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July 24, 2008

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TO: COMMISSIONERS AND INTERESTED PERSONS

FROM: SHERILYN SARB, DEPUTY DIRECTOR, SAN DIEGO COAST DISTRICT
DEBORAH LEE, DISTRICT MANAGER, SAN DIEGO COAST DISTRICT
TONI ROSS, COASTAL PROGRAM ANALYST, SAN DIEGO COAST DISTRICT

SUBJECT: STAFF RECOMMENDATION ON CITY OF CARLSBAD MAJOR AMENDMENT 1-06A (HMP Implementation Plan) for Commission Meeting of August 6-8, 2008

SYNOPSIS

The subject LCP implementation plan amendment was submitted and filed as complete on May 22, 2007. A one-year time extension was granted on August 9, 2007. As such, the last date for Commission action on this item is August 8, 2008. This report addresses one of four components to the amendment request by the City of Carlsbad #1-06. This staff report addresses the first component; (A) Habitat Management Plan Implementation Plan. The second component; (B) HMP/GP Hardline Amendment is also scheduled for the August 2008 hearing. The third component; (C) CUP Code revisions was approved on January 12, 2007 and the fourth component; (D) Density Bonus Revisions was approved on March 6, 2008.

SUMMARY OF AMENDMENT REQUEST

The City of Carlsbad is requesting several textual modifications to their certified Implementation Plan in order to implement the certified Habitat Management Plan (HMP) and other LUP provisions. The City of Carlsbad, consistent with the Endangered Species Act, developed a Habitat Management Plan to provide a comprehensive, city-wide program to preserve the diversity of habitat and protect biological resources while allowing for additional development within the City. The HMP was submitted to the California Coastal Commission (Commission) as a land use plan amendment and was approved in 2003. The HMP established an "HMP Preserve" which is a series of core areas linked by several corridors. As a component of this approval, it was understood that the implementation plan for the HMP would be submitted to the Coastal Commission within 3 years of the land use plan amendment. The subject implementation plan amendment is intended to fulfill this requirement.

There are four components to the City's proposed LCP amendment. First is a new chapter (21.210) of the certified zoning ordinance specifically addressing standards and procedures for habitat preservation and management, as well as preserve enforcement.

Various components include definitions, preserve requirements, management and maintenance requirements, necessary permits and enforcement. The second includes revisions to the Open Space zoning ordinance (21.33) to establish permitted uses on HMP preserved lands. The third and fourth components are identical revisions to the Hillside Development Regulations and the Coastal Resources Overlay Zone allowing for modifications to some coastal development standards for HMP compliance (i.e. grading on slopes greater than 25%).

SUMMARY OF STAFF RECOMMENDATION

Staff is recommending the LCP amendment be denied as submitted. The proposal includes new language to implement the Habitat Management Plan (HMP) approved in 2003. The City has been working on the Implementation Plan since then and the City of Carlsbad's Implementation Plan submittal was received as filed by the Commission in May of 2007. Since then staff has reviewed the proposed modifications and feel they are inadequate to implement all of the goals and requirements to properly manage all of the sensitive resources within the City of Carlsbad's HMP Preserve.

A number of concerns are raised by the City's submittal, for example, critical ordinances are not included, so that the Commission cannot determine whether the implementation plan will provide adequate protection of preserved lands. The overarching concern with the City's submittal is that the ordinances primarily address the process for which an individual development would be taken through the HMP permitting process. The submittal includes the general steps a developer would take to allow for development on a property containing ESHA. The submittal does not include, however, the large scale functioning, management and future protection of the lands preserved by the HMP.

One of the primary concerns raised by this submittal is the lack of a preserve management plan. As certified in the LUP, the City's intent through implementation of the HMP was to provide a large scale preserve system including core areas and corridors that would be protected in perpetuity to provide for some balance between native habitat and economic growth. It was determined during the HMP certification that an exhaustive plan would need to be developed to assure that the management of these lands would ensure core function and possible enhancement within the remaining sensitive habitat areas. Without this information, it is not possible to assess if these remaining lands would remain viable let alone enhanced.

The second major concern is the lack of protection of habitats within the Coastal Zone. As included in the HMP Land Use Plan, there is to be no net loss of critical types of habitat. Staff has processed LCP amendments allowing for development within the Coastal Zone and often the project has yet to identify where the required mitigation will be located. As was the case in La Costa Village, mitigation was accepted just outside the Coastal Zone. As such, no method has been defined that will function to address the lack of mitigation sites within the Coastal Zone.

Further, the City failed to acknowledge that modifications to the HMP preserve, either by changing the existing hardline boundaries or modifying standards for a particular site, will require an LCPA amendment, nor how the Commission will be involved in such a determination. As currently written, the City is only required to seek the approval from U.S. Fish and Wildlife Services (USFWS) and the California Department of Fish and Game (CDFG) (wildlife agencies collectively) for minor modifications to the HMP, and it is not required to contact the Coastal Commission. This eliminates the opportunity for the Commission to determine whether or not such a modification would also require an amendment to the City's LCP.

The City has included only by reference the provisions for development of guidelines to be used by both City staff and project proponents to determine adequate habitat identification, buffering, mitigation, monitoring, biological reporting, etc. However, these guidelines have not been reviewed by Commission staff, and as such, the consistency of these guidelines with the certified LUP cannot be determined. Further, upon review of these guidelines, the Commission may determine that some of the requirements discussed in these guidelines may be significant enough to be included in the implementation plan language within the LCP; so that, should the City want to amend these guidelines, it must also amend its Implementation Plan and thus seek review of these amendments by the Commission. For example, the Implementation Plan should include the determination of when a biological report will be considered too outdated to sufficiently represent the habitat at a specific location. If this guideline were not incorporated into the Implementation Plan, the City could potentially amend its guidelines to accept biological reports that are older than what the Commission might consider necessary to ensure that the intent of the LUP is carried out. By including these integral components within the Implementation Plan, the Commission would be able to determine the amendment's consistency with the intent of the HMP and the LCP.

Further, the City has failed to detail how an on the ground inventory would be included in their annual reporting to assure that the appropriate acreage and value of habitat was being maintained over time. The City has included such a framework within the First Annual HMP Report; however, as proposed, the City would have the opportunity to modify or discontinue this kind of reporting without review by the Commission. This type of reporting is necessary to determine that the appropriate locations are maintained as preserve sites, and that these preserve areas are being adequately maintained. Thus, the City should not be able to modify or discontinue this on the ground surveying without an LCP amendment that would provide the Commission with an opportunity to evaluate whether such a change would be consistent with the LUP.

There are several small scale concerns raised with the approval of the proposed Implementation Plan. First, the Open Space definitions in the Implementation Plan, as proposed, are internally inconsistent. As submitted, the City adds a definition of Open Space Preserved in Conformance with the Habitat Management Plan without deleting or further defining the existing definition of Open Space. It is unclear which definition, either the original Open Space definition, or the updated one, would be applicable in various circumstances. As proposed, an interested party may be mislead to think that uses in the traditionally defined Open Space (benches, parks, etc.) would be allowed in

areas designated as Open Space within the habitat preserve area. The result of this confusion could be unnecessary impacts within the HMP preserve.

Another smaller concern raised, relates to protection of ESHA on highly constrained lots (lots containing 80% ESHA or more). The HMP requires that, on highly constrained sites, 75% of the existing habitat be preserved. The City has used this guideline to conclude that any development within these highly constrained areas shall be entitled to a 25% development envelope. While the Commission did endorse a 25% development footprint within the HMP, it is unclear at this point whether the City is requiring all development activities, such as grading, brush management and construction of retaining walls in lieu of traditional buffers, to be included in the development envelope, rather than in the preserve areas. The City may determine that all of these activities shall be included in the development envelope, which raises fewer concerns regarding consistency with the LUP, but no such language has been explicitly proposed.

Lastly, lack of funding and lack of enforcement have become constraints of the HMP that the City failed to address by this proposed Implementation Plan. Policies for managing these kinds of constraints should be recommended for inclusion in an implementation plan.

In conclusion, the Implementation Plan as submitted is not adequate to implement the intent of the certified LUP. It appears as though the proposed amendment was designed to address the process of issuing an individual HMP permit, and not how to adequately manage and protect the HMP preserve *system*. Missing components of the proposed amendment include, but are not limited to: (1) lack of preserve management plan; (2) lack of resources; (3) no clearly identified communication or defined responsibilities between the City and the Resource Agencies and the Commission; (4) no identification of mitigation sites/opportunities within the Coastal Zone; (5) lack of appropriately defined Open Space requirements; and (6) failure to require the Commission's review of specific guidelines that may lead to undesired changes in how the HMP is managed.

The appropriate resolutions and motions begin on page 11. The findings for denial of the Implementation Plan Amendment as submitted begin on page 12.

HMP BACKGROUND

In 1993, the coastal California gnatcatcher was listed as threatened under the federal Endangered Species Act (ESA)**,** 16 U.S.C. § 1531 *et seq*. The coastal California gnatcatcher is found primarily in coastal sage scrub habitat in southern California. Based upon scientific estimates, coastal sage scrub habitat in San Diego County has been reduced by more than 70% of its original coverage. Fewer than 900 gnatcatcher pairs likely remain in the county; however, San Diego County currently supports the largest gnatcatcher population in California and presents the most significant opportunity for large-scale preservation of the species. This listing has had a significant effect on future public and private development in areas containing gnatcatcher habitat. In order to proceed, development in areas with gnatcatchers would have to completely avoid a "take" of this species or else receive federal authorization for such an impact. Several other species have been listed under the federal or state ESA since 1993; currently, approximately 25

species that are listed or proposed for listing occur in or are associated with habitat located in Carlsbad.

The Carlsbad HMP and the Multiple Habitat Conservation Program (MHCP) are intended to meet criteria for the California Department of Fish and Game's (CDFG) Natural Communities Conservation Planning process (NCCP), which was initiated in southern California in 1991 and of the federal Endangered Species Act (ESA). In the initial phases of the NCCP coastal sage scrub (CSS) program, guidelines for permitting development in areas containing CSS and conservation of CSS were developed, and the USFWS adopted a special rule regarding the gnatcatcher pursuant to Section 4(d) of the federal ESA**,** 16 U.S.C. § 1533(d). *See* 50 C.F.R. § 17.41(b), 58 Fed. Reg. 65088 (Dec. 10, 1993). This special rule exempts take of gnatcatchers during the interim period prior to approval of plans under the NCCP program, provided the take is consistent with NCCP process and conservation guidelines. In connection with the NCCP's program for CSS and the 4(d) rule, through an informal regional agreement, interim impacts in the San Diego region have been capped at 5% of the existing habitat within each jurisdiction participating in the NCCP program.

In 1992, the City signed an NCCP agreement with the California Resources Agency to develop the Habitat Management Plan (HMP) as part of the City's General Plan. The 1992 agreement enrolled the City in the NCCP program as an "Ongoing Multi-Species Plan" as defined in the NCCP process guidelines. The agreement was supplemented in 1993 to clarify that the HMP is a subarea plan of the San Diego County MHCP.

The adopted Carlsbad HMP is intended to satisfy the requirements of a federal HCP, and to function as a subarea plan of the regional MHCP under the NCCP. The MHCP study area involves approximately 186 square miles in northwestern San Diego County. This area includes the coastal cities of Carlsbad, Encinitas, Solana Beach and Oceanside, as well as the inland cities of Vista and San Marcos and several independent special districts. The participating local governments and other entities will implement their portions of the MHCP through individual subarea plans such as the Carlsbad HMP. Once approved, the MHCP and its subarea plans will replace interim restrictions placed by the U.S. Fish and Wildlife Services (USFWS) and the California Department of Fish and Game (CDFG) on impacts to coastal sage scrub and gnatcatchers within that geographical area, and will allow the incidental take of the gnatcatcher and other covered species as specified in the plan. Although the HMP is a subarea plan of the MHCP, it has received its own federal take permit and is not subject to finalization of the MHCP.
The City developed the HMP to meet the requirements of a habitat conservation plan pursuant to section 10(a)(2)(A) of the Endangered Species Act [16 USC §1539(a)(2)(A)]. The draft Carlsbad HMP was initially approved by the Carlsbad City Council on September 21, 1999. An addendum was then prepared based on comments provided by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG), and the revised document, dated December 1999, was submitted to the wildlife agencies for approval of an incidental take permit (ITP) under section 9(a)(1)(B) [16 USC § 1538(a)(1)(B)] of the Endangered Species Act. Since incidental take permits are not listed in the CCMP as one of the permits for activities likely to affect coastal uses and resources, the Commission requested, and received, permission from the Office of

Ocean and Coastal Resource Management (OCRM) in August 2000 for a federal consistency review of the HMP. The purpose of the consistency review was to determine whether issuance of the ITP would be consistent with the California Coastal Act and the CCMP.

In 2003, the City proposed an amendment to their LCP to incorporate the Habitat Management Plan (HMP) into their certified LCP and make the corresponding changes to the applicable land use plan segments (Mello I, Mello II, and Agua Hedionda). The HMP included several components. The most germane are listed below:

Components of Preserve System

The adopted HMP proposes to protect the endangered California Gnatcatcher and other listed species by contributing to an interlinked regional preserve system. The proposed preserve area for the HMP will be created from land in three different categories: hardline properties, standards areas, and existing preserve.

- Hardlines
Certain properties have been designated in the HMP with specific development/ conservation footprints, and are known as "hardline" properties. If development is proposed on these sites in a manner that is substantially in conformance with the hardline, the development will be authorized consistent with all other regulatory standards and procedures. The purpose of this process is to ensure that certain areas of onsite habitat will be set aside for permanent preservation, and that the property owners have committed to abide by the established development limitation upon approval of the HMP.

- Standards Areas
The second category of proposed preserve area in the HMP contains the "standards" areas, for which the HMP contains guidance relative to future habitat preservation and the siting of new development. The standards areas involve specific undeveloped properties within the City that are located in the biological core and linkage areas identified in the County MHCP.

- Existing Preserve Areas
The third category contains existing preserve lands (preserved prior to certification of the HMP), such as the City's three coastal lagoons and associated wetlands, the Dawson Los Monos Reserve, the Carlsbad Highlands Mitigation Bank, and other preserves located within previously-approved development. Approximately 4,450 acres of existing preserve land were incorporated into the HMP. These areas, which include both private and public land, have already been conserved for their wildlife value through previous development actions, such as mitigation banks and required open space. However, because these lands were preserved prior to the development of the HMP, many of these lands will not be monitored or managed to the extent of the post HMP preserve areas. It is the City's intention to seek outside funding for management, monitoring and enforcement of the privately owned lands in the existing preserve areas.

-Highly-Constrained Properties

There are a number of properties in the coastal zone that are entirely or almost entirely constrained by ESHA. The second HMP addendum provides that for those coastal zone properties which have more than 80% of their area in ESHA, at least 75% of the property shall be conserved. Alternatively, if the City, with the concurrence of the wildlife agencies and the Commission ,agree upon a hardline preserve boundary for any of these properties, then a new hardline map may be created in the HMP through an LCP amendment and the amount of onsite preservation as identified in the hardline boundary shall apply.

-Additional Requirement within the Coastal Zone

The following mitigation ratios will be required for authorized habitat impacts on properties within the coastal zone:

- 2:1 for coastal sage scrub
- 3:1 for all other rare native vegetation except wetlands
- 3:1 for riparian areas
- 4:1 for vernal pools, other seasonal wetlands, and salt marsh

Buffers for coastal habitat would be established as follows:

- A minimum 100 foot buffer shall be required from all freshwater and saltwater wetlands areas.
- A minimum 50 foot buffer shall be required from riparian areas and coast oak woodlands. No development or brush management shall take place within the buffer area for these habitat types except as otherwise specified herein.
- If a riparian area is associated with steep slopes (>25%), the 50 foot buffer shall be measured from the top of the slope.
- For steep slopes not associated with a riparian area, and for nonsteep areas (<25% slope) with native vegetation, a minimum 20 foot buffer shall be required. For steep slopes, the buffer shall be measured from the top of the slope. No development may be located within the buffer except as otherwise specified herein. However, if brush management is required for fire protection, Zone 3 (to a maximum of 20 feet) may be located within the buffer area if allowed by the fire management authority.
- Zones 1 and 2 for brush management and fire protection, where required, shall be located on the portion of the property proposed for development and outside of required buffers. Any plantings in Zone 2 must consist of native vegetation appropriate to the habitat.
- Recreation trails and public access pathways may be permitted in the required buffer area within the 15 feet closest to the adjacent developable area, provided that the construction of the trails and/or pathways and their proposed uses are consistent with the preservation goals for adjacent habitat, and that appropriate measures are taken for their physical separation from sensitive areas.

As approved by the Commission, the HMP further provides that, in the coastal zone, there will be no net loss of coastal sage scrub, maritime succulent scrub, southern maritime chaparral, southern mixed chaparral, native grassland or oak woodland. For impacts that are allowed to coastal zone sites with these habitat types, mitigation shall include a creation component, which requires establishment of new habitat area at a ratio of at least 1:1 (one acre of creation for every one acre of habitat impact) in order to achieve the no net loss standard. In certain appropriate cases, substantial restoration may also be substituted for creation. Restoration and enhancement will also be acceptable for mitigation beyond the 1:1 creation requirement. Onsite or offsite open space preserve areas may be utilized to satisfy required mitigation for habitat impacts, if the preserve areas are disturbed and suitable for restoration or enhancement, or they are devoid of habitat value and therefore suitable for the 1:1 mitigation component requiring creation or substantial restoration of habitat. Habitat mitigation requirements other than the creation or substantial restoration component may be partially or wholly fulfilled by acquisition of existing like habitat and/or retirement of development credits on existing like habitat with permanent preservation as part of the HMP preserve management plan.

Preserve Management

The HMP as adopted provides that areas that have been placed into open space preserve will be turned over to an appropriate conservation agency with responsibility for the overall HMP preserve system, to be managed in perpetuity for conservation purposes. The City of Carlsbad is currently reviewing a draft form of their proposed long-term management and monitoring plan for their portion of the preserved areas addressed in the HMP.

As approved by the Commission, the long-term management plan was required to address habitat restoration and revegetation, hydrology and flood control, recreation and public access, species reintroduction, enforcement, adaptive management, and monitoring. Section F of the HMP provides a detailed summary of the land management processes and required actions that will take place as part of long-term management.

The preserve management plan must address the mitigation areas to the satisfaction of the City, the wildlife agencies and the Commission, and ensure adequate funding to protect the preserve as open space and maintain the biological values of the mitigation areas in perpetuity. At a minimum, monitoring reports shall be required as a condition of development approval after the first and third year of habitat mitigation efforts. The goal upon the initial certification of the LUP portion of the HMP was to allow no impacts to habitat to occur until management provisions and funding were in place. As certified, the HMP LUP amendment provided that the preserve management plan was required to be incorporated into the Implementation Plan of the LCP through an LCP amendment within one year of Commission certification of the HMP as part of the certified LCP, or 2005. To date, no long term management plan has been provided. However, development pressures have continued, and thus some impacts to habitat have been approved.

HMP Update

To date, the HMP has been operational and the City has been issuing HMP permits since 2004. Approximately 5,960 acres out of the targeted 6,478 acres of natural habitat have been preserved within the HMP planning area and all but 43 acres of land have been acquired to fulfill the Core Area requirements (high-quality habitat for the California gnatcatcher). It is important to note that of these 5,960 acres, 780 acres are not considered to be adequately preserved in that one or more of the following requirements have not been completed: Property Analysis Report (PAR), non-wasting endowment, preserve management plan, or preserve management agreement.

Currently, the majority of preserved lands in the City of Carlsbad are managed by The Center for Natural Lands Management (CNLM) and the California Department of Fish and Game (CDFG). The City is undergoing negotiations with CNLM for management of City-owned preserves; the PAR and preserve management plan for City-owned preserves are expected to be completed by mid 2008. In the meantime, management on City lands since inception of the HMP includes basic land management, erosion control, and invasive species removal. The first Annual Report (covering from inception through 2007) was completed in spring 2008. This report indicated the most prevalent constraints for the HMP as:

1. Limited resources - Lack of Funding
2. Administrative difficulties - Conservation Easement processing and approval
3. Human-related impacts - Edge effects from surrounding development
4. Monitoring difficulties - Appropriate methods for detecting population trends, and fragmented habitat managed by many entities at different levels of responsibility.

The conclusions of this report indicate that the City feels they are implementing the HMP in a manner that is consistent with the Implementing Agreement and the NCCP Take Authorization/Permits. However, the Implementation Plan as submitted by the City raises several concerns for long-term habitat protection and lack of regulations detailing accountability, enforcement, planning and funding inconsistent with the LCP amendment certifying the HMP.

ADDITIONAL INFORMATION

Further information on the City of Carlsbad LCP Amendment 1-06-A may be obtained from Toni Ross, Coastal Planner, at (619) 767-2370.

PART I. OVERVIEW

A. LCP HISTORY

The City's certified LCP contains six geographic segments as follows: Agua Hedionda, Mello I, Mello II, West Batiquitos Lagoon/Sammis Properties and East Batiquitos Lagoon/Hunt Properties and Village Redevelopment Area. Pursuant to Sections 30170(f) and 30171 of the Public Resources Code, the Coastal Commission prepared and approved two portions of the LCP, the Mello I and II segments in 1980 and 1981, respectively. The Village Redevelopment Area LCP was certified in 1988; the City has been issuing coastal development permits there since that time. The Commission certified the Agua Hedionda Land Use Plan in 1982. The West Batiquitos Lagoon/ Sammis Properties segment was certified in 1985. The East Batiquitos Lagoon/Hunt Properties segment was certified in 1988. On October 21, 1997, the City assumed permit jurisdiction and has been issuing coastal development permits for all of its segments except Agua Hedionda. The Agua Hedionda Lagoon LCP segment remains as a deferred certification area until an implementation plan is certified.

B. STANDARD OF REVIEW

The standard of review for land use plans, or their amendments, is found in Section 30512 of the Coastal Act. This section requires the Commission to certify an LUP or LUP amendment if it finds that it meets the requirements of and conforms with Chapter 3 of the Coastal Act. Specifically, it states:

> Section 30512
>
> (c) The Commission shall certify a land use plan, or any amendments thereto, if it finds that a land use plan meets the requirements of, and is in conformity with, the policies of Chapter 3 (commencing with Section 30200). Except as provided in paragraph (1) of subdivision (a), a decision to certify shall require a majority vote of the appointed membership of the Commission.

Pursuant to Section 30513 of the Coastal Act, the Commission may only reject zoning ordinances or other implementing actions, as well as their amendments, on the grounds that they do not conform with, or are inadequate to carry out, the provisions of the certified land use plan. The Commission shall take action by a majority vote of the Commissioners present.

In those cases when a local government approves implementing ordinances in association with a land use plan amendment and both are submitted to the Commission for certification as part of one LCP amendment, pursuant to Section 13542(c) of the Commission's regulations, the standard of review of the implementing actions shall be the land use plan most recently certified by the Commission. Thus, if the land use plan is conditionally certified subject to local government acceptance of the suggested modifications, the standard of review shall be the conditionally certified land use plan.

C. PUBLIC PARTICIPATION

The City has held Planning Commission and City Council meetings with regard to the subject amendment request. All of those local hearings were duly noticed to the public. Notice of the subject amendment has been distributed to all known interested parties.

PART II. LOCAL COASTAL PROGRAM SUBMITTAL - RESOLUTIONS

Following a public hearing, staff recommends the Commission adopt the following resolutions and findings. The appropriate motion to introduce the resolution and a staff recommendation are provided just prior to each resolution.

III. MOTION: ***I move that the Commission reject the Implementation Program Amendment for the City of Carlsbad as submitted.***

STAFF RECOMMENDATION OF REJECTION:

Staff recommends a **YES** vote. Passage of this motion will result in rejection of Implementation Program Amendment and the adoption of the following resolution and findings. The motion passes only by an affirmative vote of a majority of the Commissioners present.

RESOLUTION TO DENY CERTIFICATION OF THE IMPLEMENTATION PROGRAM AMENDMENT AS SUBMITTED:

The Commission hereby denies certification of the Implementation Program Amendment submitted by the City of Carlsbad and adopts the findings set forth below on grounds that the Implementation Program Amendment as submitted does not meet the requirements of and is not in conformity with the policies of Chapter 3 of the Coastal Act Certification of the Implementation Program Amendment would not meet the requirements of the California Environmental Quality Act as there are feasible alternatives and mitigation measures that would substantially lessen the significant adverse impacts on the environment that will result from certification of the Implementation Program Amendment as submitted

PART III. FINDINGS FOR REJECTION OF THE CITY OF CARLSBAD IMPLEMENTATION PLAN AMENDMENT 1-06A, AS SUBMITTED

A. AMENDMENT DESCRIPTION

The City of Carlsbad, consistent with the Endangered Species Act, developed a Habitat Management Plan to provide a comprehensive, citywide program to preserve the diversity of habitat and protect biological resources while allowing for additional development within the City. The HMP was submitted to the Coastal Commission as a land use plan amendment and was approved in 2003. As a component of this approval, it was understood that the implementation plan for the HMP would be submitted to the Coastal Commission within 3 years of the land use plan amendment. The subject implementation plan amendment is intended to fulfill this requirement. There are four components to the City's proposed LCP amendment. First is a new chapter (21.210) of the certified zoning ordinance specifically addressing standards and procedures for habitat preservation and management as well as preserve enforcement. Various components include definitions, preserve requirements, management and maintenance requirements, necessary permits and enforcement. The second includes revisions to the Open Space zoning ordinance (21.33) to establish permitted uses on HMP preserved lands. The third and fourth components are analogous revisions to the Hillside Development Regulations and the Coastal Resources Overlay Zone allowing for modifications to some coastal development standards for HMP compliance (i.e. grading on slopes greater than 25%).

B. SUMMARY FINDINGS FOR REJECTION

The amendment request, as submitted, will detail the entire implementation of the HMP, an LUP amendment that was approved based on a conflict resolution determination of the Commission. Therefore, the Implementation Plan must include adequate detail to ensure the protection of ESHA and preserved habitat in perpetuity. As submitted, much of the necessary detail has not been finalized. Six primary concerns are raised based on the City's submittal. First, the amendment does not include a final preserve management plan for City owned properties detailing how preserved lands will be maintained, including adequate funding, monitoring, enforcement measures, and reporting. Without such detail, it is not possible for the Commission to determine whether the IP will adequately protect ESHA, consistent with the policies of the certified LUP. Further, it is unclear how the City proposes to develop a Preserve Management Plan that will not only address City property HMP preserve, but also the large-scale management of the lands managed by the wildlife agencies and or privately owned.

