediment to avian movement, but would result in increased roadkills to wildlife, in general, as well as increased habitat fragmentation and potential indirect effects.

General Preserve Design Configuration

The alternative preserve design proposes to conserve about 57 acres more habitat (excluding field crops) than the existing preserve. Within the Otay River Valley, the alternative preserve design increases the amount of habitat that is conserved, provides a connection between conserved floodplain habitat and upland habitat north of the river, and reduces edge effects in those areas compared to the existing design. It also provides a direct connection between the river valley and the mouth of Salt Creek. Within the Salt Creek area, the alternative preserve design adds habitat along east-facing slopes, but loses some habitat along west-facing slopes. In addition, the alternative design includes a road that transects Salt Creek, resulting in increased habitat fragmentation and edge effects in this area. The alternative design also includes the protection of a small wildlife corridor that may provide a connection between Salt Creek and the lower Otay Reservoir.

Summary

The alternative preserve design increases the amount of habitat conserved. It conserves less coastal sage scrub than the existing preserve, but conserves more disturbed coastal sage scrub and maritime succulent scrub. Overall, there is a reduction of 14 acres of conserved coastal scrub habitats with the alternative design. However, the alternative design includes a habitat restoration element. It is presumed that most of this habitat would be restored to coastal scrub suitable for gnatcatchers and cactus wrens.

The alternative preserve design will result in minor shifts in species conservation compared with the existing preserve design. Of the three species for which conservation will be increased, two (California gnatcatcher and coastal cactus wren) are considered part of core or "major" populations. Of the species point localities lost with this design, one (San Diego barrel cactus) is considered part of a major population.

Potential edge effects to vegetation from the alternative design are higher than the existing design in the Salt Creek area, largely as a result of the road that transects the alternative preserve.

Potential restoration is proposed only for the alternative preserve design. It is estimated that up to 65.5 acres of habitat within the preserve would be suitable for enhancement and 86.8 acres would be suitable for restoration. These areas would likely be

enhanced/restored to coastal sage and maritime succulent scrub habitats. Thus, the alternative preserve may result in a net increase in conservation of coastal sage and maritime succulent scrub vegetation of 72.8 acres (86.8 acres from restoration - 14 acres of coastal scrub habitats lost with the alternative preserve design). Areas deemed suitable for habitat enhancement occur entirely within the Salt Creek area, while habitat restoration areas occur largely in the Otay River Valley and along the northwest edge of the preserve. Proposed enhancement or restoration areas could benefit from cactus salvaging activities. An alternative to cactus salvaging, which would greatly enhance the alternative preserve design, would be conservation of the 3 stands of maritime succulent scrub that occur in the proposed development area along the eastern preserve boundary (Figure 4).

The alternative preserve design will enhance the Otay River Valley wildlife corridor by providing a connection between the valley and slopes to the north and reducing edge effects in this area. It will also provide connectivity between the valley and the mouth of Salt Creek. In addition, the alternative design will provide a potential corridor between Salt Creek and the lower Otay Reservoir. The effectiveness of this small corridor would, however, be increased with both habitat restoration efforts and an increase in area to the south to ensure that the entire swale is included in the design. Within the Salt Creek area, the alternative design loses some coastal scrub habitat along west-facing slopes, but adds habitat of comparable quality along east-facing slopes. The alternative design also includes a road across Salt Creek that may result in some disruption of wildlife movement, and may result in increased roadkills and habitat fragmentation (including edge effects). Rerouting this road outside the Salt Creek watershed would greatly improve the alternative preserve design.

Table 1

VEGETATION IN EXISTING, APPROVED PRESERVE[1] VERSUS ALTERNATIVE PRESERVE

Conserved Vegetation Type[2]	Overall Study Area		Salt Creek Area	
	Existing Preserve (acres)[2]	Alternative Preserve (acres)[2]	Existing Preserve (acres)[2]	Alternative Preserve (acres)[2]
Coastal Sage Scrub	636.7	606.6	473.0	448.2
Disturbed Coastal Sage Scrub	3.6	8.3	---	4.6
Maritime Succulent Scrub	87.8	99.2	74.9	89.1
Grassland	60.4	128.3	7.4	46.5
Riparian Scrub	12.5	12.5	0.4	0.4
Disturbed Riparian Scrub	119.8	119.8	---	---
Disturbed Natural Floodchannel/Streambed	115.8	117.0	16.9	18.1
Eucalyptus Woodland	9.8	11.5	5.0	3.4
Field Crops	0.3	31.7	0.1	4.7
Total	1,046.7	1,134.9	577.7	615.0

[1] The existing approved preserve design is the MHPA.
[2] Based on 1996 MSCP GIS database; developed lands are not included in preserve acreage calculations.