Second, the overarching intent, and the primary concern, of the proposed amendment appears to be to provide a method for individual developments to obtain an HMP permit, but it fails to address how the large scale function of the preserved lands will be protected over time. Commission review of the implementation measures seems to be excluded and; frequently, information that is necessary to determine the amendment’s consistency with the certified LUP has not been completed.

Third, the amendment does not adequately integrate, or implement, the LUP policies approved by the Commission to specifically address protection and preservation of ESHA located in the Coastal Zone. The language of the amendment does not clearly explain that when lands are proposed for development and located within the Coastal Zone, additional measures will be required to sufficiently protect such habitat. Fourth, the proposed amendment also fails to include review by the Commission for all changes made to the HMP, as such, the Commission is not able to review proposed changes and will not be given the opportunity to determine whether the proposed changes would require an LCP amendment. Many such revisions could likely be handled as de minimis or minor LCP amendments but the Commission's oversight responsibility has to be recognized.

Fifth, the City has only included by reference, but has not presented to the Commission for inclusion in the IP, the guidelines that must be developed to help both City planners and applicants determine how to best design development and preserve habitat in HMP areas and how to prepare biological reporting components as part of the management plan.

Sixth, although annual reporting is a requirement of the HMP Land Use Plan, the required contents of this Annual Report are not included in the IP. Items such as an "on ground" inventory of habitat were included in the First Annual Report; however, there are no assurances in the IP that this will continue to be a required component of annual monitoring reports. These reports are a critical component of any preserve management plan as they provide the data to analyze whether habitat values are decreasing or changing over time, which is the primary method for the City and the Commission to ensure that the HMP is being implemented successfully and that ESHA is being adequately protected, as required in the LUP. If the basic monitoring requirements are not included in the IP, the City may modify the components of these annual reports in such a way that they no longer constitute an effective measure of the success of the implementation of the HMP. Thus, the Commission cannot find the proposed IP adequate to implement the policies of the LUP in the absence of defined parameters for annual monitoring reports that will allow the City and the Commission to assess whether the policies of the LUP are being carried out.

Smaller scale concerns with this submittal include its inclusion of inadequate definitions of Open Space and that it does not adequately address development allowances on highly constrained lots. The result is confusion as to what types of development are allowed within HMP Open Space, and whether small-scale impacts/development are allowed within the required preserve areas or must be considered within the development footprint.

In conclusion, the proposed amendment represents a process to issue HMP permits, but it fails to address how the intent of the HMP will be implemented by the City. The scope of material not included in the proposed amendment is so expansive, that necessary information cannot be developed through suggested modifications and, as such, denial of the proposed amendment, without suggested modifications, is necessary.

B. SPECIFIC FINDINGS FOR REJECTION

The standard of review for LCP implementation submittals or amendments is their consistency with and ability to carry out the provisions of the certified LUP.

a) Purpose and Intent of the Ordinance. Included in the City's submittal are four modifications to the existing ordinances. Each one is discussed separately below.

1) New Ordinance 21.210 (HMP Preservation and Management Requirements). The purposes and intent of this chapter are:

A) Implement the goals and objectives of the land use and the open space/conservation elements of the city's general plan;
B) Implement the city's habitat management plan;
C) Preserve the diversity of natural habitat in the city and protect the rare and unique biological resources located within those habitats;
D) Assure that all development projects comply with the habitat preserve and conservation standards contained in the habitat management plan;
E) Provide a process for permitting limited, incidental impacts to occur to natural habitat areas and the species located therein; and
F) Provide a process for allowing exemptions from the habitat preserve and conservation standards under limited, specific circumstances.

2) Modified Ordinance 21.33 (Open Space Zone). The purpose and intent of this chapter are to provide for, regulate, and define open space and recreational uses.

3) Modified Ordinance 21.95 (Hillside Development Regulations). The intent of this Chapter is to regulate and create design standards for development on steep hillsides.

4) Modified Ordinance 21.203 (Resource Protection Overlay Zone). The intent of this Chapter is to regulate and create design standards for development within the Coastal Zone.

b) Major Provisions of the Ordinance.

1) New Ordinance 21.210 (HMP Preservation and Management Requirements). The Chapter outlines the entire HMP permit process and regulations required when development is proposed within the HMP preserve. The Chapter includes habitat *preservation* requirements (associated with development.), habitat *management* requirements (after development), HMP permitting process (prior to development), Amendments to HMP Permit and enforcement within the preserved open space areas.

2) Modified Ordinance 21.33 (Open Space Zone). The Chapter designates high priority resource areas and regulates allowable uses within areas zoned as open space. As modified, this chapter would further regulate allowable uses with Open Space zoning within the HMP preserve areas.

3) Modified Ordinance 21.95 (Hillside Development Regulations). The Chapter currently prohibits development on hillsides with a slope greater than 25% that contains natural vegetation. As amended, some development would be permissible on such hillsides for areas within the HMP provided development on the steep slopes would result in greater habitat preservation.

4) Modified Ordinance 21.203 (Resource Protection Overlay Zone). The Chapter outlines restrictions and guidelines for areas within the Coastal Resource Overlay Zone. Currently, grading/development of slopes greater than 25% and containing natural habitat is prohibited. As modified herein, the policy would allow for development on these steep slopes if the project is within the HMP area and the development on the slopes would result in greater habitat protection.

c) Adequacy of the Ordinance to Implement the Certified LUP Segments.

1) New Ordinance 21.210 (HMP Preservation and Management Requirements).

This Chapter regulates virtually all facets of the implementation of the HMP and the process for HMP permit issuance in general. The Commission approved the changes to the City's LUP to incorporate the HMP and thus allow development with ESHA based on the Coastal Act's provision for conflict resolution because the LUP as certified provided greater protection of ESHA in the region than would be provided if the status quo remained. In order to find the LUP consistent with the Coastal Act, the Commission required that numerous items be included in the Implementation Plan to ensure protection of the preserved habitat in perpetuity. The City's submittal does not include many of these requirements and as such the proposed amendment is not consistent with the requirements detailed within the City's LCP Amendment incorporating the HMP into its LCP.

HMP Preservation and Management Requirements

It was understood when the HMP was first certified that implementation of the HMP and MHCP would result in some loss of native habitat and listed species throughout the region, inconsistent with Section 30240 of the Coastal Act. However, prior to the HMP, the City's LCP did not protect any native habitat on slopes less than 25% grade and therefore the HMP represented a significant improvement over existing requirements. Additionally, greater benefit would be obtained from preserving large contiguous areas of the most environmentally sensitive vegetation and wildlife areas rather than preserving all fragmented pieces of habitat in place. Further, the approved mitigation requirements assured that there would be no net loss of ESHA within the coastal zone. However, in order to find the Habitat Management Plan consistent with the Coastal Act, the Commission had to find that the approval of the HMP represented the most protective option for coastal resources.

The finding that approval of the HMP is the most protective option for coastal resources was based on the understanding that the habitat mitigation would be implemented as approved, and properly maintained in perpetuity. The Commission, therefore; required the City to develop a detailed implementation plan including various necessary components such as appropriate funding, a preserve management plan, enforcement, guidelines for biological reports, and an update to their open space zoning restricting uses that would preserve habitat, all to be included in their implementation plan submittal.

In approving the HMP as an LUP amendment, one of the Commission's primary concerns was that it be implemented in such a way as to ensure adequate management and maintenance of mitigation areas, otherwise the long term benefits of the HMP for coastal resources would not be realized, and the LUP would therefore not be consistent with the Chapter 3 policies of the Coastal Act. To address the Commission's concerns, the City included LUP policies addressing the establishment of the preserve area, funding, monitoring and management. Interim preserve management requirements, as provided in the HMP, were meant to cover the first three years following approval of the HMP, during which a permanent plan for management was to be developed by the City in cooperation with existing reserve managers, private owners, and the wildlife agencies. This preserve management plan was to be approved by the City, the wildlife agencies, and the Commission and was to ensure adequate funding to protect the preserve as open space and maintain the biological values of the mitigation areas in perpetuity. Additionally, the preserve management plan was required to be incorporated into the Implementation Plan through an LCP amendment within one year of Commission certification of the HMP as part of the certified LCP. The Commission has not received the final nor a draft of the preserve management plan. The City is expecting completion of this plan by late-2008. The management plan is a critical component of the IP, however, so without inclusion of this plan in this IP amendment, the new and/or modified zoning language cannot be found to adequately implement the certified LUP.

This preserve management plan will determine how all preserve areas in the HMP will be protected in perpetuity. The plan must allow for changes over time, and ensure that funding and enforcement will always be available to ensure that the habitat will continue to function in its natural form (i.e. free from invasive species, human impacts, edge effects, etc.). This plan is an invaluable component for the protection of the preserved habitat; without such a plan, the HMP preserve areas could end up as nothing more than "paper preserves", in that no real "on the ground" efforts may be made for the protection of these resources. As submitted by the City, the IP amendment contains no parameters for what this plan may contain and whether it will be adequate to implement the LUP. As stated previously, this kind of information was deemed essential by the Commission during the certification of the HMP LUP amendment. While the Commission's ecologist is prepared to outline the kinds of tasks and standards that need to be included in such a plan, determining the proper specifics and language details is more appropriately the responsibility of the City. The Commission does not have sufficient information at this time to draft suggested modifications that would adequately address the deficiencies of the submitted IP, as identified above.

One of the items the City has suggested it would include in its permanent Preserve Management and Monitoring Plan is a detailed baseline inventory of the existing habitat. The City is currently surveying the preserve land to create this baseline inventory. Prior to this current effort, large scale vegetation types were determined, however, the need for a detailed and precise habitat inventory is considered critical by both the City and Commission staff. Without a determination of the existing habitat value, goals for restoration, habitat types, and long term management cannot be completed.

An additional item that must be included in the management plan is a description of the standards to be used to monitor individual sites and compare them to the preserve system in general. Additional monitoring would need to be developed for the surveying of any protected species on the various individual sites. Without these standards, it would be virtually impossible to compare data throughout the City. Without this data comparison, it would again be virtually impossible to quantify the value of the entire preserve system, or a method to track changes in habitat both at individual sites and in the entire preserve system over time.

Another crucial component necessary to achieve a viable preserve system is a comprehensive enforcement plan. Issues such as fire management and access control to limit illicit trash disposal, poaching and encampments would need to be addressed by an enforcement plan. Further, items such as budgeting for patrolling and enforcement personnel would need to be determined. Additionally, methods to prevent resource damage such as fencing, signage, and public outreach would need to be included in this enforcement plan. Again, the City has stated that an enforcement plan is currently being developed; however, without the ability to review this document, the Commission cannot determine whether the submitted amendment is consistent with the certified LUP. Additionally, adequate funding to implement the final preserve management plan has not been secured. Without funding, the essential functioning of the system cannot be maintained.

Development since certification of the HMP

Since HMP approval, several developments within the hardline and standards areas have been approved for development. Many of these also required an LCP amendment for modifications to land use and zoning designations at the proposed sites. These LCP amendments were approved by the Commission based on the assumption that the requirements for implementation included in the certification of the HMP were forthcoming. The most important of these upcoming IP amendments were the updated zoning language, details for the long-term management of the HMP preserve, including funding, monitoring and enforcement, and an approved conservation easement document. Of these, only the updated Open Space Zone language was submitted to the Commission as part of this IP amendment. The City contends that the specifics of monitoring, management, enforcement, etc. were not something they wanted to include in the implementation plan, as these types of restrictions/requirements will change over time. The City therefore simply made a reference to these guidelines in Section 21.210.19 of its submittal, but it did not include a copy of the guidelines themselves for review and approval of the Commission. To date, staff has not received any of these guidelines; and,

as such, it is not possible for it to assess the amendment's consistency with the certified LUP. The Commission cannot find the City's IP adequate to protect all sensitive habitat and wildlife in perpetuity and therefore sufficient to implement the certified LUP without being able to review the guidelines that will be used to govern monitoring, management and enforcement in the preserve areas. Furthermore, upon review of the proposed guidelines, the Commission may isolate certain critical components that must be included in the IP to ensure adequate implementation of the HMP and thus the LCP. Without the opportunity to review these guidelines, or request inclusion of crucial components of the guidelines into the certified IP, consistency with the LUP cannot be determined and the proposed amendment must be denied.

Additionally, other smaller scale concerns have been raised with the implementation plan as submitted. These are discussed briefly below. As previously stated, many of these concerns can be addressed by suggested modifications; however, given the information remaining that would need to be submitted by the City before consistency with the LUP can be determined, it is not useful to suggest modifications at this time to address these more minor concerns.

Annual Reporting

The City was required to complete annual reports documenting the progress of the HMP preserve system and to assure that the City was complying with the requirements of the HMP. The Commission approved the LUP amendment certifying the HMP and the annual monitoring requirement in 2003. Commission staff received the first HMP Annual Report on June 5, 2008. The City acknowledges that the report was significantly delayed, and explains that this delay was approved by the wildlife agencies. The Commission was never consulted regarding this delay. The proposed IP amendment includes no penalties for not submitting required reports or incentives to ensure that it is submitted on a timely basis in the future. Given the Commission's limited resources, enforcing the reporting requirements should be a matter addressed by the City. As stated above, these annual reports will provide the Commission the opportunity to ascertain whether the long term benefits of the HMP for coastal resources are being realized or not. Without the strict completion of these annual reports, the viability of the HMP cannot be appropriately addressed and therefore is inconsistent with the certified Land Use Plan.

Finding Appropriate Mitigation Sites

Since the certification of the HMP, the Commission has processed several project based LCP amendments permitting the land use and zoning changes to allow for development within the HMP and coastal zone. Many of these sites have chosen to provide a portion of their mitigation offsite. The Commission can review the LCP amendment for consistency with the City's Land Use Plan and the Coastal Act, however, determining what defines high-quality mitigation is often beyond the scope of what many consider a mapping change, which is primarily how these LCP Amendments have been presented to the Commission. Further, if presented as an LCP amendment, quite often the Commission does not review that item until the proposal has gone through the entire process of HMP permitting through the City. As such, modifications, such as the

location of offsite mitigation would need to be addressed in the initial as opposed to the final permitting phase. Those the City would need to develop language, or a process by which appropriate mitigation sites are identified *prior to* approval. Some of the projects reviewed for land use and/or zoning changes by the Commission (LCPA 2-06B La Costa Village) did not have the mitigation identified or others requested the City allow a "modified mitigation requirement." As written in the HMP, there is to be no net loss of ESHA within the coastal zone. In order to imlpement this policy, the City included language in the certified HMP requiring that, to the extent practicable, impacts that occur in the coastal zone were to be mitigated within the coastal zone. Some of the projects approved identified mitigation locations outside the coastal zone, or partially outside the coastal zone. Many applicants contend that coastal mitigation sites are not available. While this may be the case, mitigation outside of the coastal zone does not comply with the "no net loss" policy protecting ESHA in the coastal zone. The City needs to require that applicant's exhaust all possible mitigation sites located in the coastal zone before outside mitigation is allowed. The process needs to ensure that coastal zone mitigation sites are fully evaluated before a less desirable option is approved. Currently, both the City and previous applicants have suggested there is simply no available site offering mitigation in the coastal zone. Given that the Commission approved a plan that would assure no net loss of habitat in the coastal zone, however, and that this policy is not being adequately implemented under the current IP and the proposed IP does not address this deficiency, the Commission cannot find that the implementation plan as submitted is consistent with the certified land use plan. If it is not possible to adequately implement this policy, then the City should submit an LUP amendment to change the policy.

Protection of Wetlands

One of the most valuable habitats protected within the coastal zone is wetlands. The HMP as certified by the Commission assured that there would be no net loss of wetlands in the coastal zone. It was indicated in the HMP that wetlands would need to be identified on any standards area to appropriately protect, buffer, and mitigate for any construction related impacts. An integral part of this effort would be to assure that wetlands are being correctly identified. The Commission has historically required a specific method to determine areas on a project site that are functioning as wetlands. Other agencies have various methods of their own. To ensure that wetlands are protected in the coastal zone, as defined by the Commission, applicants/agents need to be aware of what definition the City will accept. As submitted, there is no definition of what constitutes a wetland (i.e. ponding of water, hydric soils, indicator species) and it may not be clear to the applicant or their chosen agent what definition would be most appropriate in order to correctly identify the presence of all wetland habitats within the coastal zone. The City states that due to changes in science over time, they would prefer that level of detail be determined in "guidelines" so that every modification would not require an LCP amendment. However, as stated previously, the Commission has yet to receive any of the proposed guidelines; and, as such, it is impossible for the Commission to determine if wetlands will be adequately identified, let alone adequately protected. As such, the amendment as submitted is inconsistent with the certified LUP.

Equivalency Findings / Consistency Determination

The City has a certified process by which to make minor modifications to proposed hardline preserve areas or other HMP maps which do not reduce the acreage or quality of habitat. These modifications require administrative level review and consultation with the wildlife agencies; currently the Commission is not given the opportunity to review these "minor amendments." Since the certification of the HMP, LCP amendments have included these equivalency findings in the biological report, or the City's staff report, however, these amendments often raise concerns during Commission review. The processing of these project driven LCP amendments within the HMP area would be streamlined if the Commission were provided the opportunity to comment on minor modifications at the same time the wildlife agencies are reviewing the project, rather than at the end of the process when all other components of a project (aside from LCPA) have been finalized. It is only with this modification that the Commission can be certain that minor changes made to habitat preserve boundaries are at least reviewed by Commission staff to determine consistency with the certified LCP. Furthermore, if upon review, the Commission determines that the modifications will not result in the most protective project design, or the modifications are too significant to process through an administrative review, the Commission would need to be given the opportunity to determine that either the modifications are too substantive or the changes do not result in a better development envelope/protected preserve area, and an LCP amendment would be required. It is only with this oversight, that the Commission can find the implementation plan consistent with the intent of the certified LUP.

Highly Constrained Sites

Due to the real estate value for property near the coast, many of the remaining undeveloped HMP properties are highly constrained sites (greater than 80% ESHA coverage). The LUP requires that these highly constrained sites have a conservation minimum of 75%, thus a development envelope of 25% maximum. As specific projects have been reviewed by Commission staff by way of an LCP amendment, with development proposed on these highly constrained sites, it has become clear that what can be included in the development envelope is not fully defined. Often times grading, or brush management, development of retaining walls, etc. is not being considered by the City as a component of development. However, these sorts of activities are development that should not be included in a portion of the 75% conservation area. The City has yet to determine how exactly buffers, grading, fuel modification and minor ancillary developments are calculated in highly constrained sites, ensuring that the 75% conservation *minimum* is ensured. Without these determinations of what constitutes development that must be prohibited in the conservation areas, a project can be developed that includes a building *size* of 25% of the lot, with all other discussed types of uses/impacts occurring in the remaining habitat. This leads to a false indication of the amount and value of the conserved lands within the Coastal Zone. As such, the amendment as proposed cannot be found consistent with the LUP and therefore must be denied.

2) Modified Ordinance 21.33 (Open Space Zone).

The newly developed term "Open Space Preserved in conformance with the Habitat Management Plan" has been included in the existing Open Space Zone. Prior to this distinction, numerous activities were permissible within open space areas, including golf courses, swimming pools, playground equipment, etc. The modification to this chapter further restricts open space within the HMP to uses that are necessary (such as utility easements and fencing). The more general definition of Open Space, which appears earlier in this chapter, is unchanged;, however, it includes no indication that there may be a more restrictive Open Space designation that may apply to certain properties. Given this, and the fact that the new Open Space zone is defined towards the end of the chapter, members of the public may not realize that open space within the HMP has more restrictive requirements than the regular open space zoning. As such, the proposed amendment cannot adequately implement the provisions included in the certified LUP.

As approved by the Commission, the City was required to define and develop appropriate restrictions for Open Space zones parcels within the habitat preserve. The City included in their submittal a new term "Open Space Preserved in conformance with the Habitat Management Plan." All HMP areas will have this type of Open Space designation (aside from those properties processed prior to the certification of the HMP and managed by private entities such as a Homeowners Association. The proposed definition does adequately protect the HMP preserve lands. As submitted by the City, it is unclear that the original provision for open space and the provisions for "Open Space Preserved in conformance with the Habitat Management Plan" *are* mutually exclusive. Members of the public could be unsure what kind of open space they have and therefore what's permissible within their open space area.

Furthermore, in master planned areas, open space lands are designated Planned Community (PC) and are included within individual Master Plans as open space. The City failed to include the "Open Space Preserved in conformance with the Habitat Management Plan" in any of the applicable Master Plan areas (Kelly Ranch, Aviara). As such, a member of the public may not be aware of what are the permissible/non-permissible uses within their Master Plan Area.

3) Modified Ordinance 21.95 (Hillside Development Regulations).

The modifications made to this chapter allow for development on steep slopes in order to better protect the habitat existing onsite. As proposed by the City, a proposed development may encroach onto naturally vegetated steep slopes if the project was designed to protect the best/most sensitive habitat on the project site. For example, if a high quality stand of coastal sage scrub was located on a flat portion of the site, and a low quality stand was located on the steep slope, this modification would allow the development to occur on the slope because the project would be located in the least sensitive portion of the project location, consistent with the HMP.

4) Modified Ordinance 21.203 (Resource Protection Overlay Zone).

The modifications made to this chapter are identical to those in Ordinance 21.95. The new language would accommodate the protection of the most viable or highest priority sensitive resources, thus these revisions may be found consistent with the HMP and the LUP.

In conclusion, there is still a significant amount of information, as discussed above, necessary for the Commission to determine the adequacy of the proposed implementation plan amendment to implement the certified LUP. It is understood that a number of these items are forthcoming and will be designed to adequately implement the goals of the HMP. However, without technical review of these items, neither the preservation of the existing habitat, nor the creation of additional and suitable habitat through mitigation can be guaranteed. Therefore, the amendment is not consistent with the certified LUP and shall be denied.

PART VII. CONSISTENCY WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 21080.5 of the California Environmental Quality Act (CEQA) exempts local government from the requirement of preparing an environmental impact report (EIR) in connection with its local coastal program. The Commission's LCP review and approval program has been found by the Resources Agency to be functionally equivalent to the EIR process. Thus, under CEQA Section 21080.5, the Commission is relieved of the responsibility to prepare an EIR for each LCP.

Nevertheless, the Commission is required in an LCP submittal or, as in this case, an LCP amendment submittal, to find that the LCP, or LCP, as amended, does conform with CEQA provisions. The City of Carlsbad prepared and certified a Mitigated Negative Declaration for the HMP preserve system and included a land use plan amendment in 2003. The Commission found that this EIR and the approved suggested modifications were adequate to find the amendment consistent with Chapter 3 policies of the Coastal Act and the certified LCP. The amendment allowed for the development of some environmentally sensitive areas, but only through the conflict resolution process was the LCP amendment found to provide the greatest feasible protection of sensitive resources by concentration of development and by establishing a comprehensive regional program for habitat mitigation and preservation. The City's implementation plan amendment submittal was intended to detail how the comprehensive program would be developed, funded and enforced. The amendment as submitted by the City lacks critical components necessary to ensure that these goals are met. As such, the Commission finds that the proposed amendment will not serve to adequately implement the approved LUP amendment and thus does not conform to CEQA provisions.

Exhibit 2

RESOLUTION NO. 2006-016

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CARLSBAD, CALIFORNIA, APPROVING A NEGATIVE DECLARATION AND LOCAL COASTAL PROGRAM AMENDMENT FOR THE HABITAT MANAGEMENT PLAN IMPLEMENTATION
CASE NAME: HABITAT MANAGEMENT PLAN IMPLEMENTATION
CASE NO.: ZCA 05-01/LCPA 05-09

WHEREAS, pursuant to the provisions of the Municipal Code, the Planning Commission did, on December 7, 2005, hold a duly noticed public hearing as prescribed by law to consider a Negative Declaration and Local Coastal Program Amendment; and

WHEREAS, the City Council of the City of Carlsbad, on the 7th day of March, 2006, held a duly noticed public hearing to consider said Negative Declaration and Local Coastal Program and at that time received recommendations, objections, protests, comments of all persons interested in or opposed to the Negative Declaration and/or ZCA 05-01/LCPA 05-09; and

NOW, THEREFORE, BE IT HEREBY RESOLVED by the City Council of the City of Carlsbad, California, as follows:

1. That all recitations are true and correct.

2. That the City Council approves ZCA 05-01 and LCPA 05-09 and the findings of the Planning Commission as set forth in Planning Commission Resolutions No. 5994 and 5995, on file with the City Clerk and made a part hereof by reference, are the findings and conditions of the City Council.

3. That the application for a Negative Declaration and Local Coastal Program Amendment for the Habitat Management Plan Implementation Zone Code Amendment is approved as shown in Planning Commission Resolutions No. 5993 and 5994.

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EXHIBIT #1
Resolution of Approval
LCPA #1-06A HMP Implementation Plan
California Coastal Commission

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Carlsbad on the 7th day of March 2006, by the following vote, to wit:

AYES: Council Members Lewis, Hall, Kulchin, Packard, Sigafoose

NOES: None

ABSENT: None

CLAUDE A. LEWIS, Mayor

ATTEST:

LORRAINE M. WOOD, City Clerk

(SEAL)

ORDINANCE NO. **NS-783**

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CARLSBAD, CALIFORNIA AMENDING THE LOCAL COASTAL PROGRAM AND TITLE 21 OF THE MUNICIPAL CODE BY THE ADDITION OF A NEW CHAPTER 21.210 TO THE ZONING ORDINANCE RELATING TO THE REQUIREMENTS, STANDARDS, AND PROCEDURES FOR HABITAT PRESERVATION AND MANAGEMENT IN CONFORMANCE WITH THE CITY'S HABITAT MANAGEMENT PLAN AND BY AMENDING OTHER EXISTING CHAPTERS TO ESTABLISH CONSISTENCY AND IMPLEMENTATION OF THE HABITAT MANAGEMENT PLAN.

CASE NAME: HABITAT MANAGEMENT PLAN IMPLEMENTATION

CASE NO.: ZCA 05-01

The City Council of the City of Carlsbad, California does ordain as follows:

SECTION 1: That Title 21 of the Carlsbad Municipal Code is amended by the addition of a new Chapter 21.210 to read as follows:

Chapter 21.210

Habitat Preservation and Management Requirements

Sections:

21.210.10 Purpose and Intent.

The purposes and intent of this chapter are to:

A. Implement the goals and objectives of the land use and the open space/conservation elements of the Carlsbad general plan;
B. Implement the city's habitat management plan, the Implementing Agreement and conditions, the North County Multiple Habitat Conservation Plan (MHCP), the state's Natural Communities Conservation Plan (NCCP) and 10(a)1(B) permit conditions;
C. Preserve the diversity of natural habitats in the city and protect the rare and unique biological resources located within those habitats;
D. Assure that all development projects comply with the habitat preservation and conservation standards contained in the habitat management plan;
E. Provide a process for permitting limited, incidental impacts to occur to natural habitat areas and the species located therein; and
F. Provide a process for allowing minor amendment from the habitat preservation and conservation standards under limited, specified circumstances.

21.210.11 Definitions.

The following definitions are established:

A. Whenever the following terms are used in this chapter, they shall have the meaning established by this section:

1. "Conditions of Coverage" means the measures to avoid, minimize and mitigate for impacts to habitat and the covered species located therein and the conditions and terms of the approval of the HMP by the wildlife agencies contained in the HMP Implementing Agreement.

2. "Conservation" means to keep protected habitat and the species located therein from loss, decay or depletion and to move the species toward recovery. Conservation also describes all actions related to maintaining and managing habitat and providing a viable habitat preserve system in the city. Conservation and preservation are similar terms and are used in much the same way. Preservation connotes the act of setting aside or securing habitat, whereas conservation is generally more broad and includes activities such as management of the habitat.

3. "Covered Species" means the species for which take authorization is provided because long-term viability has been determined to be adequately maintained under the HMP as identified in lists 1, 2, and 3, Exhibit "A" to the Implementing Agreement. The HMP addresses the species identified as list 1 in a manner sufficient to meet all of the criteria for issuing an incidental take permit. Take authorization for species of lists 2 and 3 is contingent on other MHCP Subarea Plans being permitted and/or funding for enhanced management of preserved areas.

4. "Development Project" means any use of a property, including grading, clearing and grubbing, construction, alteration of any magnitude or activities incidental thereto which requires a discretionary or ministerial permit, entitlement or approval issued under Titles 15, 18, 20 or 21 of the Municipal Code.

5. "Habitat" means the environment or the environmental conditions of a specific location where species or a population of such species lives, occurs or occupies. It includes both natural and native habitat.

6. "Habitat In-Lieu Mitigation Fee" means a per-acre fee charged for impacts to on-site habitat as an alternative to acquiring off-site habitat to mitigate for such impacts.

7. "Habitat Management Plan" means the comprehensive plan which identifies how the city can preserve and conserve the diversity of habitat and protect rare species and biological resources within the city while allowing for additional development consistent with the city's General Plan and its Growth Management Plan. In so doing, the Plan allows the city to issue permits and authorization for the incidental take of rare species in conjunction with private development projects, public projects, and other activities which are consistent with the Plan.

8. "Hardline Preserve Areas" means properties which are already part of or are planned to be part of the HMP habitat preserve system. "Existing" hardline preserve areas are depicted on Figure 5 of the HMP and have already been conserved for their habitat value due to permitting actions occurring in the past before approval of the HMP. "Proposed" hardline preserve areas are properties whose preservation and development areas have been planned as part of the HMP. These areas have been agreed-upon in coordination with the landowners, the City, U.S. Fish and Wildlife Service, and the California Department of Fish and Game. If the area proposed for development and proposed for conservations are in conformance with the HMP, the development will be allowed under the HMP.

9. "HMP" means the Carlsbad Habitat Management Plan (dated December 1999 as amended, final approval November 2004).
10. "HMP Permit" means the permit required when a development project impacts, either directly or indirectly, habitat in the city.
11. "Implementing Agreement" or "IA" means the legal document which defines the roles, responsibilities, activities and conditions that will be undertaken by the city and the wildlife agencies to provide for the preservation, conservation and management of habitat and the species covered under the HMP.
12. "Incidental Take Permit" means the taking of an HMP Covered Species incidental to and not the purpose of carrying out otherwise lawful activities.
13. "Management of Habitat" means all the activities and actions necessary to ensure that the habitat preserve system in the city remains viable and protected for the species that are located there including maintenance, biological monitoring and adequate funding for same.
14. "MHCP" means the Multiple Habitat Conservation Plan, a comprehensive subregional plan which addresses multiple species habitat needs and the preservation of natural vegetation in a 175 square mile area in northwestern San Diego County.
15. "Mitigation" means measures undertaken to diminish or compensate for the negative impacts of a development project or activity on areas of habitat, native vegetation or species located therein including minimizing the impact by feasible avoidance, repairing or restoring the area of impact or compensating for the impact by replacing or providing substitute resources.
16. "Narrow Endemic Species" means native species with restricted geographic distributions, soil affinities and/or habitats, and for purposes of the HMP, species that in addition have important populations within the Plan area, such that substantial loss of these populations or their habitat within the HMP area might jeopardize the continued existence or recovery of that species and therefore special conservation standards are required.
17. "NCCP" means the Natural Community Conservation Planning Act of 1991.
18. "Preserve" means an area set aside and managed for the protection of wildlife and biological resources.
19. "Preservation" means to keep in safety; protect from danger or harm; to keep intact or unimpaired; maintain. Preservation and conservation are similar terms and are used in much the same way. Preservation connotes the act of securing the land and its values, whereas conservation generally is more broad and includes activities such as management of the land and its resources.
20. "Property Analysis Record (PAR)" means a computerized database methodology used to calculate the costs associated with the management, maintenance and monitoring of natural habitat areas.
21. "Standards Areas" means properties whose preservation and development areas have not yet been planned as part of the HMP. Instead, preservation and conservation standards have been developed for these properties which must be complied with when a development project is submitted for the property.
22. "Wildlife Agencies" means the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

21.210.12 Applicability

A. All development projects and fuel modification activities in the City shall comply with the habitat preservation and conservation standards contained in the City's Habitat Management Plan (HMP) as well as the Implementing Agreement, Permit conditions. the

MHCP, the NCCP and 10(a)1(B) permit conditions, and the requirements contained in this chapter. All requirements of the HMP are incorporated herein by reference.

B. No grading of habitat in the City, including clearing and grubbing, shall occur pursuant to Title 15 of the Municipal Code until all the processing and permitting requirements of this chapter are fulfilled.

21.210.13 Habitat Preservation Requirements.

The provisions of this section shall apply to all development projects as follows:

A. Hardline Preserve Areas. Properties or areas of the City identified in the HMP as existing hardline preserve areas are shown on Figure 5 of the HMP. Properties or areas of the City identified in the HMP as proposed hardline preserve areas are shown on Figures 8 through 25 and 34 through 40 of the HMP. These areas shall be prohibited from development located in or encroaching into the hardline preserve area. Minor modifications to the boundaries of the proposed hardline preserve area shall only be allowed if approved as an equivalency finding pursuant to Section 21.210.18 of this chapter. Incidental take of covered species and direct impacts to habitat shall only occur outside the boundaries of the hardline preserve areas. Hardline preserve areas are to be designated as biological open space and preserved in such designation in perpetuity.

B. Standards Areas. Properties or areas of the city identified in the HMP as standards areas (HMP Figure 26) shall comply with all the habitat preservation standards contained in Section D.3(C) of the HMP which are incorporated by reference. Incidental take of covered species and direct impacts to habitat shall not be permitted in these areas until a development project is approved which complies with the standards and provides any land to the habitat preserve areas as required by the standards.

C. Additional mitigation. In addition to setting-aside land for the preserve area, all impacts to habitat and covered species shall be mitigated as follows:

   a. All development projects which impact habitat shall provide on-site or off-site replacement habitat in accordance with the mitigation ratios contained in Table 11 in Section D.6 of the HMP. Preference shall be given for on-site mitigation unless off-site mitigation provides for improved quality or configuration of open space. Replacement habitat shall be identified as part of the approval of the development project.

   b. Larger, connected areas of habitat that is not impacted by development or brush management and preserved on-site within the boundaries of the property where the project is located shall be credited toward the mitigation ratios.

   c. If at least 67% of the habitat on the property where the development project is located is preserved, the project shall not be required to obtain off-site mitigation land in compliance with the mitigation ratios except if: 1) the project would otherwise be inconsistent with the HMP, IA, MHCP, and NCCP and 10(a)1(B) permits; 2) the proposed on-site preservation would reduce the City's ability to meet the specific habitat conservation obligations in the HMP; and /or 3) the areas to be preserved on site would not benefit the City's preserve system (e.g., habitat exists in a small, isolated patch or patches outside of the Focus Planning Area, and containing no Narrow Endemic species).

   d. Mitigation of impacts through habitat restoration or habitat creation shall be allowed in limited circumstances and shall be mitigated at a higher ratio as determined by the City in consultation with the wildlife agencies.

D. Additional conditions. In addition to the requirements, standards and conditions contained in A, B and C of this Section, the following additional conditions of coverage shall apply to all development projects. These conditions are intended to reference existing requirements and conditions contained in the HMP, IA, MHCP, and NCCP and 10(a)1(B) permit conditions; the conditions listed below are not intended to add

additional requirements or conditions above those contained in the HMP, IA, MHCP, and NCCP and 10(a)1(B) permit conditions:

1. Impacts to Narrow Endemic Species shall be avoided to the maximum extent practicable in conformance with the Narrow Endemic Species Policy contained in the MHCP and incorporated herein by reference, however where impacts to a Narrow Endemic Species population are demonstrated to be unavoidable, impacts shall be limited to 5% of the total Narrow Endemic Species population within the boundaries of the property where the development project is located. Relocation of the Narrow Endemic Species cannot be used to meet the 5% numeric standard.
2. Grading for a development project during wildlife breeding seasons shall be prohibited, except as provided by the HMP and MHCP, unless a minor adjustment is specifically approved by the city and the wildlife agencies.
3. All development projects shall be located and designed to minimize overall impacts to natural habitat.
4. All fuel modification (brush management) zones required as a result of the development project, and as required by the Fire Marshal, shall be located outside the preserve areas, shall be considered impacted and shall be mitigated according to C of this section.
5. Impacts to wetland and riparian habitats shall be avoided to the maximum extent possible. All development projects that would affect these habitats must demonstrate that the impacts: 1) cannot be avoided by a feasible alternative, 2) have been minimized to the maximum extent practicable, 3) mitigated at a minimum 3:1 ratio and 4) will be mitigated in ways that assure no net loss of habitat value or function.
6. Impacts to vernal pools shall be avoided. In the event that no project alternative is feasible that avoids all impacts on a particular property, the impacts must be minimized and mitigated to achieve a no net loss of biological functions and values through strict adherence to the Wetland Avoidance and Mitigation Criteria (Section 3.6.1 of MHCP Volume I), Standard Best Management Practices (MHCP Appendix B), and Revegetation Guidelines (MHCP Appendix C).
7. In the standards areas, 67% of coastal sage scrub and 75% of the gnatcatchers located in the area shall be preserved. Some areas may preserve more or less than these percentages due to parcel size, location, resources, or long term conservation potential as approved by the City and the Wildlife Agencies.
8. All development projects shall comply with the applicable standards of the MHCP (dated March 2003) and the measures to minimize impacts to covered species described in Section D.6, Table 9 and Appendix C of the HMP.
9. All development projects located in the coastal zone shall also be required to comply with the additional, general conservation standards contained in Section D.7, Standards 7-1 through 7-12 of the HMP and the additional, parcel-specific conservation standards contained in Section D.7, Standards 7-13 and 7-14 of the HMP as incorporated into the Local Coastal Program.

E. Habitat in-lieu mitigation fee. Development projects which are subject to additional mitigation pursuant to Subsection C of this section and which impact habitat types D, E and F listed in Table 11 of the HMP shall pay a fee in an amount to be determined by City Council resolution, in–lieu of providing on-site or off-site mitigation land. The fee shall be used to fund the acquisition of habitat land in the MHCP as required by the HMP and Implementing Agreement. The fee shall be adjusted as necessary to acquire suitable habitat on a per acre basis comparable to the land being developed.

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21.210.14 Habitat Management Requirements.

All development projects shall be required to provide for the permanent management, maintenance and biological monitoring in perpetuity of all on site and off site mitigation land and all habitat preserve areas within the boundaries of the property in which the project is located according to the provisions of this section:

A. Standard of management. All preserve areas shall be managed, maintained and monitored according to the standards contained in Section F.2 of the HMP, Volume 2 and 3 of the MHCP and the Citywide Open Space Management Plan.

B. Funding of management. Based upon the management plan required by Subsection B of this Section, the developer shall provide a non-wasting endowment or other secure financial mechanism acceptable to the Planning Director to the identified conservation entity in an amount sufficient for management, maintenance and monitoring of the preserve areas and mitigation land in perpetuity. The endowment will be tied to the preserved land for which it is provided and will be held by the City or a third-party financial entity approved by the City with demonstrated success in managing endowments. Only the interest accrued from the endowment shall be paid to the property manager.

C. Conservation easement required. A conservation easement shall be placed on all preserve areas to ensure the area will be preserved in perpetuity, managed and maintained for its biological value and to prevent uses which will impair or interfere with the conservation of the area. At a minimum, the required conservation easement shall include the following:

   i. Identification of grantee, underlying land ownership, and third party beneficiaries including the City and the Wildlife Agencies.
   ii. Permitted and prohibited uses.
   iii. Grantor's duties and responsibilities as per the preserve management plan, which may be amended from time to time.
   iv. Enforcement provisions.

D. Preserve Management Plan. Prior to recordation of a final map (if applicable) or prior to issuance of a grading permit, the developer shall be required to submit a plan to identify how the preserve areas and mitigation land will be managed and maintained for the first year after the areas are set-aside for preservation. The plan shall include the costs for managing and monitoring the areas in perpetuity and shall identify a conservation entity, subject to approval by the Planning Director, to serve as preserve manager and who possesses the necessary biological qualifications and experience to manage and monitor the preserve areas in perpetuity. The plan shall be based on the results of a Property Analysis Record (PAR) or other method acceptable to the Planning Director. The plan shall commit the preserve manager to prepare a permanent Preserve Management Plan and annual work plans and shall give the city the right to enforce the preparation and execution of the plans. The plan shall be approved by the Planning Director. The preserve management plan shall include the following:

   i. An overall vision of the preserve area, its role in the Citywide preserve system and its regional relationship.
   ii. The baseline biological conditions as identified in field surveys of the property not more than one-year old including an identification of the covered species that occur or have the potential to occur in the preserve area and the known or expected threats to the biological value of the area.
   iii. Identification of resource management goals and specific conservation objectives based on the vision for the preserve area and baseline biological conditions.
   iv. Area-specific management directives based on the resource goals and conservation objectives.

v. A description of preserve-level and subregional monitoring activities which shall be consistent with the HMP and MHCP Volume I and II.

Appendix D of the citywide Open Space Management Plan contains an outline of the required format for preserve management plans.

E. Annual work plan. Each year, the Preserve Manager shall be obligated to submit to the Planning Department an annual work plan for each preserve area. The work plan shall identify specific problems and how they will be addressed, the planned monitoring and management actions for the year and include a prioritization of specific management needs and area-specific management directives.

21.210.15 Permits Required.

A. Impacts to habitat and covered species shall not occur in the city until the permits required by this chapter have been approved. The permits required by this chapter shall be processed concurrently with any other development permits required by Titles 15, 18, 20 and 21 of the Municipal Code.

21.210.16 HMP Permit.

An HMP permit shall be required for any development project which directly or indirectly impacts natural habitat in accordance with the procedures set forth in this section.

A. Application requirements. An application for an HMP permit may be made by the record owner or owners of the property affected by the development project or the authorized agent of the owner or owners. The application shall be filed with the Planning Director upon application forms provided by the Planning Director. At the time of filing the application, the applicant shall pay a processing fee in an amount specified by City Council resolution. The application shall be accompanied by a biological report, which allows for detailed review to determine compliance with this chapter. The biological report shall include the following:

1. A biological survey prepared by a biologist which identifies the location and quantifies all habitat and vegetation on the property (or any offsite work area). The survey shall also identify any covered species, the location of any offsite wetland, riparian habitat, oak woodland, nesting raptors or narrow endemic species located within 100 feet of the property. If the biological survey is conducted outside the acceptable time of year for identifying narrow endemic species, but the biologist identifies that narrow endemic species could be present on the property, then surveys for narrow endemic species must be conducted during acceptable time of year in accordance with wildlife agencies protocols if such protocols exist. The processing of the HMP permit application will be held in abeyance until the applicant submits subsequent surveys conducted during the acceptable time of the year.
2. For projects located in a proposed hardline area, a map shall be submitted showing the precise boundary of the proposed development area and the proposed preserve area consistent with the proposed hardline preserve area figures contained in the HMP.
3. For projects located in the standards areas, an analysis shall be submitted which exactly and clearly identifies how the project complies with the standards and conditions contained in the HMP and MHCP, IA, any applicable permit conditions in the NCCP and 10(a)1(B) permits, the hardline preserve boundaries which would result from compliance with the standards and how the project is being located on the least biologically sensitive portion of the property.

4. For projects which impact narrow endemic species, the following information shall be provided:
   a. A graphic depiction of all narrow endemic species located on the property where the development project is located;
   b. A written biological description of the status of the narrow endemic species;
   c. Quantification of both preservation of narrow endemic species and impacts to narrow endemic species associated with the project including direct and indirect effects on an area and individual plant basis;
   d. A written report of the feasibility or infeasibility of total avoidance of narrow endemic species population(s);
   e. A written description of project design features that reduce indirect effects such as edge treatments, landscaping, elevation differences, minimization and/or compensation through restoration or enhancement and consistently with the MHCP adjacency standards.
5. For projects which impact wetlands, the following information shall be provided:
   a. A graphic depiction of all wetlands located on the property where the development project is located;
   b. A written biological description of the status of the wetlands;
   c. Quantification of proposed impacts to wetlands associated with the project;
   d. Written analysis of the inability to avoid impacts to wetlands;
   e. Written description of project design features that minimize impacts to wetlands including buffers as described in Section 7-11 of the HMP.
6. An analysis of how the development project complies with the additional preservation conditions contained in Section 21.210.13(D) of this chapter.
7. A description of proposed additional mitigation consistent with Section 21.210.13(C and E) of this chapter.
8. Any other information, data or analysis deemed necessary by the Planning Director.

B. Review process. An application for a HMP permit or HMP permit amendment shall be processed and approved concurrently with any other development permits required by Titles 11, 15, 18, 20 and 21 of this code. The same decision-making body or official which has the authority to finally approve, conditionally approve or deny the other development permits required for the project shall have the authority to finally approve, conditionally approve or deny a HMP permit. Amendments to HMP permits shall be acted on by the same decision-making body that approved the original HMP permit and any subsequent HMP permit amendments. The decision of the decision-making body or official is final and effective ten calendar days after the adoption of the resolution or written decision, unless within such ten-day period the applicant or any other interested person files a written appeal utilizing the same appeal procedure applicable to the other permits which are processed concurrently with the HMP permit. If no other discretionary permits are being processed concurrently with the HMP permit, then the appeal procedures contained in Chapter 21.54, Sections 21.54.140 and 21.54.150 of this Title shall apply.

C. Incidental take permit. If a development project impacts an HMP covered species and an incidental take permit is required under the authority of the citywide incidental take permit issued for the HMP, the Planning Director shall have the authority to issue the take permit as long as an HMP permit has been approved for the project by the appropriate decision-making body or official pursuant to Subsections A and B of this section.

D. Required findings. No HMP permit shall be approved unless the decision-making body or official finds that:
   1. The development project complies with the purpose and intent provisions of Section 21.210.10 of this chapter.

2. The proposed development is in compliance with all provisions of the Carlsbad Habitat Management Plan (HMP), the Implementing Agreement, the Multiple Habitat Conservation Plan (MHCP), the Natural Community Conservation Plan (NCCP) and 10(a)1(B) permit conditions, the preservation requirements set forth in Section 21.210.13 of this chapter and the management requirements set forth in Section 21.210.14 of this chapter.
3. The project design as approved by the city has avoided and minimized impacts to habitat and covered species to the maximum extent feasible.
4. If applicable, the take of covered species is consistent with the Citywide incidental take permit issued for the HMP, will be incidental to otherwise lawful activities related to construction and operation of the project and will not appreciably reduce the likelihood of survival and recovery of the species.

21.210.17 Habitat Management Plan Amendment.

Certain HMP implementation actions will require an amendment to the HMP as follows:

A. Minor amendments.

1. Equivalency findings. Minor changes to the boundary of a proposed hardline preserve areas or other HMP maps which do not reduce the acreage or quality of habitat are considered minor amendments to the HMP and can be approved by the City with equivalency findings. The city shall provide written notice of the equivalency findings to the wildlife agencies, and unless the agencies object within 30 days of notification, the change will be considered automatically approved. If objections are raised, the City will meet with the agencies to resolve the objection and written approval of the change from the Agencies will be required.
2. Consistency findings. The conversion of standards areas to hardline preserve areas and the processing of certain City projects not shown as hardline preserve areas in the HMP are considered minor amendments to the HMP and can be approved by the City with consistency findings as follows:
   a. Conversion of standards areas to hardline preserve areas. If the Planning Director determines that the new hardline preserve area boundary conforms to the standards contained in Section D.3(C) of the HMP, the Director shall consult with the wildlife agencies as part of the environmental review process for the development project. If objections to the new preserve area boundaries are not received during the public review period for the environmental review process from the wildlife agencies, consistency findings shall be prepared and adopted as part of the normal development permitting process for the project.
   b. City projects. For city projects not proposed as hardline preserve areas and not requiring any discretionary review and permitting process, the city shall review the project for compliance with the standards contained in Section 21.210.13. If the city project complies, it shall be determined to be consistent with the HMP and the Planning Director shall make consistency findings.
3. Other minor amendments.
   a. Minor amendments may also be considered for the following cases:
      i. The total impact to habitat is less than one acre, the habitat is not occupied by a covered species, does not impact a Narrow Endemic Species or a wetland and the habitat mitigation in-lieu fee is assessed pursuant to Section 21.210.13(E) of this chapter;
      ii. The development project is an essential public works project resulting in a public facility or infrastructure that benefits the community at large and strict adherence to the requirements would render the project completely infeasible;

iii. Strict application of the requirements of this chapter would result in development of less than 25% of the property. Development shall occur on the least biologically sensitive portion of the property.

iv. The alternate design results in a biologically superior development.

b. Process for minor amendments for these cases. A request for a minor amendment shall be processed concurrently with any other permit required for the development project. Supporting data and information shall be submitted by the applicant for the minor amendment which clearly demonstrates that the project design, siting and size are the minimum necessary to make the project feasible or provide an economically viable use of the property. The Planning Director shall consult with and obtain approval from the wildlife agencies in reviewing a request for a minor amendment. The minor amendment shall require the approval or conditional approval of the Planning Commission or City Council based on whichever authority is the final decision-maker on the concurrent permit(s) [Note: Such projects may require a Major Amendment (described below) depending upon the nature of the impact and conflict with the HMP, IA, MHCP, and NCCP and 10(a)1(B) permits].

c. Required findings. No minor amendment request shall be approved unless the decision-making body finds that:

i. If applicable, the project is an essential public works project that will service the community at large; and

ii. The proposed project and all project alternatives have been analyzed in an appropriate environmental (CEQA) document; and

iii. The impacts to habitat have been minimized to the maximum extent practicable; and

iv. The project has mitigated its impacts to the maximum extent practicable.

v. The project does not reduce the ability to meet the specific habitat conservation obligations of the HMP, IA, MHCP, and NCCP and 10(a)1(B) permits.

B. Major amendments. Removal of lands from conserved areas, or reconfiguration of hardline areas resulting in a decrease of acreage, quality of habitat, or function of the conserved area shall constitute a major amendment to the HMP. Additions to the covered species list shall also require a major amendment to the plan. Major amendments shall require public, environmental review (CEQA and NEPA) and will be subject to the following amendment process:

1. The City will initiate a pre-amendment review with the wildlife agencies. In this review, the City will present a report that identifies the change or the affected species. The purpose of the review meeting will be to determine whether adequate information is available to consider approval of the change.
2. Within 90 days of the review meeting, the wildlife agencies will notify the City that they have sufficient information to act on the proposed change; have specific items of additional information necessary to properly evaluate the proposed changes; or have determined that additional data collection and analysis is necessary for adequate evaluation of the impacts of the proposed change.
3. Where specific items of additional information are requested, the City will provide the information to the extent it is reasonably available within 90 days. Where additional data collection and analysis are requested, the agencies will provide a detailed explanation of what is required and the purpose of the data and analysis.
4. Once the additional information is received, the agencies shall notify the City within 30 days whether the change is approved. If approved, the change shall constitute an amendment of the Plan which shall then be presented to the City Council for approval and adoption.

21.210.18 Guidelines

A. From time to time, the Planning Director may upon review by the City Attorney prepare guidelines to assist in the implementation of this chapter or the HMP, including but not limited to, wetland preservation and mitigation. The Planning Director shall have the authority to approve and publish any guidelines.

21.210.19 Enforcement Measures – Violations and Remedies

A. Whenever the Planning Director determines that a violation of this chapter has occurred or an individual has impacted habitat without the benefit of a HMP permit, the following enforcement measures and remedies may be undertaken by the Planning Director, in lieu of or in addition to any remedial actions undertaken in accordance with Section 15.16.140 of the Municipal Code.