Table 2

SENSITIVE SPECIES IN EXISTING, APPROVED PRESERVE[1] VERSUS ALTERNATIVE PRESERVE

Conserved Species	Overall Study Area		Salt Creek Area	
	Existing Preserve (points)[2]	Alternative Preserve (points)[2]	Existing Preserve (points)[2]	Alternative Preserve (points)[2]
California Gnatcatcher	89	92	77	79
Coastal Cactus Wren	60	64	55	60
Cooper's Hawk	2	3	---	---
Golden Eagle	1	1	1	1
Grasshopper Sparrow	2	2	---	---
Least Bell's Vireo	4	4	---	---
Orange-throated Whiptail	3	3	3	3
Southern California Rufous-crowned Sparrow	28	25	24	21
Otay Tarplant	1	1	1	1
San Diego Barrel Cactus	111	109	90	91
Snake Cholla	6	6	3	3
Variegated Dudleya	4	4	4	4

[1] The existing approved preserve design is the MHPA.

[2] Numbers represent points in the 1996 MSCP GIS database. No species polygons are within the existing, approved preserve design or alternative preserve design.

Table 3

VEGETATION COMMUNITIES WITHIN 150 FEET OF PRESERVE BOUNDARY (AREA OF POTENTIAL EDGE EFFECTS)

Vegetation Type	Overall Study Area		Salt Creek Area	
	Existing Preserve (acres)[1,2]	Alternative Preserve (acres)[1,2]	Existing Preserve (acres)[1,2]	Alternative Preserve (acres)[1,2]
Coastal Sage Scrub	75.8	75.8	41.8	59.8
Disturbed Coastal Sage Scrub	---	3.3	---	3.3
Maritime Succulent Scrub	24.9	17.9	16.6	12.0
Grassland	21.8	30.8	5.3	21.7
Riparian Scrub	0.9	0.9	---	---
Disturbed Riparian Scrub	12.1	0.6	---	---
Disturbed Natural Floodchannel/Streambed	8.3	1.0	4.7	1.0
Eucalyptus Woodland	1.8	3.0	0.9	3.0
Field Crops	0.3	4.9	0.1	4.3
Total	145.9	138.2	69.4	105.1

[1] Acreage of conserved vegetation within 150 feet of preserve boundary.
[2] Based on 1996 MSCP GIS database.

Table 4

SPECIES POINTS WITHIN 150 FEET OF PRESERVE BOUNDARY (AREA OF POTENTIAL EDGE EFFECTS)

Species	Overall Study Area		Salt Creek Area	
	Existing Preserve (points)[1,2]	Alternative Preserve (points)[1,2]	Existing Preserve (points)[1,2]	Alternative Preserve (points)[1,2]
California Gnatcatcher	17	24	13	17
Coastal Cactus Wren	12	13	10	10
Cooper's Hawk	1	---	---	---
Golden Eagle	---	---	---	---
Grasshopper Sparrow	---	---	---	---
Least Bell's Vireo	1	---	---	---
Orange-throated Whiptail	1	1	1	1
Southern California Rufous-crowned Sparrow	6	5	3	4
Otay Tarplant	---	---	---	---
San Diego Barrel Cactus	9	13	5	6
Snake Cholla	1	3	---	1
Variegated Dudleya	---	---	---	---

[1] Number of conserved species points within 150 feet of preserve boundary.

[2] Based on 1996 MSCP GIS database. No species polygons are within the existing, approved preserve or alternative preserve.

Table 5

POTENTIAL RESTORATION AREAS IN ALTERNATIVE PRESERVE DESIGN

Conserved Vegetation Type[1]	Overall Study Area		Salt Creek Area	
	Potential Habitat Enhancement Area (acres)	Potential Habitat Restoration Area (acres)	Potential Habitat Enhancement Area (acres)	Potential Habitat Restoration Area (acres)
Coastal Sage Scrub	54.5	11.4	54.5	0.7
Disturbed Coastal Sage Scrub	---	4.6	---	4.6
Maritime Succulent Scrub	5.8	0.7	5.8	---
Grassland	5.2	38.5	5.2	1.4
Disturbed Riparian Scrub	---	---	---	---
Eucalyptus Woodland	---	0.6	---	---
Field Crops	---	31.0	---	4.7
Total	65.5	86.8	65.5	11.4

[1] Based on 1996 MSCP GIS database.