1. Stop Work Notice. The Planning Director shall issue a stop work order demanding that all activities in violation of this chapter be stopped until a valid HMP permit is obtained and corrective action is authorized by the Planning Director.
2. Corrective Action. The Planning Director, in consultation with the Wildlife Agencies, shall determine the extent of corrective action necessary to cure the violation. Corrective action may include a higher mitigation ratio than specified in Table 11 of Section D.6 of the HMP.
3. Owner-Notification. The owner of the property shall be notified in writing that a violation has occurred. The notification shall specify the location, nature and extent of the activity or condition which contributed to the violation, the corrective action needed to cure the violation and the period of time deemed necessary by the Planning Director to correct the violation. The appeal process contained in Section 21.51.140 of this code shall apply to the Planning Director's determination.
4. Record Notice of Violation. In the event that the owner does not correct the violation in the manner or within the time period requested by the Planning Director, the Planning Director shall record a notice of HMP violation against the property with the county recorder. Upon completion of any corrective action and/or issuance of a valid HMP permit and upon payment of the investigation fee required pursuant to this section, the Planning Director shall file a notice of release of HMP violation with the county recorder releasing the property from the notice of violation.
5. Prohibition of Development Permits. Any property which has a notice of HMP violation recorded against it shall be prohibited from obtaining or using any development permit pursuant to Titles 18, 20 and 21 of this code until after all corrective actions are taken in accordance with the requirements of the Planning Director and, a notice of release of violation has been recorded with the county recorder.
6. Investigation Fee. An investigation fee established by City Council resolution shall be paid by the person responsible for the violation in accordance with the provisions of this chapter. The payment of such investigation fee shall not relieve any person from the performance of the corrective work or otherwise complying with the requirements of this chapter.
7. Criminal Penalities. Each person, firm or corporation who commences or does any activity contrary to the provisions of this chapter, or otherwise violates the provisions of this chapter, is guilty of an infraction. Every day during any portion of which any violation of any provisions of this title is committed, continued or permitted by such person, firm or corporation, shall be deemed a separate violation and shall be punishable as provided in this title and in Section 1.08.010(b) of this code.

8. Abatement of Public Nuisance. Any activity commenced or done contrary to the provisions of this chapter, or other violation of this chapter, shall be, and the same is declared to be, a public nuisance. Upon order of the City Council , the City Attorney shall commence necessary proceedings for the abatement of any such public nuisance in the manner provided by law. Any failure, refusal, or neglect to obtain a permit as required by this chapter shall be prima facie evidence of the fact that a public nuisance has been committed in connection with any activity commenced or done contrary to the provisions of this chapter.
9. Civil Action. The City Attorney may, at the request of the Planning Director, initiate any appropriate civil action in a court of competent jurisdiction to enforce the stop work notice, including the required corrective actions, including the recovery of any funds expended by the city to abate any public nuisance resulting from an unlawful act as defined in Section 15.16.170 of the Municipal Code and any additional civil penalties provided for by law.

SECTION 2: That Section 21 of the Carlsbad Municipal Code is amended by adding a new (6) to Section 21.33.010 of the O-S Open Space Zone to read as follows:

"21.33.010(6). Protect areas set-aside and preserved as natural habitat and the biological resources located in the areas in conformance with the City's Habitat Management Plan."

SECTION 3: That Title 21 of the Carlsbad Municipal Code is amended by adding a new Section 21.33.045 to the O-S Open Space Zone to read as follows:

"21.33.045. Open space preserved in conformance with the Habitat Management Plan.

A. Notwithstanding Sections 21.33.020, 21.33.030 and 21.33.040 of this chapter, no development, uses, structures or activities shall be permitted in areas zoned for open space which have been set-aside and preserved for natural habitat in conformance with the City's Habitat Management Plan except as provided below:
   (1) Activities related to the management, maintenance and biological monitoring of the habitat by the managing entity as required by the Habitat Management Plan and city and other regulatory agency permits and approved by the Wildlife Agencies in the Habitat Management Plan and/or MHCP in order to preserve and protect the property for natural habitat purposes. Fuel modification activities are not allowed within the preserve areas;
   (2) Planting and maintaining of locally native trees, shrubs and other native landscaping elements in order to restore or enhance the habitat area as required by the Habitat Management Plan and city and other regulatory agency permits and approved by the Wildlife Agencies in the Habitat Management Plan and/or MHCP including the appurtenances necessary to maintain the native landscaping placed thereon;
   (3) Trails which are approved as part of the citywide trail program and which are located in conformance with city and other regulatory agency permits and are consistent with the Habitat Management Plan and MHCP Volume I, section 6.3.8 for public access, and approved by the Wildlife Agencies;

(4) Passive recreation uses such as hiking, picnicking and bird watching if allowed by the city and other regulatory agency permits and approved by the Wildlife Agencies;
(5) Existing utility easements;
(6) Additional easements, subject to approval of the Wildlife Agencies, that are consistent with the preservation of the natural condition of the property, do not impair or interfere with the conservation values of the property and do not compromise the overall levels of conservation in the preserve or adversely affect preserve and species goals;
(7) Fencing as required by the managing entity and which does not adversely affect wildlife movement and approved by the Wildlife Agencies;
(8) Signing which identifies the property as a habitat preserve and informs persons of the nature and restrictions on the property and approved by the Wildlife Agencies; and
(9) Other, minor ancillary uses or structures which have been specifically approved as part of the Habitat Management Plan or as allowed by city or other regulatory agency permits and approved by the Wildlife Agencies. Ancillary structures that are specific to a project development, such as storm drains or detention basins, shall be allowed outside the preserve (any exceptions shall follow the appropriate process for a boundary adjustment

B. A Conservation Easement shall be placed on all open space areas set-aside and preserved as natural habitat in conformance with the Habitat Management Plan. The Conservation Easement shall ensure that the property will be preserved in perpetuity and will be managed and maintained for its natural habitat value. The easement shall specifically list all allowable and prohibited open space uses."

SECTION 4: That Title 21 of the Carlsbad Municipal Code is amended by adding a new (3) to Section 21.95.140 of the Hillside Development Regulations to read as follows:

"21.95.140(3). The proposed modifications will result in the preservation of natural habitat as required by the City's Habitat Management Plan and the required amount of preservation could not be achieved by strict adherence to the requirements of Section 21. 95.120."

SECTION 5: That Title 21 of the Carlsbad Municipal Code is amended by adding a new (E) to Section 21.95.140 of the Hillside Development Regulations to read as follows:

"21.95.140.

E. Inside the coastal zone, the decision-making body or official may approve encroachments to slopes of twenty-five percent grade and over in order to preserve natural habitat s required by the City's Habitat Management Plan, in accordance with Chapter 21.203 of the Municipal Code, provided that the required amount of preservation could not be achieved by strict adherence to the requirements of Sections 21.95.120(A) and (B) of this chapter."

SECTION 6: That Title 21 of the Carlsbad Municipal Code is amended by adding a new (d) to Section 21.203.040(A)(1) to read as follows:

"21.203.040(A)(1)

d. Notwithstanding (a) and (b) above, encroachments to slopes of twenty-five percent grade and over may be permitted in order to preserve natural habitat as required by the City's Habitat Management Plan and the required amount of preservation could not be achieved by strict adherence to the to the requirements of (a) and (b)."

EFFECTIVE DATE: This ordinance shall become effective thirty (30) days after its adoption, and the City Clerk shall certify to the adoption of this ordinance and cause it to be published at least once in a publication of general circulation in the City of Carlsbad within fifteen days after its adoption. (*Not withstanding the preceding, this ordinance shall not become effective within the City's Coastal Zone until approved by the California Coastal Commission.*)

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INTRODUCED AND FIRST READ at a regular meeting of the Carlsbad City Council on the 7th day of March 2006, and thereafter.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Carlsbad on the 14th day of March 2006, by the following vote, to wit:

AYES: Council Members Lewis, Hall, Kulchin, Packard

NOES: None

ABSENT: Council Member Sigafoose

ABSTAIN: None

APPROVED AS TO FORM AND LEGALITY

Signature on File

RONALD R. BALL, City Attorney

3-16-06.

Signature on File

CLAUDE A. LEWIS, Mayor

ATTEST:

Signature on File

LORRAINE M. WOOD, City Clerk

(SEAL)

PLANNING COMMISSION RESOLUTION NO. 5995

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF CARLSBAD, CALIFORNIA, RECOMMENDING APPROVAL OF AN AMENDMENT TO THE CARLSBAD LOCAL COASTAL PROGRAM AMENDING TITLE 21 OF THE MUNICIPAL CODE AMENDING TITLE 21 OF THE MUNICIPAL CODE (ZONING ORDINANCE) BY ADDING A NEW CHAPTER 21.210 AND BY AMENDING OTHER CHAPTERS OF THE ZONING ORDINANCE FOR PURPOSES OF IMPLEMENTING THE CITY'S HABITAT MANAGEMENT PLAN.

CASE NAME: HABITAT MANAGEMENT PLAN IMPLEMENTATION

CASE NO: LCPA 05-09

WHEREAS, the Planning Director has prepared an amendment to Title 21 of the Municipal Code (Zoning Ordinance) **relating to implementation of the Habitat Management Plan**; and

WHEREAS, the Zoning Ordinance is the implementing ordinance for the City of Carlsbad Local Coastal Program; and

WHEREAS, California State law requires that the Local Coastal Program and Zoning Ordinance be in conformance, and therefore, an amendment to the Local Coastal Program is required in conjunction with an amendment to the Zoning Ordinance (implementing ordinance) to ensure consistency between the two documents; and

WHEREAS, the **City of Carlsbad**, "Applicant," has filed a verified application for an amendment to the Local Coastal Program; and

WHEREAS, said verified application constitutes a request for a Local Coastal Program Amendment as show on Exhibit **"A"** dated **December 7, 2005**, attached to Planning Commission Resolution No. 5994 and incorporated herein by reference, as provided in Public Resources Code Section 30574 and Article 15 of Subchapter 8, Chapter 2, Division 5.5 of Title 14 of the California Code of Regulations of the California Coastal Commission Administrative Regulations; and

WHEREAS, the Planning Commission did on the **7th** day of **December 2005**, hold a duly noticed public hearing as prescribed by law to consider said request; and

WHEREAS, at said public hearing, upon hearing and considering all testimony and arguments, if any, of all persons desiring to be heard, said Commission considered all factors relating to the Local Coastal Program Amendment; and

WHEREAS, in accordance with State Coastal Guidelines requirements, the Local Coastal Program was subject to a six-week public review period, starting on **September 23, 2005** and ending on **November 4, 2005**, and the Planning Commission considered all comments received prior to the Planning Commission hearing, if any.

NOW, THEREFORE, BE IT HEREBY RESOLVED by the Planning Commission of the City of Carlsbad, as follows:

A) That the foregoing recitations are true and correct.

B) At the end of the State mandated six week review period, starting on **September 23, 2005**, and ending on **November 4, 2005**, staff shall present to the Planning Commission and City Council a summary of the comments received.

C) That based on the evidence presented at the public hearing, the Planning Commission hereby **RECOMMENDS APPROVAL** of **LCPA 05-09 – HABITAT MANAGEMENT PLAN IMPLEMENTATION** based on the following findings, and subject to the following conditions:

Findings:

1. That the proposed Local Coastal Program Amendment meets the requirements of, and is in conformity with, the policies of Chapter 3 of the Coastal Act and all applicable policies of the **Mello I, Mello II, Agua Hedionda Lagoon, East Batiquitos Lagoon, West Batiquitos Lagoon, and the Village Redevelopment Plan** segments of the Carlsbad Local Coastal Program not being amended by this amendment, in that **it ensures consistency with the Carlsbad Zoning Ordinance, and does not alter any other coastal zone regulations, land use designations or policies, and any further proposals must comply with all of the above in addition to the amendments approved by this action.**

2. That the proposed Local Coastal Program Amendment **will implement the Carlsbad Habitat Management Plan as incorporated into the Local Coastal Plan and will protect natural habitats in the City.**

3. That the proposed Local Coastal Program Amendment is required to ensure consistency with the **proposed Zone Code Amendment (ZCA 05-01) and the Local Coastal Plan.**

PASSED, APPROVED AND ADOPTED at a regular meeting to the Planning Commission of the City of Carlsbad, held on the **7th** day of **December 2005**, by the following vote, to wit:

AYES: Chairperson Segall, Commissioners Baker, Cardosa, Dominguez, Heineman, Montgomery, and Whitton

NOES:

ABSENT:

ABSTAIN:

JEFFRE N. SEGALL, Chairperson
CARLSBAD PLANNING COMMISSION

ATTEST:

DON NEU
Assistant Planning Director

7. Additional Conservation Standards To Be Applied To Properties in the Coastal Zone.

7-1 Environmentally Sensitive Habitat Areas (ESHA)

Pursuant to Section 30240 of the California Coastal Act, environmentally sensitive habitat areas, as defined in Section 30107.5 of the Coastal Act, shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

7-2 Coastal Sage Scrub

Coastal Sage Scrub is a resource of particular importance to the ecosystems of the Coastal Zone, due in part to the presence of the Coastal California gnatcatcher (Federal Threatened) and other species. Properties containing Coastal Sage Scrub located in the Coastal Zone shall conserve a minimum 67% of the Coastal Sage Scrub and 75% of the gnatcatchers onsite. Conservation of gnatcatchers shall be determined in consultation with the wildlife agencies.

7-3 Oak Woodland

An oak woodland is a closed to relatively open stand of trees within which a dominant tree species is a species of oak. In coastal southern California, that species is generally Coast Live Oak (Quercus agrifolia), which is commonly found on slopes and riparian situations. Shrubs vary from occasional to common, and the herb layer is often continuous and dominated by a variety of annual grasses.

7-4 Streams

A stream is a topographical feature with a clear bed and bank that periodically conveys water.

7-5 Ephemeral Drainages and Ephemeral Streams

Ephemeral drainages and ephemeral streams are topographic features that convey water, but only during and shortly after rainfall events in a typical year.

7-6 Wetlands

Pursuant to California Public Resources Code Section 30121 and Title 14, California Code of Regulations Section 13577(b), 'wetland' means lands within the coastal zone, which may be covered periodically, or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. Wetland shall include land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. A preponderance of hydric soils or a preponderance of wetland indicator species shall be considered presumptive evidence of wetland conditions.

Wetlands in the Coastal Zone shall be delineated following the definitions and boundary descriptions in Section 13577 of the California Code of Regulations.

Pursuant to California Public Resources Code Section 30233, no impacts to wetlands shall be allowed in the Coastal Zone except as provided in that Se

7-7 Wetland Mitigation Requirements

If impacts to a wetland are allowed consistent with Policy 7-6 above, mitigation shall be provided at a ratio of 3:1 for riparian impacts and 4:1 for saltwater or freshwater wetland or marsh impacts.

7-8 No Net Loss of Habitat

There shall be no net loss of Coastal Sage Scrub, Maritime Succulent Scrub, Southern Maritime Chaparral, Southern Mixed Chaparral, Native Grassland, and Oak Woodland within the Coastal Zone of Carlsbad.

Mitigation for impacts to any of these habitat types, when permitted, shall include a creation component that achieves the no net loss standard. Substantial restoration of highly degraded areas (where effective functions of the habitat type have been lost) may be substituted for creation subject to the consultation and concurrence of the U.S. Fish and Wildlife Service and the California Department of Fish and Game (wildlife agencies). The Coastal Commission shall be notified and provided an opportunity to comment upon proposed substitutions of substantial restoration for the required creation component. Development shall be consistent with Policy 7-1 of this subsection, unless proposed impacts are specifically identified in the HMP; these impacts shall be located to minimize impacts to Coastal Sage Scrub and maximize protection of the Coastal California gnatcatcher and its habitat.

7-9 Upland Habitat Mitigation Requirements

Where impacts to the habitats stated in 7-1 are allowed, mitigation shall be provided as follows:

a. The no net loss standard shall be satisfied as stated in 7-8. Typically this will consist of creation of the habitat type being impacted (or substantial restoration where allowed) at a ratio of at least 1:1 as provided in the HMP.

b. Onsite preservation is not eligible for mitigation credit in the coastal zone. Onsite or off-site open space preserve areas may be utilized to satisfy required mitigation for habitat impacts associated with development if the preserve areas are disturbed and suitable for restoration or enhancement, or they are devoid of habitat value and therefore suitable for the 1:1 mitigation component requiring creation or substantial restoration of new habitat. Substantial restoration is restoration that has the effect of qualitatively changing habitat type and may meet the creation requirement if it restores habitat type that was historically present, but has suffered habitat conversion or such extreme degradation that most of the present dominant species are not part of the original vegetation. Substantial restoration contrasts with enhancement activities, which include weeding, or planting within vegetation that retains its historical character, and restoration of disturbed areas to increase the value of existing habitat which may meet other mitigation requirements pursuant to the HMP.

c. Impacts to Coastal Sage Scrub shall be mitigated at an overall ratio of 2:1, with the creation component satisfying half of the total obligation. The remainder of the mitigation obligation shall be satisfied pursuant to the provisions of the HMP.

d. Impacts to Southern Maritime Chaparral or Maritime Succulent Scrub shall be mitigated at an overall ratio of 3:1, with the creation component satisfying one-third of the total obligation. The remainder of the mitigation obligation shall be satisfied pursuant to the provisions of the HMP.

   Impacts to Southern Mixed Chaparral, Native Grassland, and Oak Woodland shall be mitigated respectively at ratios of 1:1, 3:1, and 3:1, with the creation component satisfying the obligation or one-third of the total obligation. The remainder of the mitigation obligation shall be satisfied pursuant to the provisions of the HMP.

Mitigation for impacts within the coastal zone should be provided within the coastal zone if possible, particularly the 1:1 creation component, in order to have no net loss of habitat within the coastal zone. Mitigation measures on land outside the Coastal Zone may be acceptable if such mitigation would clearly result in higher levels of habitat protection and value and/or would provide significantly greater mitigation ratios, and the mitigation area is part of the HMP. Land area inside and outside the coastal zone which serves as mitigation for habitat impacts in the coastal zone shall be permanently retired from development potential and secured as part of the HMP preserve management plan as a condition of development approval.

g. Habitat mitigation requirements other than the creation or substantial restoration component may be partially or wholly fulfilled by acquisition of existing like habitat and/or retirement of development credits on existing like habitat with permanent preservation as part of the HMP preserve management plan.

h. All mitigation areas, onsite and offsite, shall be secured with a conservation easement in favor of the wildlife agencies. In addition, a preserve management plan shall be prepared for the mitigation areas, to the satisfaction of the City, the wildlife agencies, and the Coastal Commission. Phase 1 of the preserve management plan shall be incorporated into the Implementation Program of the LCP through an LCP amendment within one year of Commission certification of the HMP as part of the certified LCP. Phase 2 of the preserve management plan shall be incorporated into the Implementation Program in the same manner within three years of Commission certification of the HMP as part of the certified LCP. The preserve management plan shall ensure adequate funding to protect the preserve as open space and to maintain the biological values of the mitigation areas in perpetuity. Management provisions and funding for mitigation required to address habitat impacts shall be in place prior to the impacts for which the mitigation is required. At a minimum, monitoring reports shall be required as a condition of development approval after the first and third year of habitat mitigation efforts.

i. If any conflict should arise between the provisions of the HMP and the policies of the LCP, the LCP shall take precedence.

7-10 Highly Constrained Properties

There are properties in the Coastal Zone that are entirely or almost entirely constrained by environmentally sensitive habitat area (ESHA). In these cases, one of the following additional standards shall apply:

a. If more than 80% of the property by area is covered with ESHA at least 75% of the property shall be conserved, OR

b. If the City, with the concurrences of the wildlife agencies and the Coastal Commission through an LCP amendment, approves a Hardline preserve boundary for any of these properties as part of the HMP, then the amount of onsite preservation as identified in the Hardline boundary shall apply.

7-11 Buffers and Fuel Modification Zones

Buffers shall be provided between all preserved habitat areas and development. Minimum buffer widths shall be provided as follows:

a. 100 ft. for wetlands

b. 50 ft. for riparian areas

c. 20 ft. for all other native habitats (coastal sage scrub, southern maritime chaparral, maritime succulent scrub, southern mixed chaparral, native grassland, oak woodland).

Buffer widths shall be measured from the edge of preserved habitat nearest the development to the closest point of development. For wetlands and riparian areas possessing an unvegetated bank or steep slope (greater than 25%), the buffer shall be measured from the top of the bank or steep slope rather than the edge of habitat, unless there is at least 50 ft. between the riparian or wetland area and the toe of the slope. If the toe of the slope is less than 50 feet from the wetland or riparian area, the buffer shall be measured from the top of the slope.

Any proposed reductions in buffer widths for a specific site shall require sufficient information to determine that a buffer of lesser width will protect the identified resources. Such information shall include, but is not limited to, the size and type of the development and/or proposed mitigation (such as planting of vegetation or the construction of fencing) that will also achieve the purposes of the buffer. The California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the Coastal Commission staff shall be consulted in such buffer determinations.

No development, grading, or alterations, including clearing of vegetation, shall occur in the buffer area, except for:

a. Fuel modification Zone 3 to a maximum of 20 ft. for upland and non-riparian habitat. No fuel modification shall take place within 50 ft. of riparian areas, wetlands, or oak woodland.

b. Recreation trails and public pathways within the first 15 feet of the buffer closest to the development, provided that construction of the trail or pathway and its proposed use is consistent with the preservation goals for the adjacent habitat, and that appropriate measures are taken for physical separation from sensitive areas.

Buffer areas that do not contain native habitat shall be landscaped using native plants. Signage and physical barriers such as walls or fences shall be required to minimize edge effects of development.

7-12 Grading and Landscaping Requirements

In addition to the requirements of the model grading ordinance in the Carlsbad Master Drainage Plan, permitted new development shall also comply with the following requirements:

a. Grading activity shall be prohibited during the rainy season: from October 1st to April 1st of each year.

b. All graded areas shall be landscaped prior to October 1st of each year with either temporary or permanent landscaping materials, to reduce erosion potential. Such landscaping shall be maintained and replanted if not well-established by December 1st following the initial planting.

c. The October 1st grading season deadline may be extended with the approval of the City Engineer subject to implementation by October 1st of special erosion control measures designed to prohibit discharge of sediments off-site during and after the grading operation. Extensions beyond November 15th may be allowed in areas of very low risk of impact to sensitive coastal resources and may be approved either as part of the original coastal development permit or as an amendment to an existing coastal development permit.

d. If any of the responsible resource agencies prohibit grading operations during the summer grading period in order to protect endangered or rare species or sensitive environmental resources, then grading activities may be allowed during the winter by a coastal development

permit or permit amendment, provided that appropriate best management practices (BMPs) are incorporated to limit potential adverse impacts from winter grading activities.

7-13 City Owned Lands Adjacent To Macario Canyon and Veterans Memorial Park

The City of Carlsbad owns approximately 521 acres in and adjacent to Macario Canyon, a portion of which is located in the Coastal Zone. A municipal golf course has been proposed for a portion of the property, and a public park is planned for another portion. Development of the property shall be subject to the following policies regarding protection of habitat:

a. The impact and conservation areas for the municipal golf course are shown as a Hardline design in the HMP (Figure 8 Revised) and, which shall serve as the standard of review for determining areas in which development may occur in the future. Areas shown for conservation shall not be impacted or disturbed except for revegetation, restoration, and other similar activities related to mitigation. Areas shown for impact may be fully developed with appropriate mitigation.

b. Any impacts to Coastal Sage Scrub shall be mitigated by on-site creation at a ratio of 2:1 in compliance with the no net loss standard stated in 7-1. Onsite revegetation or restoration may be done on agricultural, disturbed or non-native grassland areas. For impacts to the Coastal California gnatcatcher, additional mitigation shall be provided by acquisition and preservation at a 1:1 ratio of land supporting gnatcatchers. Impacts to dual criteria slopes shall not exceed 10%.

c. In order to provide a viable north-south wildlife corridor across Macario Canyon, the area shown on the HMP Hardline map as "Veterans Memorial Park Wildlife Corridor" shall be conserved concurrent with any impacts to the Macario Canyon property. No development shall occur within the Wildlife Corridor except a designated trail and rest areas along the trail.

d. Protection and management of all mitigation areas shall be consistent with 7-9(f) and (h).

e. The area shown as "Veterans Memorial Park Development Area" is designated for public recreational use. It is the intent of this policy that the public park area be developed so as to maximize public access and provide a variety of recreational opportunities. Development within steep slopes and/or native vegetation shall be limited to passive recreational facilities, such as recreational trails and picnic areas. Within the proposed development areas, grading of steep slopes with native vegetation shall be limited to the minimum amount necessary to allow such uses.

f. Segments of the Citywide Trail System viewpoints, and other opportunities for public access shall be incorporated into the development areas.

g. In the riparian area of Macario Canyon Creek, two crossings shall be allowed, as shown in the HMP Hardline exhibit. Crossing #1 shall utilize the existing farm road. Crossing #2 shall utilize a bridge span structure. No riparian impacts shall occur for either crossing.

h. The design of riparian buffers shall be as shown in the HMP. Buffers shall be landscaped with appropriate native, non-invasive plants to provide a natural transition between recreational areas and riparian habitat, as well as to discourage human intrusion into the riparian area. Appropriate signing and fencing will also be utilized.

7-14 Other Parcels – Specific Habitat Protection Standards

The following standards apply to those parcels in Zones 20 and 21 shown on Exhibit A (page 121) which are located within the biological core and linkage areas designated in the MHCP. They are in addition to the applicable, general conservation standards contained in 7-1 through 7-11 of the

HMP. The standards are intended to direct development to existing disturbed areas to the maximum extent feasible, limit impacts to native vegetation, and establish viable core and linkage areas as designated in the HMP. In general, each property shall be allowed to develop at least 25% of the site with appropriate mitigation as specified in 7-8 through 7-11. When individual properties are proposed for rezoning or development, detailed biological information will be required to determine whether the proposal is consistent with the HMP, subsection 7 and the standards below, based upon the actual type, location and condition of onsite resources, and the appropriate locations of development and preservation areas. One or more wildlife crossings under Poinsettia Lane of a sufficient size for larger species shall be provided if recommended by the wildlife resource agencies.

a. Assessor's Parcel No. 212-120-33 (Hieatt) – No impact to vernal pools. Minimize impact to vernal pool watersheds.

b. Assessor's Parcel No. 212-010-3 (Kirgis) – Preserve 75% of property with development clustered immediately adjacent to Kelly Ranch.

c. Assessor's Parcel No. 215-070-38 (Fernandez) – Cluster development on disturbed areas to the maximum extent feasible. Maximum 10% impact on CSS and SMC for access purposes.

d. Assessor's Parcel No. 215-040-03 (Muroya) – Cluster development on disturbed areas to the maximum extent feasible. Maximum 10% impact on CSS and SMC for access purposes.

e. Assessor's Parcel No. 212-040-50 (Emerald Point) – Development limited to disturbed non-native grassland areas. No impacts to native habitat allowed.

f. Assessor's Parcel No. 215-020-06 (RWSB) – Development shall be limited to a maximum of 25% of the property, not including Poinsettia Lane construction, and shall be clustered to the maximum extent feasible along disturbed portions of the property adjacent to Cassia Road and the future Poinsettia Lane extension. Impacts to the SMC habitat shall be minimized. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property and designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.

g. Assessor's Parcel No. 215-020-07 (Maldonado) –Development shall be concentrated along the Poinsettia Lane extension and shall be limited to the western half of the property. No impacts to the coast oak woodland and riparian area except for Poinsettia Lane extension. The eastern half of the property is recommended for offsite mitigation for other properties in Zone 21; however, at a minimum, a wildlife corridor linkage oriented generally north-south shall be provided on the eastern half of the property and designed to connect to neighboring properties with existing or potential wildlife corridor linkages. The corridor linkage shall include any onsite coast oak woodland area.

h. Assessor's Parcel No. 215-050-21 (Namikas) – Development shall be limited to a maximum of 25% of the property, not including Poinsettia Lane construction, and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands except for Poinsettia Lane extension. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property, including the onsite coast oak woodland area, and be designed to connect to neighboring properties with existing or potential wildlife corridors linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.

i. Assessor's Parcel No. 215-050-22 (Sudduth) - Development shall be limited to a maximum of 25% of the property, not including Poinsettia Lane construction, and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands except for Poinsettia Lane extension. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property including the onsite coast oak woodland area and be designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.

j. Assessor's Parcel No. 215-050-44, 45, 46, 47 (Kevane) - Development shall be limited to a maximum of 25% of the property and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands shall be allowed. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property, including the coast oak woodland, and be designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.

k. Assessor's Parcel No. 215-050-12 (Reiter) - Development shall be limited to a maximum of 25% of the property, and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands shall be allowed. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property, including the coast oak woodland, and be designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.

l. Assessor's Parcel No. 215-050-73 (Levatino) – Maximum 25% development clustered on the southern portion of the property. Buffer widths may be reduced and/or additional impacts may be allowed to the extent necessary to obtain site access, and/or to accommodate Circulation Road improvements as identified in the certified LCP.

The parcel specific standards listed above are adopted because hardline preserve boundary lines were not established at the time of preparation of the HMP. The purpose of the standards is to ensure that future development is sited to preserve the maximum amount of ESHA within the coastal zone, and to establish a viable habitat corridor and preserve area in Zones 20 and 21. If the City, with the concurrence of the wildlife agencies and the Coastal Commission through an LCP amendment, subsequently approves a Hardline preserve boundary for any of the above-described properties as part of the HMP, then the onsite preservation included in the Hardline preserve boundary shall apply.

City of Carlsbad LCP Amendment No. 1-06A (Habitat Management Plan Implementation Plan)

Key sections of the City of Carlsbad's Open Space Management Plan, dated May 2004 and revised September 2005, are available on-line.

See www.coastal.ca.gov – August 7, 2008 Commission hearing Item #Th 32a

EXHIBIT #3
City of Carlsbad Open Space Management Plan
LCPA #1-06A HMP Implementation Plan
California Coastal Commission

City of Carlsbad
Open Space Management Plan

Prepared by:

Technology Associates International Corporation (TAIC)
5962 La Place Court, Suite 225
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In Association with:

Center for Natural Lands Management

Prepared for:

City of Carlsbad Planning Department
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Revised: September 2005

TAIC
Technology Associates International Corporation

Center for Natural Lands Management

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CARLSBAD OPEN SPACE MANAGEMENT PLAN

1.0 INTRODUCTION: OSMP PROCESS AND STRUCTURE

The OSMP is the framework plan to implement the Carlsbad Habitat Management Plan (HMP) that was developed, along with the Multiple Habitat Conservation Plan (MHCP), with the input of the wildlife agencies, the Coastal Commission, and the public to establish a process, standards, guidelines, and conditions for long-term conservation and management of the sensitive species and habitats within the north coastal portions of San Diego County. These two documents (HMP and MHCP) provide a regulatory context with which the OSMP must maintain consistency. The purpose of the OSMP is:

1. To describe a process and structure for open space management and monitoring in the City of Carlsbad.

2. To identify and describe key open space management issues in the City.

3. To recommend strategies and solutions for effectively handling these open space management issues.

4. To quantify expected management and monitoring costs for implementation of the OSMP.

The information and analysis synthesized during the development of this plan was used to help quantify management and monitoring costs in the Open Space Management Funding Analysis, which is contained in Appendix A. This plan was developed with substantial input from the wildlife agencies, key City of Carlsbad staff (Planning Department, Parks Department, and Police Department), interest groups, and the general public. Appendix B includes a list of people and organizations invited to participate.

The MHCP is a comprehensive, multiple jurisdictional planning program designed to develop an ecosystem preserve in northwestern San Diego County. Implementation of the regional preserve system is intended to protect viable populations of key sensitive plant and animal species and their habitats, while accommodating continued economic development and quality of life for residents of this north county region. The MHCP is one of several large multiple jurisdictional habitat planning efforts in San Diego County each of which constitutes a subregional plan under the State of California's Natural Community Conservation Planning (NCCP) Act of 1991.

The current MHCP study area encompasses approximately 29,962 acres of natural habitat across seven incorporated cities in northwestern San Diego County (Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista). These jurisdictions will implement their respective portions of the MHCP plan through citywide "subarea" plans, which describe the specific implementing mechanisms each city will institute for the MHCP. The seven subarea plans will contribute collectively to the conservation of biological communities and species in the MHCP study area. In turn, the MHCP plan, in concert with other subregional plans, will contribute to continued ecosystem viability in southern coastal California. The Carlsbad HMP, which covers a total of 6,449 acres of open space (5,329 acres of natural habitat), is the MHCP subarea plan for the City of Carlsbad.

The specific biological and conservation objectives of the HMP are to:

- Conserve the full range of vegetation types remaining in the City, with a focus on rare and sensitive habitats.

- Conserve areas of habitat capable of supporting the HMP species in perpetuity.

- Maintain functional biological cores.
- Maintain functional wildlife corridors and habitat linkages within the City and to the region, including linkages that connect gnatcatcher populations and movement corridors for large mammals.
- Conserve rare vegetation communities.
- Conserve narrow endemic species and maintain populations of target species.
- Apply a "no net loss" policy to the conservation of wetlands, riparian and oak woodland habitats throughout the City, and to coastal sage scrub and chaparral within the coastal zone.

Implementation of OSMP will be a critical component necessary for achieving these goals and maintaining compliance with the Implementing Agreement and endangered species take permits for species covered by the HMP and the MHCP. Therefore, compliance with the MHCP and HMP requirements is the first and guiding priority of the OSMP. An MHCP-wide monitoring plan (MHCP Volume III) was developed to provide guidance and direction for management of covered species and their habitats in compliance with the conditions for coverage identified in the biological analysis of the MHCP (MHCP Volume II). The Carlsbad OSMP will need to be consistent with the monitoring and management requirements of the MHCP monitoring plan.

There are three major components to open space management in the City of Carlsbad, (1) monitoring and adaptive management of species, habitat condition, and ecological processes, (2) management of threats and impacts to species and habitats, and (3) creation and maintenance of recreational and educational opportunities. Each of these components raises a number of important open space management issues. Most of these issues are not unique to Carlsbad and have well-established open space management solutions; however, some of these issues will require further thought and consensus from the City, the wildlife agencies, the Coastal Commission, and the interested public before workable solutions can be implemented by this City-wide Open Space Management Plan (OSMP).

The issues addressed in this plan are organized and discussed as they apply across the City, but in practice they will be implemented in the biogeographic and preserve management context of Management Units and Subunits, as defined for the OSMP. Individual preserve managers will identify which management issues affect their particular subunit (preserve area) and will develop and implement area-specific management directives (ASMDs) as a part of their individual preserve management plans, but in coordination with related ASMDs and other management issues throughout the rest of the Management Unit. Note that many ASMDs already exist as they have been stipulated by the conditions for coverage in the MHCP conservation analysis and will be incorporated into individual preserve management plans.

There are three additional categories of land in the OSMP planning area that are not included in the areas identified as preserved within the HMP or MHCP, including other natural lands, developed parks, and drainage basins.

Other Natural Lands – The OSMP covers all of the natural lands in the City (7,345 acres). However, the HMP covers 5,329 acres of natural lands including all existing or proposed preserves (100% conserved) and standards areas (where a portion will be developed according to HMP/MHCP standards and the rest conserved). The remaining 2,015 acres of natural lands (mostly isolated smaller fragments of habitat) were not included in the HMP and MHCP primarily because they did not contribute significantly to the overall preserve design; however, they are included in the OSMP planning area and will continue to be managed as open space.

Developed Parks – Developed parks have been incorporated into the GIS Inventory so that City-wide management can be scheduled, tracked and analyzed in this database. This category includes existing parks as well as parks developed in the future.

Drainage Basins – The City's drainage basin facilities were also incorporated into the GIS Inventory for the OSMP so that management can be scheduled, tracked and analyzed in this database. The drainage basin parcels are included as an overlay because they are sometimes covered by other categories and may overlap with the HMP/MHCP areas.

1.1 Process and Structure for Implementation of the Carlsbad OSMP

This section of the OSMP outlines the basic process and structure for implementation of the OSMP for monitoring, management, oversight, and reporting responsibility. Additionally, there is a description of the calendar of events to facilitate the coordination and timing of periodic meetings and reports, and guidelines for how data will be coordinated, managed and analyzed.

1.1.1 Primary Entities Involved in Implementation

There are six primary entities or general groups involved in implementation of the OSMP, including the City of Carlsbad, their Preserve Steward and Preserve Managers who have direct responsibility for on the ground implementation on a daily basis, and the wildlife agencies, California Coastal Commission, and the broader scientific community, environmental NGOs and the general public who have the responsibility for reviewing and commenting on the associated planning documents, ongoing implementation process, and analysis and reports. A brief description of the roles of these entities follows below.

1. Wildlife Agencies

The wildlife agencies include the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). USFWS and CDFG are responsible for:

- Enforcing compliance by the City of Carlsbad with management and monitoring obligations of their Implementing Agreement and the Carlsbad HMP and MHCP.
- Reviewing Annual Reports and proposed annual work plans, three-year status summary reports, preserve management plans, and other associated management/research activities.

2. California Coastal Commission

The California Coastal Commission's primary mission is to plan for and regulate land and water uses in the coastal zone consistent with the policies of the Coastal Act. With respect to the MHCP and the Carlsbad HMP, the California Coastal Commission is responsible for:

- Overseeing development and HMP implementation in the Coastal Zone.
- Approval of the OSMP as a Local Coastal Plan Amendment.
- Reviewing of Annual Reports.

3. City of Carlsbad

The City of Carlsbad is responsible for:

- Overseeing implementation and maintaining compliance.
- Tracking habitat gains/losses using Habitrak.

- Compliance monitoring (development project review and approval).
- Species and habitat monitoring via the preserve steward and preserve managers.
- Management and maintenance via the preserve steward and preserve managers.

4. HMP Preserve Steward:

The Preserve Steward is a new role that has evolved from the necessity for the City of Carlsbad to have the services of a person with the necessary ecology, conservation biology, and statistics background to oversee the City-wide monitoring, management, and maintenance of the whole OSMP preserve system. The Preserve Steward will play the central role in preserve management, serving as the City's technical expert on preserve management. The preserve steward will be a contracted consultant or City staff person responsible for:

- Taking a leadership role in the overseeing and coordination of City-wide preserve management, monitoring and reporting.
- Frequent communication with the preserve managers, the City, and the wildlife agencies.
- Providing science-based technical guidance and direction to preserve managers for survey design, data collection and analysis.
- Supporting the City on compliance monitoring (review of predevelopment plans and post-construction conformance review) by training and updating City planning staff regarding development standards and guidelines required for development adjacent to preserve areas.

The Preserve Steward will have primary responsibility for coordinating all parties having a role in preserve management, including the preserve managers, City departments, the wildlife agencies, and public interest groups, as shown in Figure 1-1. The Preserve Steward will direct the collection of all monitoring data, review all data and reports, formulate hypotheses regarding the status of species and habitats, consult with other scientists as needed to interpret monitoring data, design and carry out research within the limits of the resources available for management, prescribe adaptive management programs when needed, and prioritize threats to the preserve system and direct management actions accordingly. One of the Preserve Steward's key responsibilities will be to continuously evaluate the effectiveness and efficiency of management activities in view of the resources available, and ensure that the most cost-effective measures are consistently used. When the MHCP structure is formed, the Preserve Steward role should evolve to become a subregional coordinator shared by all MHCP cities having approved plans.

5. Preserve Manager

The Preserve Manager is the person with on the ground responsibility for management and monitoring of each preserve area. Preserve managers may be employees of the City, recognized professional third party biological management entities (e.g., Center for Natural Lands Management), a state or federal agency (e.g., CDFG), or another public/semi-public land management entity (e.g., North County Transit or San Diego Gas and Electric). The preserve manager is responsible for:

- Development of a preserve management plan for each preserve area and updating the plan on a three-year basis.

- Managing individual preserve areas according their individual preserve management plans.
- Monitoring species, habitats, and management actions according to their preserve management plans.
- Coordinating with the preserve steward, other preserve managers, the City, and the wildlife agencies regarding open space management issues, management and monitoring.
- Collection of biological monitoring data according to MCHP-established protocols for preserve area, MHCP-level, and regional monitoring. Submittal of data to the preserve steward and wildlife agencies.

6. Scientific Community, Environmental NGOs and General Public

This last group includes the broader community of individuals and interest groups that play a role in the public process of open space planning and management within the NCCP context. The scientific community, environmental NGOs and general public have the opportunity and/or responsibility for:

- Reviewing Annual Reports.
- Observing actions and identifying issues in preserve areas.
- Providing input to the wildlife agencies, Coastal Commission, and the City as needs arise.

The structure for interaction of the several of these entities is shown in Figure 1-1.

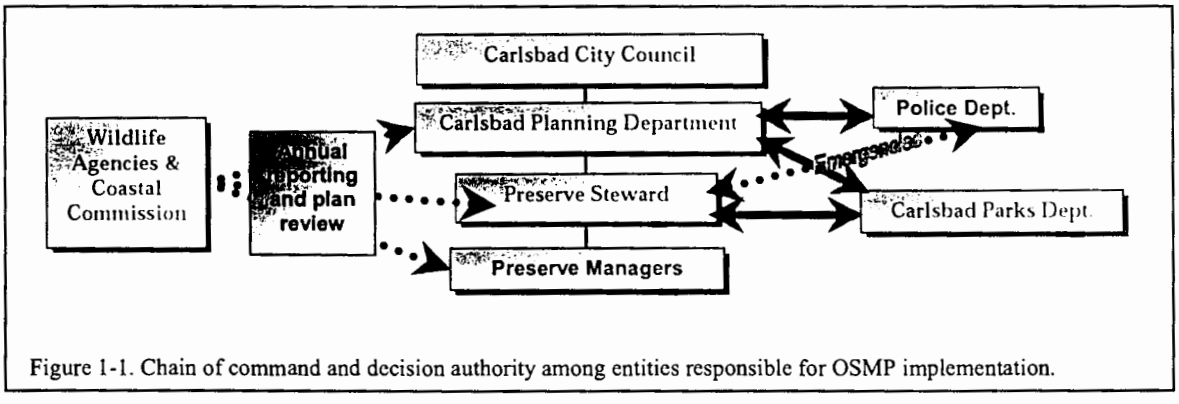


Figure 1-1. Chain of command and decision authority among entities responsible for OSMP implementation.

1.1.2 Preserve Management Decision Authority

Preserve managers will have full budget discretion, within the limits of their funding, to implement preserve management and monitoring on non-City owned properties according to the directives of their preserve management plans and annual work plans. Actions and expenditures not specifically identified in preserve management plans or work plans are allowed if required as a part of a reasonable adaptive management response or to address another emergency situation. However, such unknown future expenditures must be carefully determined since they will likely exceed annual budgets and may reduce funding for future years when funding is supported by an endowment.

For the City-owned land, budgets will be spent according to the directives of their preserve management plans and annual work plans; however, budget discretion would remain with the City for annual approval of these plans and for actions and expenditures not specifically identified in these plans for adaptive management response or to address emergency situations not covered by the annual work plan for City-owned lands.

The preserve steward will assist preserve managers in making the decisions for actions and expenditures not identified in the preserve management plans or annual work plans and will be responsible for obtaining City approval for additional actions or expenditures when required.

If the preserve steward or the wildlife agencies determine that additional budget needs to be spent on a particular task, the preserve manager will comply with this decision. In general, the preserve manager will retain control of the budget and will be in charge of how it is spent.

Initially, the City Planning Department will work closely with the preserve managers and preserve steward to establish a chain of command and communication with the Police Department, Fire Department and other relevant City departments (see Figure 1-1). The Rangers and other employees of the preserve manager will go through an orientation process to understand the limits of their authority and to understand when they will need to call in the Police Department. Eventually, the chain of command and communication will become routine. Through the orientation process the rangers will also learn how to identify activities that are illegal or otherwise not permitted or acceptable uses in or near the OSMP preserve system.

If there is a conflict between the preserve management plans (MHCP, HMP, individual Preserve Management Plans, or annual work plans) and any other public need (such as a trail, sewer line, etc.) the City will evaluate and resolve the conflict as follows:

1. Is the public need a matter of health, safety and welfare, or is it a matter of convenience?

2. Was the project covered in the HMP as a project that would be permitted by the HMP, or is it a new project not previously addressed?

3. Is there a reasonable alternative that would avoid the impact?

4. Is the impact direct or indirect?

5. Is the impact temporary or permanent?

6. Would any covered species in the HMP be affected, directly or indirectly?

7. Can the impact be mitigated to less than significant?

8. Can the impact be mitigated by seasonal restrictions?

9. Would the impact cause an increase in costs or management effort by the preserve manager?

The City and preserve steward would consult with the wildlife agencies on these points and try to arrive at a consensus decision. The preserve steward would make recommendations to the City regarding the decision, but the City would be responsible for the final decision and will evaluate the impacts of this action on covered species or the resources they use in a timely and quantitative manner.

1.1.3 Planning Documents to Guide Implementation

There are several documents that City staff, the preserve steward, and preserve managers must be intimately familiar with. Because the permit duration for incidental take under the City's implementing

agreement is for 50 years and because the preserve system will be conserved and managed in perpetuity, there will be new staff at all levels that will eventually be a part of the implementation process. All current and future staff will be required to read and clearly understand the following documents, some of which will be updated and amended over the years:

1. The *Natural Community Conservation Planning Act* (NCCP) as a component of the *California Endangered Species Act.* This is the state-level legislation that dictates the guidelines for preparation and implementation of conservation plans that contribute to species recovery, such as the MHCP and Carlsbad HMP, and which provides a mechanism for legal incidental take of endangered, threatened, or otherwise sensitive species in California.

2. The *Federal Endangered Species Act* and *Habitat Conservation Planning Handbook.* Section 10(a) of this act and the associated handbook specify how habitat conservation plans, including the MHCP and Carlsbad HMP, should be prepared and implemented to provide for the conservation and management of federally endangered or threatened species, while allowing actions that may take listed species without precluding their recovery.

3. The *MHCP subregional plan* includes policies and guidelines for coordinated implementation across the entire MHCP preserve system. The *MHCP Conservation Analysis* (volume II) includes species-specific conditions for conservation and management. The *MHCP Monitoring Plan* (volume III) includes MHCP-wide guidelines for monitoring and management along with sample standardized survey protocols and data collection sheets. Recommended and required survey protocols will continue to be updated over time; therefore, current survey protocols will be obtained from and confirmed with the wildlife agencies annually.

4. The *Carlsbad Habitat Management Plan* (HMP) and *Implementing Agreement* are the two documents that contain the specific policies, guidelines, and permit conditions for management, monitoring, and reporting of species and habitat status and condition.

5. The *Carlsbad Open Space Management Plan* (this document) provides detailed direction regarding the coordination of entities and individuals responsible for management and monitoring, describes the primary open space management issues and recommended approaches to address those issues, and analyzes the funding requirements for open space management City-wide.

6. Preserve managers will be required to complete an individual *Preserve Management Plan* for each of the preserve areas they manage within one year of the time at which the preserve area is officially dedicated and recorded into the preserve system. The preserve management plans are required to be updated every three years thereafter. A draft update (or initial) preserve management plan is due in November of every third year and will be distributed to the preserve steward, City, wildlife agencies, and public for review and comment. The final preserve management plan due the following February. The specific contents of the preserve management plan are discussed in the next section.

7. Every year each preserve manager must submit an *Annual Work Plan* for each preserve area. A draft annual work plan is due each November to the preserve steward, City, and wildlife agencies for review and comment, and the final preserve management plan is due the following February. Each annual work plan will outline the planned monitoring and management actions for the year and include a prioritization of specific management needs and area-specific management directives (ASMDs) to be implemented in the adaptive management context.

1.1.4 Preserve Management Plan Preparation

At a basic level, open space management within the NCCP context is a process of taking the permit conditions specified in the Implementing Agreement and associated documents (the MHCP and Carlsbad HMP in this case) and integrating them into a preserve specific management actions. Figure 1-2 is a conceptual model of how the essential elements of habitat management interact in the NCCP context.

Following the organization in Figure 1-2, each preserve manager will develop a preserve management plan that describes the regional biogeographic significance and context of the preserve, the baseline biological conditions, and the known or expected stressors and threats to the biological value of the preserve. This information creates the context in which the permit conditions apply to each individual preserve area.

The obligations established in the permit conditions along with the biological and management issues will be evaluated to set resource management priorities and specific conservation objectives in each preserve management plan. These conservation objectives in turn will be used to develop management and monitoring Area-Specific Management Directives (ASMDs). The ASMDs are be paired with preserve management hypotheses (assumptions and expectations for the response or outcome of management actions), which are stated in the preserve management plans along with the ASMDs and can be tested through monitoring of the results of management actions and of species and habitat status. The preserve management plan will be developed and applied using the principles of adaptive management, where monitoring results would in turn be used to refine future management actions to better attain conservation objectives.

Appendix D is an outline of the required format for preserve management plans developed in the OSMP area. The outline has been adapted from the California Department of Fish and Game's guide to preparation of land management plans (CDFG 2003). It is important to use a standardized format for the preserve management plan so that the City of Carlsbad and the wildlife agencies may easily review and confirm that the preserve management plan includes the necessary goals, objectives, actions, priorities, and area-specific management directives (ASMDs) to manage and monitor species and habitats within the context of the Carlsbad HMP and overall MHCP. Appropriately designed and developed preserve management plans will greatly facilitate the ability of the City of Carlsbad to maintain compliance with the permit conditions of its Implementing Agreement for the HMP. The CDFG land management plan format is being used for the CDFG lands within the City and provides a consistent template for the non-CDFG preserve areas.

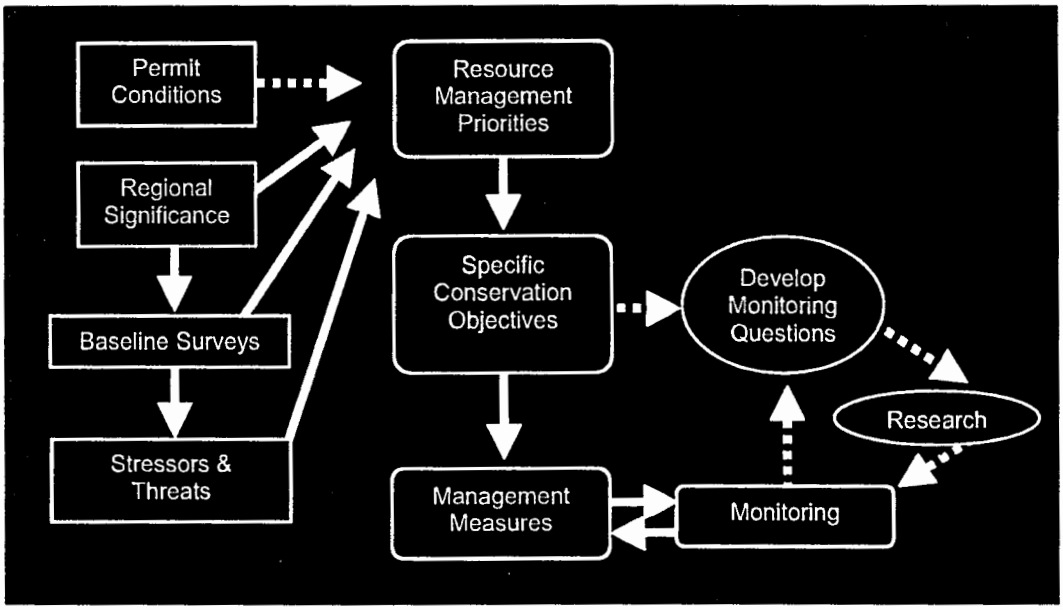


Figure 1-2. Generalized conceptual model of the Habitat Management Process within the NCCP context (*after* CBI 2001).

The preserve management plan will accomplish the following:

1. Provide an overall vision of preserve area and its role in the City-wide preserve system.

2. Identify the covered species that occur or have the potential to occur in the preserve area. The list of species covered by the Carlsbad HMP (the City's subarea plan to the MHCP) is included in Table 1-1. List 1 in Table 1-1 is species independently covered by the HMP. List 2 is species for

Table 1-1
Covered Species under the Carlsbad HMP

List 1: Species Proposed for Coverage under the Carlsbad HMP

Scientific Name	Common Name	Status*	MHCP Subregional Plan Vol. II Page Ref.
	Plants		
Brodiaea filifolia	Thread-leaved brodiaea	FT/CE/NE	4-37
Chorizanthe orcuttiana	Orcutt's spineflower	FE/CE/NE	4-56
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	FSC	4-74
Euphorbia misera	Cliff spurge	None	4-101
Hazardia orcuttii	Orcutt's hazardia	FSC/NE	4-111
Quercus dumosa	Nuttall's scrub oak	FSC	4-159
	Invertebrates		
Panoquina errans	Salt marsh skipper	FSC	4-202
Euphyes vestris harbisoni	Harbison's Dun Skipper	FSC/NE	4-196
	Birds		
Pelecanus occidentalis californicus	California brown pelican	FE/SE	4-251
Plegadis chihi	White-faced ibis	FSC/SSC	4-256
Accipiter cooperii	Cooper's hawk	SSC	4-264
Pandion haliaetus	Osprey	SSC	4-269
Falco peregrinus anatum	American peregrine falcon	CE	4-280
Rallus longirostris levipes	Light-footed clapper rail	FE/CE/FP	4-285
Charadrius alexandrinus nivosus	Western snowy plover	FT/SSC	4-291
Sterna elegans	Elegant tern	FSC/SSC	4-299
Sterna antillarum browni	California least tern	FE/CE/FP	4-304
Empidonax traillii extimus	Southwestern willow flycatcher	FE/CE	4-314
Vireo bellii pusillus	Least Bell's vireo	FE/CE	4-321
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC	4-333
Icteria virens	Yellow-breasted chat	SSC	4-360
Aimophila ruficeps canescens	California rufous-crowned sparrow	FSC/SSC	4-366
Passerculus sandwichensis beldingi	Belding's savannah sparrow	FSC/CE	4-371
Passerculus sanwichensis rostratus	Large-billed savannah sparrow	FSC/SSC	4-377
	Reptiles		
Cnemidophorus hyperythrus beldingi	Orange-throated whiptail	SSC	4-245

* See the "Key to Legal and Management Status" that follows List 4.

Table 1-1 (Continued)
Covered Species under the Carlsbad HMP

List 2: Species Coverage Contingent on Other MHCP Subarea Plans being Permitted

Scientific Name	Common Name	Status*	MHCP Subregional Plan Vol. II Page Ref.
Plants			
Acanthomintha ilicifolia	San Diego thornmint **	FT/CE/NE	4-9
Ambrosia pumila	San Diego ambrosia	FE/NE	4-16
Ceanothus verrucosus	Wart-stemmed ceanothus **	FSC	4-50
Dudleya viscida	Sticky dudleya	FSC	4-89
Ferocactus viridescens	San Diego barrel cactus	FSC	4-106
Quercus engelmannii	Engelmann oak	None	4-165

* See the "Key to Legal and Management Status" that follows List 4.
** Coverage for this species is also contingent on funding for management of conserved areas.

List 3: Species Coverage Contingent on Funding for Management of Conserved Areas

Scientific Name	Common Name	Status*	MHCP Subregional Plan Vol. II Page Ref.
Plants			
Arctostaphylos glandulosa ssp. *crassifolia*	Del Mar manzanita	FE/NE	4-26
Baccharis vanessae	Encinitas baccharis	FT/CE/NE	4-32
Comarostaphylis diversifolia ssp diverifolia	Summer holly	FSC	4-63
Corethrogyne filaginifolia var. *linifolia*	Del Mar sand aster	None	4-68
Eryngium aristulatum var. *parishii*	San Diego button-celery **	FE/CE/NE	4-94
Iva Hayesiana	San Diego marsh elder ***	FSC	4-116
Myosurus minimus ssp. Apus	Little mousetail **	FSC/NE	4-133
Navarretia fossalis	Spreading navarretia **	FT/NE	4-140
Orcuttia californica	California Orcutt grass **	FE/CE/NE	4-147
Pinus torreyana ssp. *torreyana*	Torrey pine	FSC	4-154
Invertebrates			
Streptocephalus woottoni	Riverside fairy shrimp **	FE/NE	4-178
Branchinecta sandiegonensis	San Diego fairy shrimp **	FE/NE	4-184

* See the "Key to Legal and Management Status" that follows List 4.
** Coverage for this species is also contingent on the City of Carlsbad receiving legal control over the protection, management, and monitoring of the vernal pools adjacent to the Poinsettia Train Station in Carlsbad.
*** Coverage for this species is also contingent on other MHCP subarea plans being permitted.

Table 1-1 (Continued)
Covered Species under the Carlsbad HMP

List 4: MHCP Species Not Covered under the Carlsbad HMP

Scientific Name	Common Name	Status*	MHCP Subregional Plan Vol. II Page Ref.
Plants			
Dudleya blochmaniae ssp. *brevifolia*	Short-leaved dudleya	CE/NE	4-80
Lotus nuttallianus	Nuttall's lotus	FSC/NE	4-122
Tetracoccus dioicus	Parry's Tetracoccus	FSC	4-170
Invertebrates			
Euphydryas editha quino	Quino checkerspot butterfly	FE	4-211
Reptiles and Amphibians			
Scaphiopus [Spea] hammondii	Western spadefoot toad	SSC	4-215
Bufo californicus	Arroyo toad	FE/SSC	4-222
Clemmys marmorata pallida	Southwestern pond turtle	FSC/SSC	4-233
Phrynosoma coronatum blainvillei	San Diego horned lizard	FSC/SSC	4-238
Birds			
Aquila chrysaetos	Golden eagle	BEPA/SSC	4-274
Campylorhynchus brunneicapillus cousei	Coastal cactus wren	FSC/SSC/NE	4-328
Sialia mexicana	Western bluebird	None	4-355
Amphispiza belli belli	Bell's sage sparrow	FSC/SSC	4-380
Mammals			
Dipodomys stephensi	Stephens' kangaroo rat	FE/ST	4-401
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC/NE	4-407
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	FSC/SSC	4-416
Lepus californicus bennetti	San Diego black-tailed jackrabbit	FSC/SSC	4-421
Felis concolor	Mountain lion	SPM	4-425
Odocoileus hemionus fuliginata	Southern mule deer	RGS	4-431

Key to Legal and Management Status of Species in Lists 1 - 4

FE - Federally Endangered
FT - Federally Threatened
BEPA - Bald Eagle Protection Act
FSC - Federal Species of Concern (former Category 2 Candidate)
CE - State Endangered
CT - State Threatened
SSC - State Species of Special Concern SPM - State Special Protected Mammal
RGS - State Regulated Game Species
None - No Federal, State, or City status
NE - Narrow Endemic Species in the MHCP

which coverage is contingent on other MHCP Cities subarea plans being permitted. List 3 is contingent on funding for management of conserved areas. List 4 is species that are not currently covered by the HMP.

3. Identify primary goals and objectives tied to the conditions of the HMP and Implementing Agreement as well as broader open space management goals.

4. Describe preserve-level and subregional monitoring activities.

5. Develop a comprehensive list of ASMDs for the preserve area.

Incorporate new information gained from adaptive management of the preserve and other nearby similar preserve areas, and new information contained in the MHCP Three-Year Status Summary Reports.

1.1.5 Communication to Coordinate Implementation

Effective and efficient implementation of the OSMP requires frequent communication among the primary entities involved in implementation (preserve managers, preserve steward, City, and wildlife agencies). The following section outlines the various reports, review periods, and meetings to coordinate this communication. The timing of these various modes of communication is critical for efficient implantation.

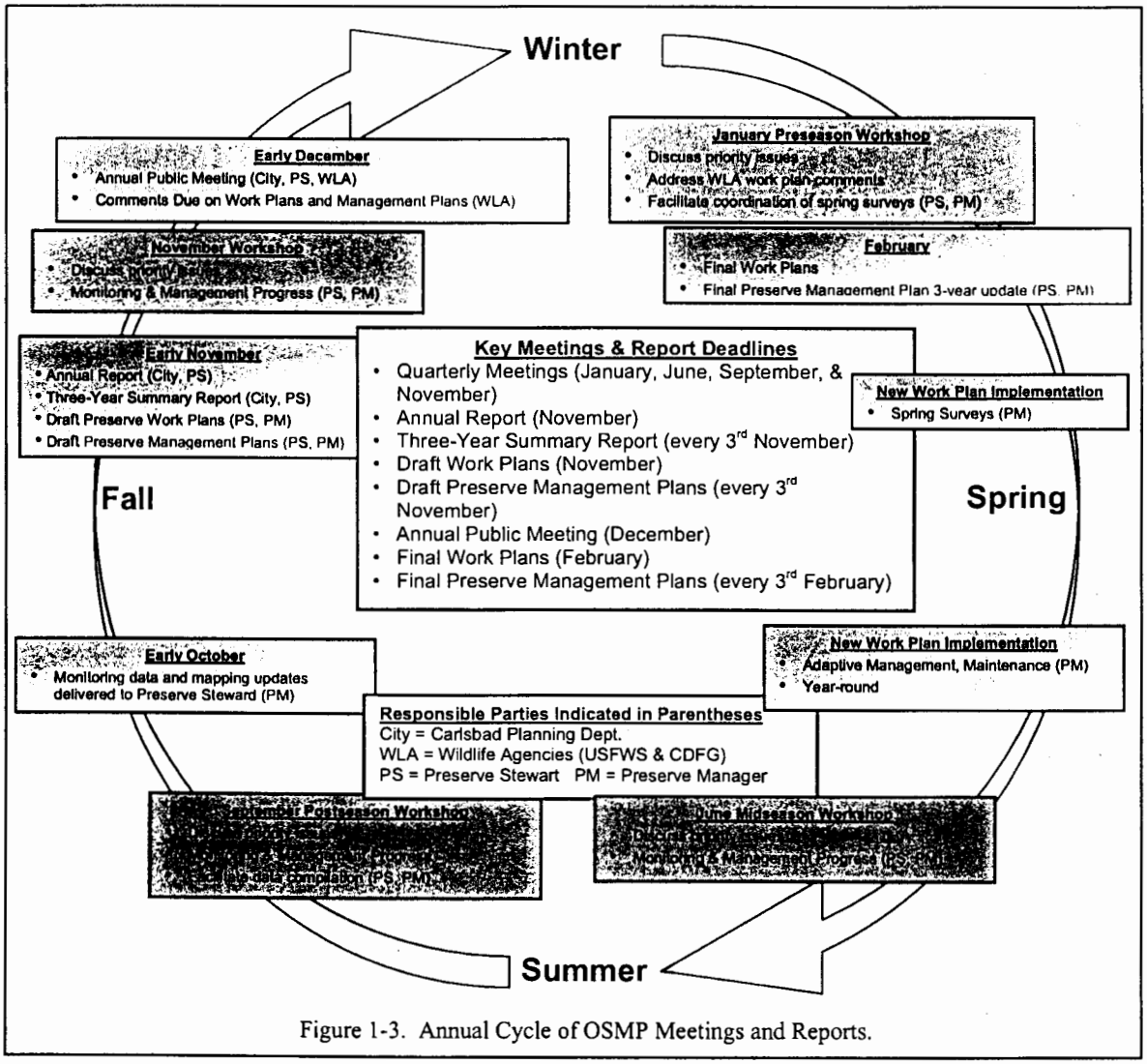


Figure 1-3. Annual Cycle of OSMP Meetings and Reports.

The reports and meetings are briefly described with target time periods for completion in parentheses:

Annual Report (due early November) includes but not limited to:

- Information, data, and analysis from all preserve areas integrated and analyzed by the preserve steward.
- Update of gains/losses calculated via Habitrak
- Descriptive text, maps and a GIS data layer with associated GIS calculations showing the areas conserved that year and during previous years.
- Descriptive text, maps and a GIS data layer with associated GIS calculations showing how the boundary of the preserve (e.g., boundary adjustments, permitted development) has changed.
- Descriptive text, maps and data for updated baseline surveys (vegetation mapping and species surveys).
- Summaries of management actions undertaken during the past year with an assessment of the success and adaptive management strategy for next year for each action.
- Summaries of all monitoring activities and associated data and analysis on status and trends of populations of covered species and condition of habitats.
- Current status of each covered species compared to the status at the time the take permit was signed. If data was not collected that year for a given species, previous year's data will be presented. If no baseline data exists, baseline surveys will be a priority for the next year.
- A list of priority open space management issues, key problem areas, and City-wide and area-specific actions to address these issues.
- Information on public use of the preserve system.
- Budget summaries showing actual compared to planned budget, status of endowments, etc.

Annual Public Meeting (early December):

- Presentation of information contained in annual report.
- Opportunity for scientific community and public input, questions, and answers.
- Attendance will include the wildlife agencies, the Coastal Commission, City, Preserve Steward, Preserve Managers, and other interested groups or individuals.

Preserve Management Plans and Annual Work Plans (draft due early November (every third year for Preserve Management Plans), final due following February):

- See Section 1.1.4 and Appendix D for required content and format.
- 30 day review by wildlife agencies and preserve steward; available for public review and comment.

Three-Year Summary Reports (early November):

- Comprehensive monitoring report summarizing previous three years relative to status and trends, MHCP goals, City-wide effectiveness of plan implementation.

Quarterly Carlsbad OSMP Workshop:

- To facilitate coordination between preserve areas/managers.
- To share ideas, address common problems, identify funding/grant opportunities (coordination of Section 6 and NCCP local assistance applications), etc.
- Required attendance - Preserve Managers, Preserve Steward
- Invited attendance – City, Coastal Commission, Wildlife Agencies, and public (key City and Wildlife Agency staff may be required for certain issues)

Status Memo from Preserve Steward (Quarterly):

- Memo to City and Wildlife Agencies providing a brief summary of the ongoing issues and progress on the work plan at each preserve area and City-wide
- Meetings with City staff as needed to resolve management monitoring issues

Status Memos from Preserve Managers (Monthly):

- Brief memo to Preserve Steward reporting status of new/ongoing issues and progress on work plan
- Discussion of management/monitoring activities of previous month

Frequent communication between Preserve Steward and Preserve Managers (ongoing as needed):

- Phone, email, field as needed
- Emergency/critical issue reporting to City, Wildlife Agencies and/or Coastal Commission as needed (Preserve Manager and/or Steward to report depending on severity of issue)

The above schedule and process for meetings and reporting will provide the structure for compliance monitoring (Is the HMP and OSMP being implemented according to the Implementing Agreement and the conditions, policies, and guidelines established therein?) and effectiveness monitoring (Is the conservation and management of the preserve system conserving the species and habitats as expected?). Figure 1-4 and 1-5 show schematically how the primary preserve management entities and reporting mechanisms interact to achieve effective compliance monitoring and effectiveness monitoring, respectively.

1.1.6 Mechanisms for Data Management and Updates

Coordination of data management is important at every preserve management and monitoring level. Field data collected to monitor the success of management actions and other ASMDs need to be consistently organized and analyzed so that adaptive management lessons can be shared and applied to other preserve areas. Species and monitoring data must be collected, analyzed, and summarized with standardized methods so that data from individual preserves can be combined for City-wide analysis and reporting, as well as for integration into subregional and regional monitoring programs.

Data Management Process:

- Preserve managers must use consistent survey methods and protocols (MHCP Monitoring Plan, Wildlife Agency protocols, other scientific methods with review of Preserve Steward)
  - Data Compilation and Reporting for monitoring data including habitat based monitoring and species-specific surveys.
    - Using standardized data entry formats preserve managers will submit data to preserve steward upon collection so that it can be analyzed by the steward, or the steward can be assured that it was collected and that it will be analyzed and interpreted in a timely manner for integration into annual report. Summary data will be prepared according to a consistent format.
  - Resource mapping updates
    - Resource mapping updates (primarily vegetation mapping) will be compiled and submitted to the preserve steward and the City in GIS format.
  - Individual research projects by preserve managers or others
    - Data types and formats will vary project to project; however, researchers should attempt to use consistent protocols and format whenever possible.
  - Primary data types to be collected and summarized City-wide
    - GIS data
    - Tabular data
    - Data summary reports

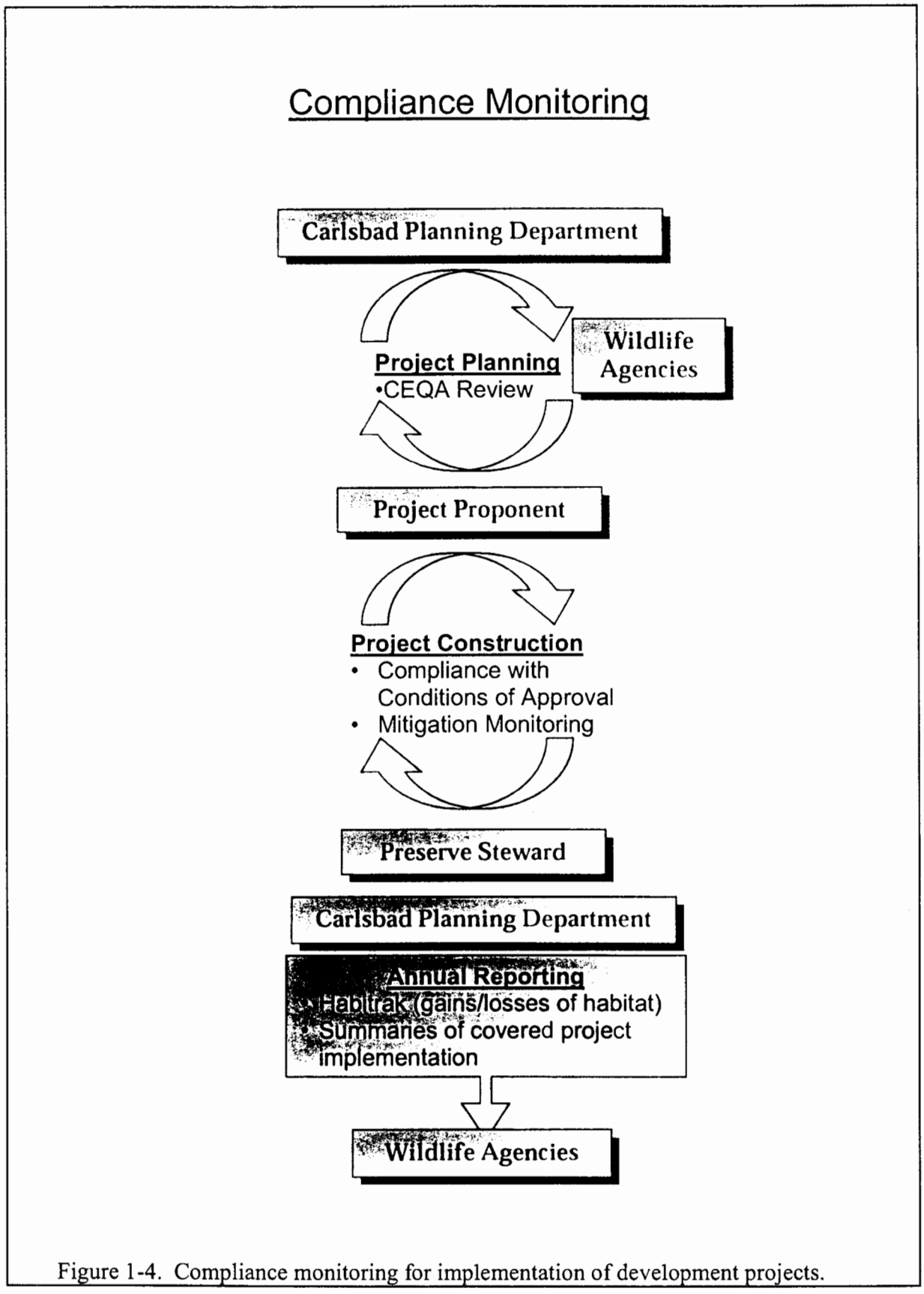


Figure 1-4. Compliance monitoring for implementation of development projects.

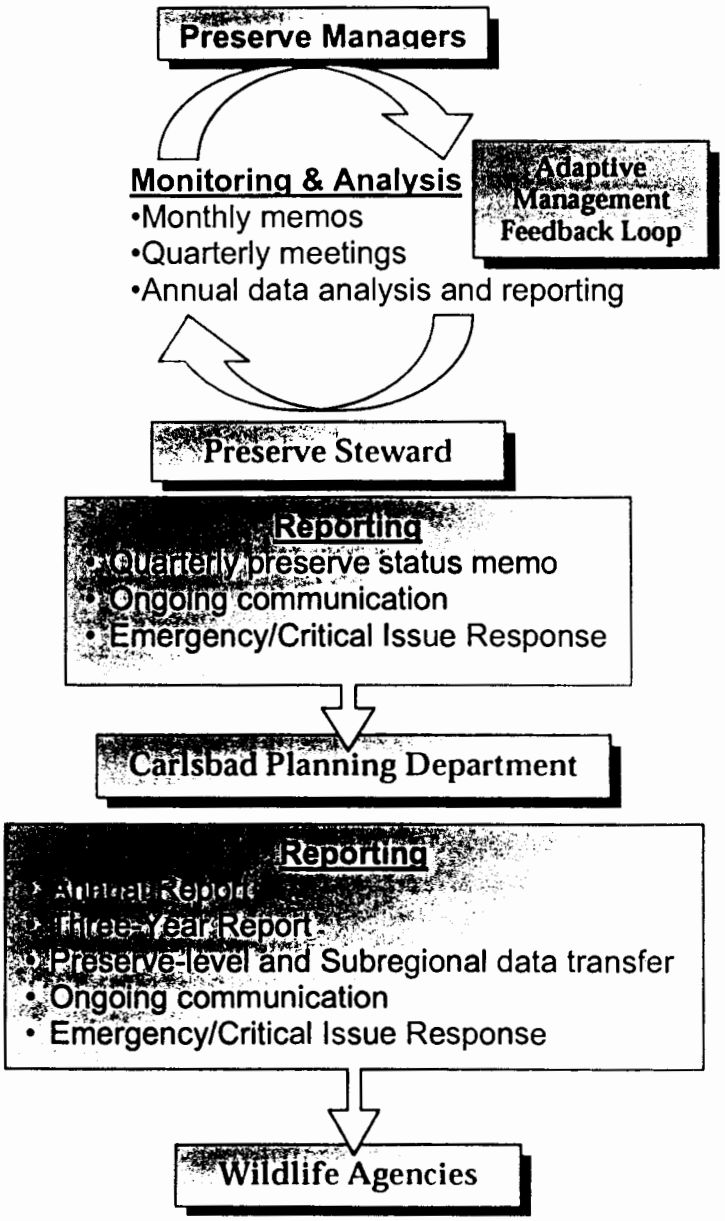


Figure 1-5. Effectiveness monitoring of biological management of the preserve system.

Ideally, data will be coordinated and managed with an Internet-based interface to make GIS mapping data accessible through the Internet. At a minimum, the City and preserve steward will provide preserve-level tabular data and pdf maps, along with preserve management plans, annual work plans, three-year summary reports and other general open space management information on City's web site.

1.1.7 Phasing of Implementation

There are two basic phases of implementation of the OSMP. The first phase is intended to establish the baseline for species status and habitat condition in the preserve areas. Phase I occurs within the first three years after signing of the implementing agreement or within the first year after a property is hardlined (dedicated and/or conservation easements recorded) into the preserve system. The second phase is the ongoing monitoring and management of the preserve system in perpetuity. Phase II starts once the baseline conditions have been established. The following outline identifies the key elements in each phase.

Phase I: Establish baseline database:

- Update vegetation maps where needed (as determined by the preserve steward and wildlife agencies).
- Conduct additional species baseline surveys where needed (as determined by the preserve steward and wildlife agencies).
- Preserve steward and the wildlife agencies determine and prioritize updates.
  - Priority 1 – Updates must be completed in first 1-2 years.
  - Priority 2 – Updates must be competed in first 3 years.
  - New preserves areas added to system – Updates, if needed, completed in first 1 year after adding to system.
- MHCP CSS Restoration Obligation –Subject to availability of regional funding or mitigation funding from other sources.

Phase II: Ongoing monitoring and management (in perpetuity):

- Regular surveys at preserve level and subregional level as prescribed by MHCP and HMP.
- Standard preserve management procedures.
- Baseline Surveys for new preserve areas (softline/standards areas) as they come online (see new preserve areas under Phase I).

1.2 Application of Adaptive Management Concepts to Open Space Management

The City and preserve managers in the OSMP area are responsible for managing individual preserve areas to ensure that conservation goals of the HMP/MHCP are met. The City expects that management and monitoring by preserve managers will occur though an adaptive management approach. The specific models for experiments, observational studies, and adaptive management will be developed by preserve managers in their preserve management plans to implement management actions and test a priori assumptions via purposeful science-based monitoring.

Monitoring at the preserve area scale needs to be focused on obtaining information for management purposes. In most instances, the array of threats or stressors of preserved habitats, their mechanisms of action, and the responses of the habitats and associated species are not completely understood at this time. Information gained through monitoring will inform management decisions through the adaptive

management process. Adaptive management acknowledges the lack of complete knowledge and understanding of a system at the outset of management actions. Adaptive management is a means to learn more about the system through the implementation of management actions and the monitoring of management results. Management actions can then be adapted to optimize management goals by incorporating new information gained through an iterative implementation and monitoring process.

There are six main steps in adaptive management:

1) Identification of the problem or management goal

2) Design of the management action or implementation plan

3) Implementation

4) Monitoring of management results

5) Evaluation of the results relative to the desired management goals, and

6) Adjustment of management actions.

The trigger for a change in the management approach/actions occurs when management results have not achieved the desired management goals. The assumptions underlying management goals must be stated explicitly and considered as hypotheses to be tested by carefully designed and implemented monitoring programs that are, in effect, management experiments. Ideally, management actions would be designed and implemented with experimental control sites and replication that would allow statistical interpretation of management results. At a minimum, careful measurement of key environmental and biological variables before and after the management action can provide some insight into the effects of management at that particular site.

1.3 Management of Threats and Impacts

This summary of threats and impacts to the species, habitats, and ecological processes in the OSMP area helps place the OSMP lands in the appropriate management context. The threats and impacts identified here are the main management issues that preserve managers in Carlsbad potentially will address on a day-to-day basis.

The terms threat and impact are value laden terms that change depending on context. Fire, for example is a natural ecological process that is necessary for many fire-adapted plant species to germinate, and for many animal species to maintain open habitat conditions to which they may be adapted. In a fully pristine and intact ecosystem fire is not a threat, per se, but only a natural ecological process that has an effect, but not necessarily a negative impact on the ecosystem. For habitats that exist in a matrix of suburban lands uses, however, fire is more often a threat. Fires that occur too frequently disrupt the natural regime of this ecological process and alter ecological communities. Activities associated with fire prevention and suppression, if not properly planned and implemented, can seriously impact protected habitats and populations.

Threats to habitats, species, and ecological processes may come from legal or illegal activities, and are numerous in suburbanized landscapes. Most threats come from the edges of preserves, the urban-wildlife interface, and are often categorized as edge effects. However, due to the highly fragmented configuration of open space in the City and the high edge-to-interior ratio, most portions of open space have the potential to be impacted by many of these threats. Therefore, these threats and their potential impacts will be a persistent management issue for preserve managers. Table 1-2 identifies the primary threats that have the potential to affect species, habitats, and ecological processes in the Carlsbad OSMP area.

TABLE 1-2.

MATRIX OF PRIMARY THREATS AND POTENTIAL EFFECTS ON SPECIES AND HABITATS MANAGED IN THE OSMP AREA

Threats	Potential Effects	Habitat Loss	Habitat Conversion - seral or type conversion	Trampling of habitat and soils	Altered soil moisture	Increased erosion	Decreased water quality	Reduction in disturbance-sensitive species	Source of exotic species introduction	Increase in exotic ant invasion	Exotic species dispersal	Reduction in native species diversity	Reduction in native pollinators	Reduced function of wildlife corridors	Reduction of area-dependent species	Altered predator-prey relationships	Roadkill	Littering
Public Use																		
Off-road vehicles		X		X		X	X	X				X	X	X	X		X	X
Noise from off-road vehicles												X		X	X			
Mountain biking		X		X		X	X					X		X	X			X
Equestrian uses		X		X		X	X		X		X	X		X				X
Hiking		X		X		X						X		X	X			X
Urban Edge																		
Fuel breaks		X			X	X	X	X	X	X	X	X	X		X	X		
Landscaping		X			X			X	X	X	X	X	X		X	X		
Irrigation runoff		X	X		X	X	X	X	X	X	X	X	X		X	X		
Herbicides and pesticides		X					X				X	X	X			X		
Urban noise								X				X			X	X		
Lighting								X				X			X	X		
Unsupervised pets/children		X		X		X	X	X	X		X	X		X	X			X
Habitat Fragmentation																		
Roads/utility corridors		X			X	X	X	X			X	X		X	X		X	X
Suburban residential/commercial construction		X												X	X			
Altered Ecological Processes																		
Fire regime (too frequent)			X		X	X		X			X	X	X	X	X	X		
Hydrology (no flood/scour, altered water table)			X		X		X				X	X		X		X		
Drought (lower water table, disease resistance)			X		X							X	X			X		
Predator-Prey Relationships (mesopredator release)								X		X	X	X		X	X	X	X	
Host-Pollinator Relationships (germination, gene flow)				X	X		X	X	X		X	X	X	X	X			

1.4 Goals for Preserve Management

Management of individual preserve areas must be guided by the overall goals of the preserve system. These goals are derived from HMP permit requirements, anticipated threats to the species and habitats, and general public expectations. They will be translated into Area Specific Management Directives by the Preserve Manager through analysis of the resources and threats for a given area. The goals are listed below, not in order of priority:

Management Plans and Funding

- Ensure that each preserve area has an up to date Area-Specific Management Plan that is adequately funded.
- Ensure that funds for management are invested prudently and expended only for legitimate preserve management purposes.
- Ensure that individual preserves are being properly managed, consistent with these goals, the applicable Area-Specific Management Plan, and the Open Space Management Plan.

Edge Effects

- Manage fire and fuel loads in the vicinity of development so that public safety is protected, while recognizing the beneficial role of fire in the ecosystem.
- Manage noise sources in the vicinity of preserves.
- Manage lighting in the vicinity of preserves to minimize impacts while allowing for reasonable lighting of public and private spaces.
- Address erosion problems promptly, while recognizing that flood events are part of the natural ecosystem process.
- Eliminate invasive, non-native plant and animal species from the preserve system. Seek to eliminate or reduce the occurrence of invasive species in adjacent areas of development.
- Eliminate feral domestic animals from the preserve system. Educate the public regarding the importance of keeping pets out of preserves.
- Maintain healthy populations of native predators (such as coyote and bobcat) within the preserve system

Public Access

- Eliminate unauthorized off-road vehicles from the preserve system.
- Eliminate illegal dumping of refuse in the preserve system.
- Eliminate migrant worker camps and other unauthorized uses within the preserve system.
- Manage trails and other recreational uses in the preserve system such that the biological integrity of the preserve system is maintained while allowing public education, enjoyment, and appreciation of the native landscape.
- Establish reasonable, enforceable regulations regarding public use of the preserve system. Maintain an effective enforcement presence in the preserves. Take appropriate and effective enforcement actions against serious violations of preserve regulations.

Monitoring and Reporting

- Ensure clear, effective, timely communication between all parties involved in management of the preserve system.
- Collect, analyze, interpret, and report data regarding the health of the preserve system to all interested parties in a uniform and timely manner. Follow recognized survey protocols for collecting data. Use the best available scientific methods to analyze data.

- Maintain effective forms of access controls to allow appropriate public visitation while minimizing impacts on the preserve system.
- Educate the public regarding all aspects of the preserve system

Other Biological Considerations

- Maintain vigilant oversight of the preserve system to guard against all types of impacts and threats, including but not limited to Changed Circumstances and Unforeseen Circumstances.
- Utilize Adaptive Management to address changes in the status of species at the earliest feasible opportunity. Pay particular attention to the rarest or most sensitive species, such as Narrow Endemics, vernal pool species, and species with very limited population or range.
- Maintain adequate connectivity for gnatcatchers and other species between important breeding areas. Use opportunities to widen constricted corridors where possible through acquisition or the entitlement process. Manage edge effects so that constricted corridors are not further impacted by adjacent human activities.

In addition to the above goals, the following table relates known and anticipated threats to areas of the preserve system where they may occur. This will allow prioritization of actions to address the threats. While many of the known threats are Citywide and affect all management units to some degree, other threats are of particular importance to specific management units. For example, while illegal offroad vehicle use has the potential to occur in any management unit, it is known to be problematic in certain management units. Preserve Managers must address these threats in their Preserve Management Plans, and annual reporting must describe how the threats are being addressed.

Potential Threats	Management Units Citywide (all Management Units)	Agua Hedionda	Arroyo La Costa	Batiquitos Lagoon	BressiRanch/Carrillo Ranch	Buena Vista Creek	Calavera Hills	Faraday	Los Monos Canyon	Poinsettia/Aviara	Villages of La Costa
Public Use											
Off-road vehicles						X	X				X
Noise				X	X	X	X				X
Mountain biking	X										
Equestrian uses		X			X						X
Hiking	X										
Urban Edge											
Fuel breaks	X										
Landscaping and Invasive Species	X										
Irrigation runoff	X										
Herbicides and pesticides	X										
Urban noise				X	X	X	X				X
Lighting		X	X	X	X		X	X		X	X
Unsupervised pets/children		X	X	X	X		X	X		X	X
Illegal dumping						X	X	X			X
Migrant Worker Camps		X				X	X	X			
Habitat Fragmentation											
Roads/utility corridors	X										
Suburban residential/commercial construction	X										
Altered Ecological Processes											
Fire regime (too frequent)	X										
Hydrology (no flood/scour, altered water table)		X	X	X	X				X		
Drought (lower water table, disease resistance)	X										
Predator-Prey Relationships (mesopredator release)	X										
Host-Pollinator Relationships (germination, gene flow)	X										

1.5 Recreational and Educational Opportunities

To be successful, the OSMP must have the full support of the public. Public support occurs when it becomes clear that there is something of value that is being protected and managed by the plan. Recreational and educational opportunities are the two most important ways in which to create and maintain a sense of value in the protection and management of open space in the City. The importance of recreational opportunities is obvious. Hiking, biking, boating, and equestrian uses are integral to many people's perceptions of open space, and integration of these public uses into the OSMP will be important. Less obvious, though are the ways in which educational opportunities create value and contribute to long-term public support of open space protection. By creating and integrating public educational opportunities into the OSMP and day-to-day preserve management, the City will have better informed "neighbors" of the open space who are more willing and educated to minimize the activities that may negatively impact the natural values (e.g., improved landscaping and watering practices, better control of pets, etc.). Furthermore, establishment of a strong educational outreach program will provide important nature learning opportunities for the City's school children, an opportunity that is often lost for many children in suburban America. Finally, education and outreach will have the effect of recruiting members of the public that live near or recreate in the OSMP area to become partners in stewardship and to be the eyes and ears for the City and other preserve managers, so that management problems or illegal uses can be quickly identified and corrected. An education/outreach component is a necessary part of most of the solutions identified in the focused analysis of management issues below (Section 3.0).

2.0 ORGANIZATION OF OSMP AREAS

The study area, the open space covered by this management plan, has been hierarchically subdivided to facilitate organization and discussion of issues relative to the areas in which they are most applicable. The OSMP study area (Figure 2-1) includes existing open space, proposed open space, and standards areas (a significant portion of which will become future open space based on specific development and conservation standards).

2.1 Management Units

The open space areas shown in Figure 2-1 have been subdivided into Management Units based on the aggregation of remaining open space within the City and/or natural biogeographic boundaries (Figure 2-2). The management units are defined by grouping of semi-contiguous areas that would be most effectively managed if treated as a single unit. The subdivisions were created by grouping the parcels around lagoons and lagoon margin habitat (Buena Vista, Agua Hedionda, and Batiquitos Management Units), and by grouping larger contiguous blocks of upland habitat with other smaller nearby open space areas resulting in the creation of eight more management units capturing the canyon networks throughout the remainder of the City (Arroyo La Costa, Bressi/Carrillo, Buena Vista Creek, Calavera, Faraday, Los Monos, Poinsettia/Aviara, and Rancho La Costa Management Units.). Note that parcels were not split between management units. Table 2-1 shows the acreages of each habitat type in each management unit. Note that all calculations of vegetation acreages are based on the MHCP vegetation database maintained by SANDAG.

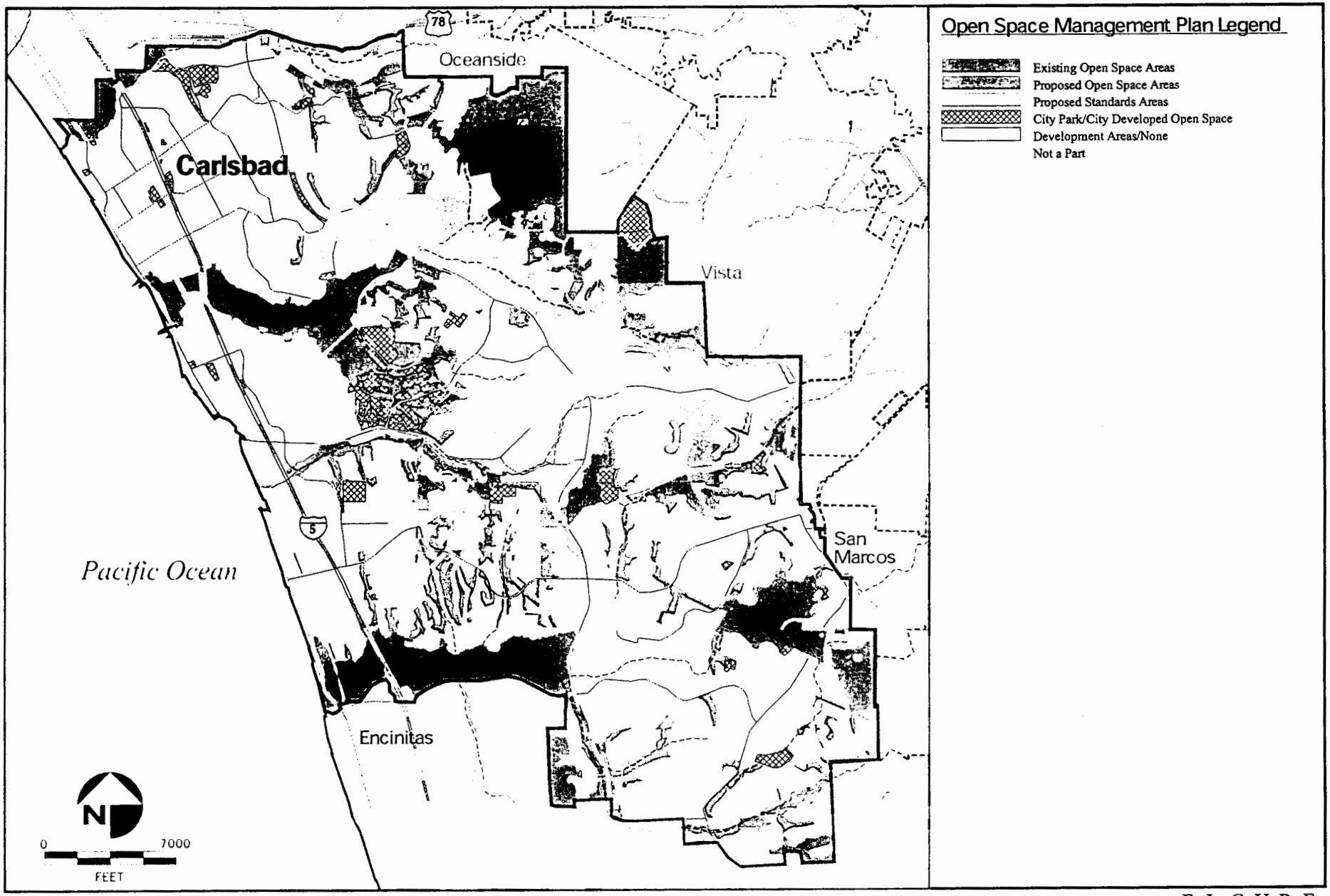
2.2 Subunits

Management units were then further subdivided into Subunits based on ownership and current (or presumed future) management entity (see below). Multiple parcels that are under the stewardship of one management entity were included in the same subunit if they were in the same management unit and semi-contiguous (connected or near enough to each other to be effectively managed as a unit). There are 57 subunits within the OSMP (Figure 2-3). Some management units contain a small number of subunits (e.g., Bataquitos Lagoon M.U.), while other management units contain many subunits (e.g., Poinsettia/Aviara M.U.).

The purpose of subdividing the OSMP into management units is to identify cohesive units with similar management issues that would be best managed in a coordinated way. The purpose of further subdividing the management units into subunits is to recognize the diverse ownerships and management entities that have or may in the future have different preserve managers, management funding sources, and that will need to coordinate among themselves within a management unit. The Carlsbad OSMP Implementation Process and Structure specifies the mechanisms for coordination of these units.
Management entities are the organizations (public or private) that are responsible for maintaining and managing the open space values on the lands addressed by the OSMP. While the City of Carlsbad, to maintain compliance with the HMP and MHCP has the ultimate responsibility for open space management citywide, numerous other management entities have the day-to-day, on-the-ground responsibility for management.

2.3 General Management Entities

There are five general management entities (City, Other Public/Semi-Public, Wildlife Agencies, Third Party Biological Management Entities, and Private Land Owners) for open space management in Carlsbad (Table 2-2). The City is the general management entity for all lands that it owns in the OSMP, which includes approximately 600 acres of open space (natural areas plus developed parks). The other public/semi-public management entity group includes the areas managed by North County Transit District, SDG&E, Cabrillo Power, and State Parks lands, which total approximate 420 acres. California Department of Fish and Game (CDFG) is the only wildlife agency with managed lands in the City. CDFG manages



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Areas Included in the OSMP

FIGURE

2-1

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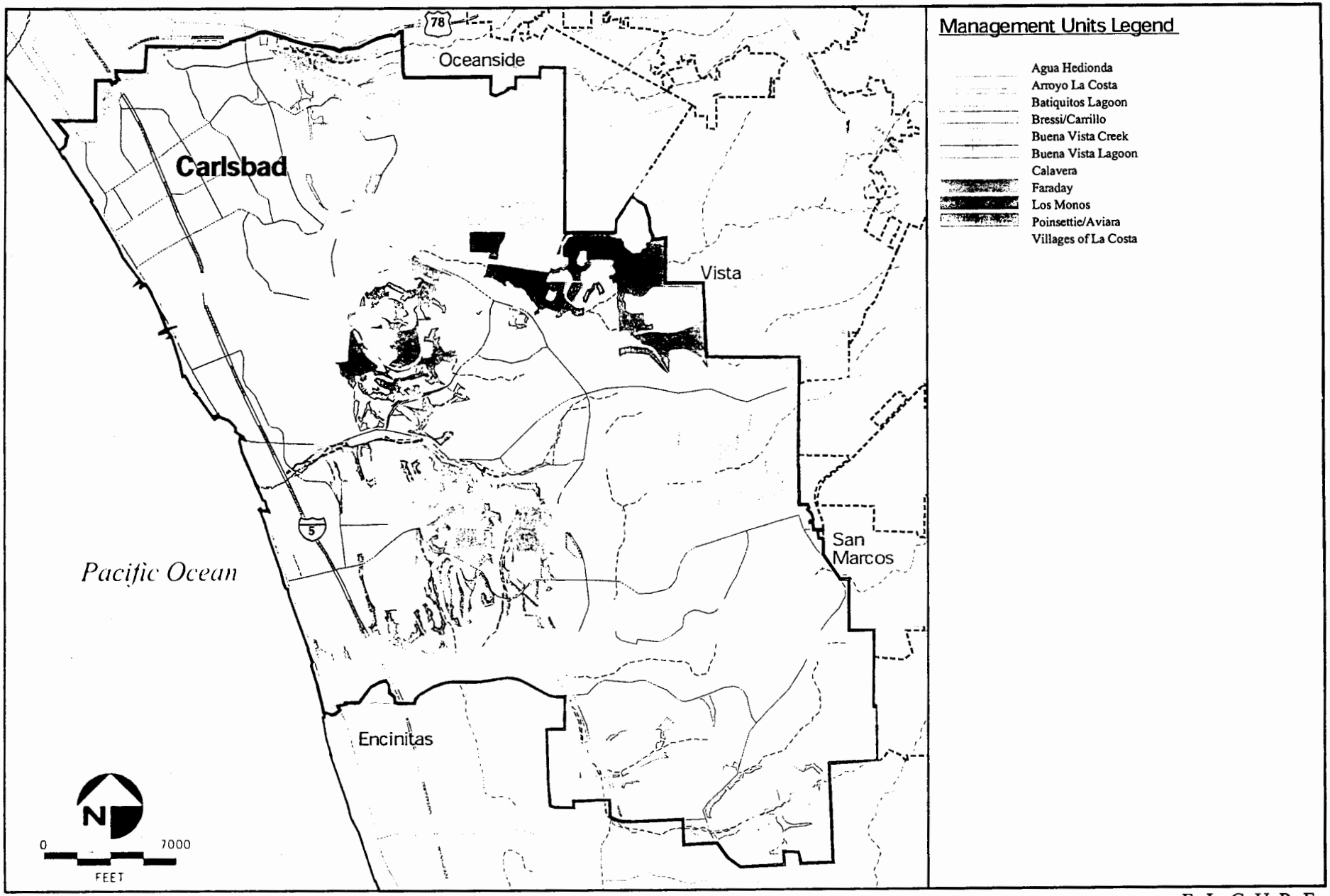

TAIC

Management Units in the OSMP

FIGURE

2-2

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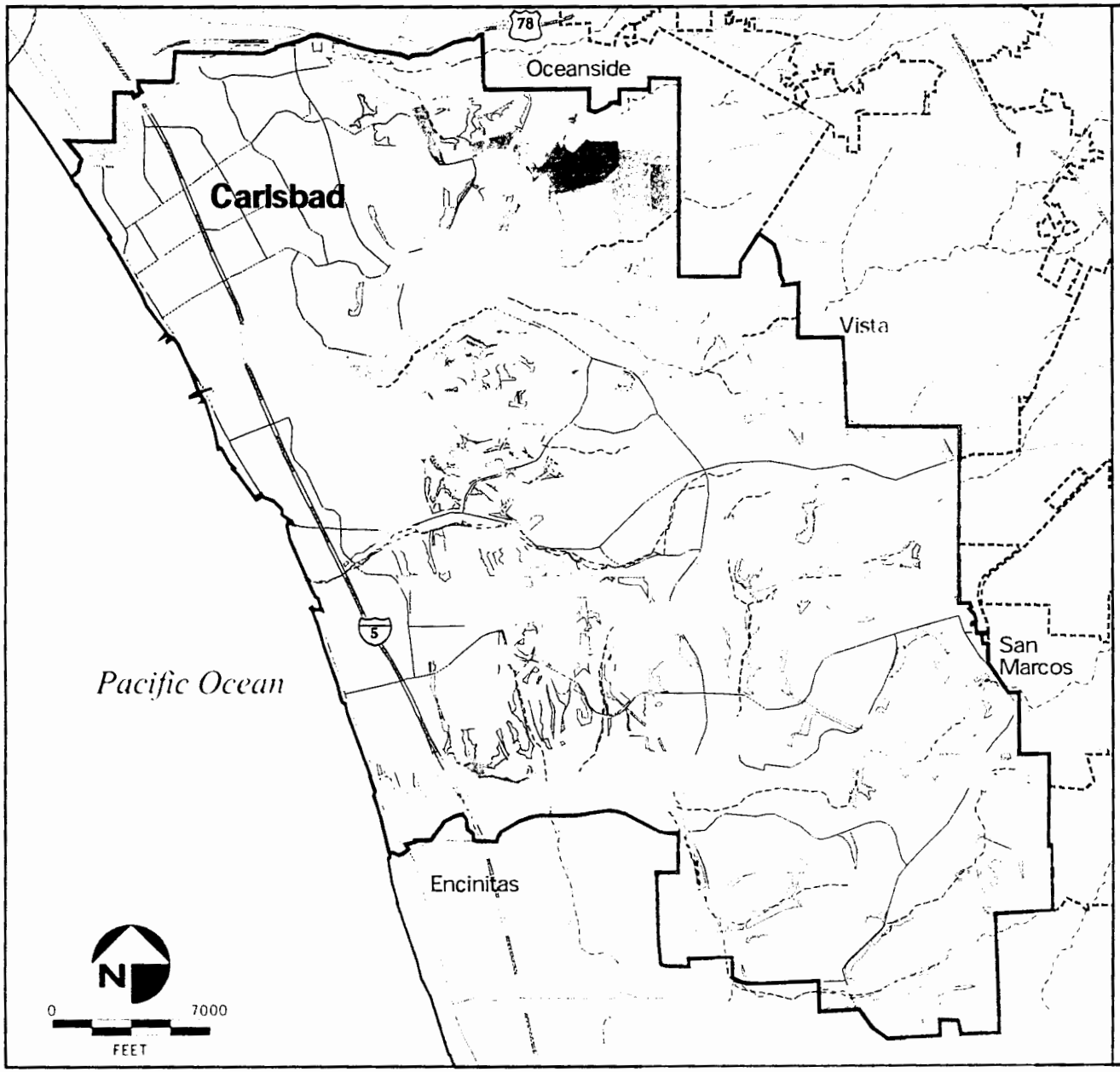
TABLE 2-1.
ACRES OF VEGETATION OCCURRING WITHIN EACH MANAGEMENT UNIT

Vegetation	Agua Hedionda	Arroyo La Costa	Batiquitos Lagoon	Bressi/ Carrillo	Buena Vista Creek	Buena Vista Lagoon	Calavera	Faraday	Los Monos	Poinsettia/ Aviara	Villages of La Costa	Grand Total
Coastal Sage Scrub	56.2	43.2	28.6	137.9	30.6	--	616.4	178.3	135.5	210.1	560.0	1,996.7
Coastal Sage Scrub/Chaparral	--	--	--	--	--	--	13.7	26.0	73.3	--	--	113.0
Chaparral	--	30.7	--	38.2	9.8	--	173.4	44.0	89.3	105.7	132.5	623.5
Southern Maritime Chaparral	--	139.9	--	--	--	--	--	25.4	6.3	128.7	80.8	381.1
Grassland	19.4	96.9	--	58.1	109.8	--	186.2	110.7	70.1	30.8	76.6	758.7
Oak Woodlands	--	--	--	3.3	--	--	11.3	--	2.6	8.9	0.4	26.4
Riparian Scrub/Woodland/Forest	67.0	75.8	17.6	27.2	70.5	--	41.7	37.7	99.7	13.5	43.6	494.4
Estuarine	263.7	--	430.6	--	--	76.9	--	--	--	--	--	771.2
Fresh Open Water	--	--	--	--	0.3	35.8	15.4	--	--	--	1.0	52.4
Meadow and Freshwater Marsh	49.0	19.0	73.9	4.4	27.8	20.8	32.3	11.4	7.7	30.8	11.2	288.2
Southern Coastal Salt Marsh	93.7	--	43.5	--	--	--	--	0.2		--	--	137.5
Eucalyptus Woodland	0.3	0.6	23.0	--	--	--	8.6	2.1	3.5	55.8	11.4	105.3
Natural Habitats	*549.3*	*406.1*	*617.2*	*269.2*	*248.7*	*133.4*	*1,098.9*	*435.9*	*487.9*	*584.3*	*917.7*	*5,748.7*
Agricultural Land	2.7	18.4	1.4	107.6	--	--	318.2	29.9	142.2	77.8	1.0	699.2
Disturbed Habitat	14.3	17.8	40.6	45.6	14.9	5.2	61.9	7.4	31.6	36.0	41.5	316.7
Developed/Urban	7.2	45.1	10.5	28.6	22.8	0.7	81.6	21.1	15.5	121.2	16.3	370.6
Non-Habitat	*24.3*	*81.3*	*52.5*	*181.9*	*37.7*	*5.9*	*461.7*	*58.3*	*189.2*	*234.9*	*58.8*	*1,386.5*
Grand Total	573.6	487.3	669.7	451.1	286.5	139.3	1,560.6	494.2	677.1	819.2	976.4	7,135.1



General Management Entity/Subunit Legend

City

City of Carlsbad Subunits:
Batiquitos Drive Open Space
Batiquitos Lagoon
Calavera Heights-Carlsbad MWD
Carlsbad Highlands Mitigation Bank
Carlsbad Village
Carrillo Ranch
Dawson Los Monos Reserve-Carlsbad MWD
La Costa Canyon Park
La Costa
Lagoon Lane
Lake Calavera Mitigation Bank
Macario Canyon
Municipal Golf Course
Poinsettia Park
Research Center
Veterans Park
Zone 19

Other Pulic/Semi-Public

Cabrillo Power

SDGE Subunits:
Chestnut Property
Hubbs Research/Bluff Top
Inner Agua Hedionda Lagoon

Other Public Agencies:
State of California
North San Diego County Transit
San Dieguito Union High School

Private

Aviara Master Home Owners Association
Rancho Carrillo Master Home Owners Association
Other HOAs and Private Open Space

Wildlife Agency

California Department of Fish and Game Subunits:
Agua Hedionda Lagoon Ecological Reserve
Batiquitos Lagoon Ecological Reserve
Buena Vista Lagoon Ecological Reserve
Carlsbad Highlands Ecological Reserve

Biological Management Entity

Center for Natural Lands Management Subunits:
Kelly Ranch
Rancho La Costa HCP
Rancho La Costa HCP-West

Environmental Trust Subunits:
Batiquitos Lagoon
Bressi Ranch
Brodiaea Preserve
Calavera Nature Preserve
Calavera West Preserve

UC Reserve System Subunits:
Dawson-Los Monos Canyon Canyon Reserve

Future Biological Management Entity

Undetermined Management Entity

TAIC

General Management Entity and Associated Subunits in the OSMP

FIGURE 2-3

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1,254 acres in the City (most of all three lagoons plus the Carlsbad Highlands Ecological Reserve). Third party biological management entities (including the Center for Natural Lands Management (CNLM), the Environmental Trust (TET), and the U.C. Reserve System) manage 1,413 acres of open space currently, and will eventually manage much of the 1,054 acres currently identified in the standards areas. Third party biological management entities are private, nonprofit organizations with specific expertise in the maintenance, management, and monitoring of natural open space. They are typically funded through large endowments that are established along with the establishment of the preserve areas they manage. The remaining open space (over 2,000 acres) is in private ownership of homeowners associations or other private parties, but is conserved in perpetuity by existing conservation easements, open space easements, or other similar land use agreements. While this land is dedicated to remain in open space, there are no current obligations to actively manage these areas for biological value.

TABLE 2-2.
ACRES OF VEGETATION MANAGED BY EACH GENERAL MANAGEMENT ENTITY

Vegetation	City	Other Public/ Semi-Public	Wildlife Agency	Biological Management Entity	Future Biological Management Entity*	Private/ HOA	Total
Coastal Sage Scrub	167.6	58.7	203.9	706.5	408.3	451.7	1,996.7
Coastal Sage Scrub/Chaparral	13.7	--	--	24.4	66.5	8.5	113.0
Chaparral	118.7	--	19.8	224.8	71.8	188.5	623.5
Southern Maritime Chaparral	9.1	--	--	92.7	79.9	199.4	381.1
Grassland	111.8	24.9	52.6	101.5	232.6	235.2	758.7
Oak Woodlands	1.2	--	6.7	0.4	14.8	3.3	26.4
Riparian Scrub/Woodland/Forest	52.0	6.0	86.3	74.6	159.5	116.1	494.4
Eucalyptus Woodland	2.3	--	23.1	12.8	7.5	59.6	105.3
Estuarine	--	265.1	504.4	--	1.3	0.4	771.2
Meadow and Freshwater Marsh	22.2	16.3	133.2	11.6	44.7	60.2	288.2
Southern Coastal Salt Marsh		19.5	116.1	0.4	--	1.4	137.5
Fresh Open Water	14.9		35.8	1.0	0.7	--	52.4
Natural Habitats	*513.4*	*390.5*	*1,181.7*	*1,250.7*	*1,087.7*	*1,324.4*	*5,748.4*
Agricultural Land	26.9	2.6	30.4	102.1	502.0	35.2	699.2
Disturbed Habitat	44.5	10.4	38.2	44.5	85.9	93.2	316.7
Developed/Urban	18.6	16.8	3.3	15.3	56.0	260.4	370.6
Non-Habitat	*90.0*	*29.8*	*71.9*	*161.9*	*643.9*	*388.8*	*1,386.5*
Grand Total	603.6	420.4	1,253.6	1,412.6	1,731.7	1,713.3	7,135.1

*Future biological management entity(ies) will be identified to manage the future preserve areas established within the "standards" areas of the OSMP. These acres represent the total standards areas. The acres that will be managed by a future biological management entity will be less than shown here.

The prime management entity is the single largest (or only) management entity for a subunit (e.g., the City, CDFG, or a private preserve manager such as CNLM). All major open space management activities will be coordinated by the prime management entity. Secondary management entities are organizations that are responsible for some management activities on some parcels in the subunit (e.g., the Buena Vista Lagoon Foundation). There may be several secondary management entities in a subunit. The prime management entity will be responsible for preparing and updating preserve management plans for each subunit (or group of subunits) and for implementing the plan. All major open space management activities will be covered

by the plan including but not limited to restoration projects, species monitoring, fence and trail maintenance. The secondary management entity may sponsor a minor open space management activity such as a trash pick up day, or the installation of an interpretive sign. All management activities (major and minor) will be consistent with the preserve management plan and coordinated with the prime management entity. The Carlsbad OSMP Implementation Process and Structure specifies the mechanisms for coordination of the different management entities. All management entities will be required to participate.

2.4 Levels of Open Space/Preserve Management and Monitoring

Open space management (including monitoring) has many different components and occurs at many different levels depending on a number of factors including ownership, open space management funding, and intended purpose and uses of the open space. Four levels of open space management have been defined here to facilitate the discussion in this report, property management, preserve management, species monitoring and management, and regional (subregional) monitoring.

2.4.1 Property Management

Property management is the most basic level of open space management and is focused primarily on establishing and maintaining the property boundary barriers including fencing, gates, and signage. Trash collection is often, but not always an action on property-level managed open space. The MHCP includes property management activities in what it describes as "preserve area monitoring".

2.4.2 Preserve Management

Preserve management includes all the property-level management actions, but also focuses on management to protect the natural open space character of the area and to provide opportunities for recreational uses. Preserve management includes but is not limited to general management of trails, public use facilities, control of erosion or invasive species, and occasionally restoration. The MHCP also includes preserve management activities in what it describes as "preserve area monitoring".

2.4.3 Species Monitoring and Management

Species monitoring and management includes all of the property-level and preserve-level management actions, but also includes many species-specific (and habitat-specific) monitoring and management actions. Many of these species or habitat specific management activities are the ASMDs developed and applied through preserve management plans. Species monitoring and management includes but is not limited to species-specific surveys and habitat enhancement, often in coordination with or required by the resource agencies under existing mitigation agreements and as are required in the conditions for coverage established by the HMP/MHCP. While some aspects of preserve-level management can occur within the adaptive management context, all aspects of species monitoring and management will occur as adaptive management. The MHCP also includes species monitoring and management activities in what it describes as "preserve area monitoring".

2.4.4 Regional Monitoring

Regional monitoring is primarily focused on the collection and evaluation of trends in data across the MHCP subregion and throughout southern California as a whole. Regional monitoring includes the maintenance of updated GIS data on vegetation type, species point data, and preserve management status (which areas are managed, at what level, and by whom). But most importantly, regional monitoring involves the synthesis of species and habitat data across the entire region (or subregion) that has been collected by consistent standardized methods and protocols so that meaningful evaluations of species and habitat status and trends can be conducted. While data collection will be the responsibility of the City and its preserve managers, the synthesis, evaluation, and interpretation of regional monitoring data will be accomplished by the state and federal resource agencies (i.e., CDFG, USFWS, and USGS). The MHCP includes regional monitoring activities in what it describes as "subregion and ecoregion monitoring".

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3.0 Open Space Management Issues

A primary goal of the OSMP was to identify the major management issues that the City and other preserve managers within the OSMP area will need to address as a part of open space, species, and habitat management and monitoring. Twenty-six often inter-related issues have been identified and are discussed below. Based on research, analysis, incorporation of requirements of the Carlsbad HMP and the MHCP, and consultation with City staff, preserve managers, resource agencies, and the Carlsbad Police department, background information has been provided on these issues along with conclusions and recommendations for how the City, the preserve steward, and preserve managers may be able to develop strategies to address these issues in individual preserve management plans and overall implementation of the OSMP. Table 3-1 lists these 26 issues and the conclusions/recommendations identified for each.

Table 3-1.
Summary of OSMP Issues and Conclusions/Recommendations

Issues		Conclusions/Recommendations
Issue 1: (Key Issue)	Wildlife Agency Management Responsibilities	The City has the ultimate responsibility for all monitoring, management, and reporting on all OSMP lands covered by the HMP/MHCP except those owned and /or managed by the wildlife agencies as of the date of the Carlsbad HMP implementing agreement.
Issue 2: (Key Issue)	Preserve Management on Existing Open Space on Private Lands	Existing open space on private lands including existing HOA open space will be maintained by the HOA or property owner according to existing HOA guidelines and/or other agreements with the City or wildlife agencies. The HOA or private landowner will be responsible for controlling trash, fire, and illegal encampments. The City is not financially responsible for active biological monitoring on these lands. If a regional funding source is available the City will coordinate with private landowners and HOAs to use these funds to implement and oversee active biological management on these lands at the required HMP/MHCP level.
Issue 3: (Key Issue)	Development of a Framework Monitoring and Management Plan	The Carlsbad OSMP will be the City's framework management plan. The resource agencies, interested organizations, and members of the public have been included in the process for the development of the OSMP (see Appendix B), therefore scheduling issues and resource agency/public involvement in the development of the draft framework plan have been addressed though this OSMP development process.
Issue 4: (Key Issue)	Preserve Management Plans and Area-Specific Management Directives	Carlsbad will work with existing preserve managers, future preserve managers, and City open space management staff to ensure that ASMDs are incorporated from the HMP/MHCP into the individual preserve management plans; and the new ASMDs are developed and incorporated as needed. The City will coordinate submittal of the ASMDs and preserve management plans to the wildlife agencies according to the timetables established in the MHCP. ASMDs and preserve management plans will be updated on a 3 to 5 year basis as needed. Preserve managers will submit annual reports to the City and the City will submit summary reports to the wildlife agencies every three years, as required by the MHCP.

TABLE 3-1. (CONTINUED)
SUMMARY OF OSMP ISSUES AND CONCLUSIONS/RECOMMENDATIONS

Issues		Conclusions/Recommendations
Issue 5: (Key Issue)	Funding to Close Management Gaps	The City will fund the additional monitoring and management activities needed to close the management gaps on lands it manages through annual budget appropriations or establishment of an endowment. However, as determined in the MHCP, the additional monitoring and management funding needed on the private/HOA open space must come from a regional funding source. Until a regional funding source is available the City will inspect the HOA lands that are a part of the preserve system at least once annually to verify that property-level management is occurring. If a regional funding source is available the City will coordinate with private landowners and HOAs to use these funds to implement and oversee active biological management on these lands at the required HMP/MHCP level. Management gaps on public/semi-public lands will be closed through coordination between the wildlife agencies, the other public/semi-public entities, and the City. The City will work with existing third party biological managers to maximize efficiency in the use of current endowments, and will work with them to identify funding for any remaining management gaps (including application of the regional funding source once it is available). The wildlife agencies will retain responsibility for funding all management and monitoring on open space they currently manage. No management gaps are expected on preserve areas established in the future for management by third party biological management entities.
Issue 6: (Key Issue)	Update of Fire Management Policies	The City will address basic issues of fire management through a comprehensive update of City fire management policies and guidelines based on the recommendations of the MHCP monitoring plan and the Wildland/Urban Interface Task Force or the equivalent current accepted regional fire management guidelines document. Resource-specific fire management planning will be incorporated into each individual preserve area plan to coordinate and manage the protection of sensitive resources during and after a burn event.
Issue 7:	Noise Impacts to Open Space	The City will work with preserve managers to develop public outreach and educational materials regarding the responsibility of "neighbors" adjacent to preserves to minimize their contribution to edge effects including noise impacts. The City and preserve managers with address specific noise impact problems with the adjacent residential, commercial, or industrial noise source on a case-by-case basis. Possible solutions for attenuation of roadway noise will be investigated by preserve managers and the City where high noise levels appear to be substantially reducing the viability of habitat.
Issue 8:	Lighting Impacts to Open Space	The City will work with preserve managers to develop public outreach and educational materials regarding the responsibility of "neighbors" adjacent to preserve to minimize their contribution to edge effects including lighting impacts. The City will continue to require shielding of major light sources on new development projects, with particular emphasis on light sources near preserve areas. The City and preserve managers will address specific lighting problems on a case-by-case basis.

TABLE 3-1. (CONTINUED)
SUMMARY OF OSMP ISSUES AND CONCLUSIONS/RECOMMENDATIONS

Issues		Conclusions/Recommendations
Issue 9: (Key Issue)	Landscaping and the Introduction of Nonnative Species	The City will establish policies and ordinances to increase the use of best management practices in landscaping (irrigation, fertilizers, pesticides/herbicides) in the vicinity the OSMP area, and to reduce the frequency of the selling and planting of species listed as noxious weeds as identified on the CalEPPC list (Appendix C). The City will work with preserve managers to identify problem species/areas, to form a coordinated response, and to develop public outreach and educational materials regarding the responsibility of land uses adjacent to preserve to minimize their contribution to edge effects including, landscaping/invasive plant impacts. Individual preserve owner/managers will work with all property owners adjacent to the preserve to educate them regarding irrigation runoff and fertilizer use. The City would only become involved in more serious cases where problems are persistent. Monitor trails for invasive species and remove invasive species populations. The City and preserve managers will address specific problems on a case-by-case basis.
Issue10: (Key Issue)	Invasive Ants	The City will establish policies and ordinances to increase the use of best management practices in landscaping with respect to invasive ant species in the vicinity the OSMP area (e.g. see landscaping guideline provided by the MHCP, specifically with respect to minimization of irrigation runoff). The City and preserve managers will ensure that all landscaping materials used within the preserve for restoration or landscaping of facilities do not contain Argentine ants, fire ants, and any other invasive pests.
Issue 11: (Key Issue)	Outdoor and Feral Animals	The City and preserve managers will develop a focused public outreach and education program that emphasizes the need for residents to control their pets to minimize their impact on the preserve system. Feral animals will be removed from preserve areas if possible. The City needs to work with existing preserve managers to address the issue of effective enforcement and deterrent methods. The City will increase the frequency of ranger patrols at preserves to increase public compliance with leash laws.
Issue 12: (Key Issue)	Alteration of Ecological Communities	The City and preserve managers need to include area-specific directives in their preserve management plans to periodically monitor the native species that often become abundant in edge-effected habitat. Control and removal programs will be initiated for any of these species that are shown to be causing the decline in other sensitive species conserved and managed under the HMP/MHCP. The monitoring and control of these species will be implemented within an adaptive management context.
Issue 13: (Key Issue)	Off-road Vehicles	To better address illegal off-road vehicle use, the City and preserve managers will work with the (Off-road Law Enforcement) ORLE team to develop a coordinated response plan. The coordinated response plan will consist of regular communication between preserve owner/managers and the ORLE Team to identify problem areas and plan enforcement efforts. Since illegal off-road activity tends to shift from location to location depending on enforcement, the coordination efforts will identify new "hot spots" with the goal of eliminating all such activities from the preserve system. In addition, all preserve entrances will include signage prohibiting off-road vehicle activity and providing a non-emergency phone number for members of the public to directly notify the Carlsbad Police and ORLE team when illegal activity is observed. Public outreach and education will be an important part of the effort to reduce illegal off-road vehicle use.

TABLE 3-1. (CONTINUED)
SUMMARY OF OSMP ISSUES AND CONCLUSIONS/RECOMMENDATIONS

Issues		Conclusions/Recommendations
Issue 14: (Key Issue)	Illegal Dumping	The City and preserve managers will ensure that potential dumpsites (relatively remote/hidden sites) in the OSMP area are inaccessible to vehicles through maintenance of gates and barriers. The City and preserve managers will establish an illegal dumping tipster hotline and post this phone number along with a non-emergency police number for real-time enforcement response. Substantial fines will be established, posted on signs, and enforced. The City and preserve managers foster a sense of community stewardship in the OSMP preserve system and "empower" the residents living near and using the open space to notify the City and law enforcement of any illegal activities including illegal dumping.
Issue 15: (Key Issue)	Management of Recreational Uses	The City and preserve managers will incorporate the MHCP guidelines for recreational uses into each preserve management plan. The MHCP guidelines will be used to establish a consistent set of rules for the OSMP citywide, to avoid confusion for members of the public. The City trails team and preserve managers will review the compatibility of the Carlsbad Citywide Trails Program and update or realign trails as needed in the plan to meet the biological protection goals and guidelines of the HMP/MHCP.
Issue 16: (Key Issue)	Enforcement	The City and preserve managers will pool their funding resources to hire five officer/rangers who will assist in preserve enforcement throughout the OSMP area. The City, preserve managers, and police department will establish a coordinated response plan to address these issues, and will work together and with local community groups on a public education program to explain goals and regulations as well as educate the public on the area's resources. The City needs to work with existing preserve managers to address the issue of effective enforcement and deterrent methods. The City will increase the frequency of ranger patrols at preserves to increase public compliance with leash laws, trespassing, and other illegal activities.
Issue 17: (Key Issue)	Itinerant Worker and Transient Camps.	The City will continue to work with local and regional agencies to find long-term solutions for housing of low-income itinerant workers and transients. The City will also work quickly to implement short-term solutions so that further habitat degradation is ceased. Note that a continued decline in habitat quality without active intervention from the City could result in the loss of one or more endangered species permits. The City will coordinate with all preserve managers to establish a protocol for reporting and handling illegal encampments to protect the health, safety, and legal rights of everyone involved. Preserve managers and rangers will notify the police department and the City when illegal encampments are discovered and will work with the City to remove structures and debris and revegetation the disturbed areas as necessary.

TABLE 3-1. (CONTINUED)
SUMMARY OF OSMP ISSUES AND CONCLUSIONS/RECOMMENDATIONS

Issues		Conclusions/Recommendations
Issue 18: (Key Issue)	Coordination of Monitoring and Management Responsibility	The process and structure for coordination and implementation of the OSMP is defined in detail in the introductory chapter of the OSMP. The City of Carlsbad will be responsible for coordinating with other cities in the MHCP to implement monitoring and management across the MHCP preserve network. The City will create the role of a Preserve Steward to oversee and support the science-based implementation of the OSMP. The preserve steward along with the USFWS and CDFG will provide oversight, including review of surveys, preserve management projects, and approval of results and reports generated by the monitoring program. The City of Carlsbad and its preserve steward and preserve managers are responsible for preserve level monitoring and management for the OSMP area, preparation of the preserve area plans specifying the monitoring and management activities for a given preserve area, and preparation of annual reports to the wildlife agencies summarizing monitoring and management actions and results.
Issue 19:	Trigger for Adaptive Management	The City of Carlsbad, the preserve steward and other preserve managers in the OSMP area will apply an adaptive management approach to all management activities. Corrective actions within an adaptive management context will be undertaken as soon as possible to prevent further degradation and more costly remedies later. If management targets (e.g., habitat condition, invasive species eradication, etc.) are rapidly deviating from desired goals, the preserve manager and/or City will contact the wildlife agencies and other issue experts to seek the best available advice as soon as possible.
Issue 20: (Key Issue)	Data Management	The City will require that preserve managers within the OSMP area adhere to all the MHCP established monitoring methods and use the standardized data collection formats. The City will investigate the development of a GIS database management tool that is accessible through the Internet and, if developed, will use this tool to efficiently maintain current data, coordinate management and monitoring, and provide information to the public.
Issue 21: (Key Issue)	Coordination of Lagoon Management	The City will work with the various lagoon management entities to coordinate dredging activities to meet the goals of hydrology/sediment management and biological conservation. The OSMP will be used as a tool to facilitate this coordination. CDFG will maintain the responsibility for species and habitat monitoring and management and the Southern California Caulerpa Action Team will continue to lead Caulerpa eradication efforts. The City will assist in monitoring and enforcement of the state ban on sale, transport, and possession of Caulerpa through periodic monitoring and informational outreach to pet stores and through educational outreach to the general public. The City will work with CDFG to improve enforcement of boating regulations on the lagoon areas where it is prohibited.
Issue 22:	Restoration	The City and preserve managers will need to incorporate restoration and enhancement into the individual preserve management plans. Additionally, detailed restoration management plans will need to be prepared for individual restoration projects for restoration required by project-specific mitigation, for the 104 acres of coastal sage scrub restoration through the OSMP area, and for additional restoration needs identified by preserve managers. Restoration management plans will be consistent with the guidelines provided in MHCP Volume III. The restoration of these 104 acres will occur once a regional funding source is available.

TABLE 3-1. (CONTINUED)
SUMMARY OF OSMP ISSUES AND CONCLUSIONS/RECOMMENDATIONS

Issues		Conclusions/Recommendations
Issue 23:	Erosion Control	The City and preserve managers will need to incorporate erosion control plans into the individual preserve management plans. The City will assist in coordination and repair of severe erosion problems. Erosion control and management plans will be consistent with the guidelines provided in MHCP Volume III.
Issue 24: (Key Issue)	Public Information, Education, and Beneficial Use of Open Space	The City will develop a citywide public information and education program to comprehensively address the public education and information needs as described above. Local public outreach to the immediate neighbors or other public users of the preserve will be conducted by each preserve manager as needed. The preserve manager will solicit assistance from the City-wide program as necessary and vise versa.
Issue 25:	Fencing and Signs	Signage and fencing are the responsibility of the primary management entity for each preserve area. The City will work with each preserve manager to develop standardized signage and OSMP rules and regulations to avoid confusion. Signage and fencing will be installed and/or maintained as described above and in the MHCP (Volume III).
Issue 26:	Preserve assembly and integration with Habitrak	The City will coordinate with preserve managers to establish a schedule and deadlines for reporting of data and project status with preserves so that citywide data are available to the City with sufficient time to update the Habitrak accounting system and prepare the City's annual reports.

3.1 Key Issues of Open Space Management in Carlsbad

There are several key issues for which the City and possibly the wildlife agencies and/or Coastal Commission will need to make policy and program decisions (e.g., how to deal with management gaps), or for which additional coordination and implementation mechanisms need to be developed (e.g., how to coordinate preserve enforcement with local law enforcement). This section highlights and outlines these key issues and makes recommendations for how best to proceed based on input received thus far in the OSMP development process. Key issues are called out where they occur. In addition, there are several other important management issues that, while not key issues requiring policy or program decisions were important to review since they are integral to open space management in the City of Carlsbad.

3.1.1 Management Responsibilities

As specified in the MHCP and HMP, the City is ultimately responsible (either directly or through agreements with other agencies or organizations) for the management and biological monitoring of its own public lands (including those with conservation easements); lands obtained as mitigation (where those lands have been dedicated to the City of Carlsbad or a third party biological management entity in fee title or easement); and lands within the City that may in the future be acquired through a regional funding program. Similarly, the CDFG will manage and monitor their present land holdings, consistent with the HMP and MHCP plans.

Issue 1 (Key Issue): Wildlife Agency Management Responsibilities

To ensure uniformity in data gathering and analysis, the wildlife agencies will assume primary responsibility for coordinating the MHCP biological monitoring program (e.g., identifying appropriate data collection methods, survey protocols, survey schedules, and standardized data collection forms), analyzing data at a subregional and regional level, and providing information and technical assistance to the City of

Carlsbad and other preserve managers within the City. However, the wildlife agencies will not have the primary responsibility to implement monitoring and management. This is the responsibility of the City along with individual preserve managers. Data analysis City-wide and at individual preserves is also the responsibility of the City and individual preserve managers.

The wildlife agencies have full financial and stewardship responsibilities for all lands they currently own and manage, and the City will not be financially responsible for ensuring that HMP/MHCP monitoring and management standards are met on currently owned wildlife agency lands (ecological reserves at Buena Vista, Agua Hedionda, and Batiquitos lagoons; a part of the former Carlsbad Highlands Conservation Bank; and 94 acres of the Holly Springs property. CDFG also manages Caltrans mitigation sites in Carlsbad). However, as per agreement among the MHCP cities, future wildlife agency acquisitions of Priority 1 properties (defined as areas that are highly constrained by narrow endemic species, major or critical locations of MHCP species, or wildlife corridors) within the City of Carlsbad will be the funding responsibility of the City (W. Tippets, CDFG, pers. com.).

> **Conclusion/Recommendation 1**: The City has the ultimate responsibility for all monitoring, management, and reporting on all OSMP lands covered by the HMP/MHCP except those owned and /or managed by the wildlife agencies as of the date of the Carlsbad HMP implementing agreement.

Issue 2 (Key Issue): Preserve Management on Existing Open Space on Private Lands

As described in the MHCP, open space areas associated with existing residential developments and governed by homeowners associations (HOA) will be maintained according to HOA guidelines. The HOAs will be responsible for controlling trash, fire, and illegal encampments. HOA open space areas may receive active biological monitoring and management pursuant to the MHCP if there is a regional funding source for biological management activities and if there are no legal (i.e., HOA) impediments. New HOA open space conserved after the City's subarea plan implementing agreement is adopted will be managed and monitored according to the specifications in the HMP/MHCP, if it is part of the preserve system.

If land is used as mitigation for public or private project impacts, or if private land is purchased with public funds or voluntarily dedicated in fee title, habitat management will be required consistent with the HMP/MHCP and associated habitat management plans.

Private landowners within the preserve who are not third-party beneficiaries of the City's take authorizations will have no additional obligations as a result of the MHCP for management or biological monitoring of their lands. Private landowners who are third-party beneficiaries will be responsible for habitat management of preserve lands they choose to retain in private ownership to the extent required by the Carlsbad HMP and implementing regulations and as specified as conditions of development permits.

> **Conclusion/Recommendation 2:** Existing open space on private lands including existing HOA open space will be maintained by the HOA or property owner according to existing HOA guidelines and/or other agreements with the City or wildlife agencies. The HOA or private landowner will be responsible for controlling trash, fire, and illegal encampments. The City is not financially responsible for active biological monitoring on these lands. If a regional funding source is available the City will coordinate with private landowners and HOAs to use these funds to implement and oversee active biological management on these lands at the required HMP/MHCP level.

3.1.2 Management Plans

Under the requirements of the MHCP, Carlsbad must prepare a framework monitoring and management plan as a condition of its implementing agreement with the resource agencies. The framework monitoring and management plan will provide general direction for all preserve management issues within the HMP boundaries and will reference the subregional MHCP Biological Monitoring and Management Plan.

Issue 3 (Key Issue): Development of a Framework Monitoring and Management Plan

The framework monitoring and management plan will identify and prioritize the specific species populations and vegetation communities to be managed, and will identify monitoring and management activities specific to individual regions, core areas, or linkages within Carlsbad that address specific covered species requirements and the City's preserve objectives. The framework management and monitoring plan will establish a process to develop area-specific management directives and describe how adaptive management will be undertaken based on new information on species and ecosystem needs. Existing preserve management plans will be incorporated by reference into the framework plan. Existing preserve management plans will be updated to address all the management and monitoring requirements of the HMP/MHCP as appropriate. This report is a part of the development of the Carlsbad OSMP, which will function as the City's Framework Management Plan.

Within 6 months of issuance of take authorizations the City is required to prepare a draft framework monitoring and management plan to submit to the wildlife agencies for review. The framework plan will be reviewed and approved by the wildlife agencies and finalized by the city within an additional 3 months. The development of the framework plan will also include a mechanism for public involvement.

> **Conclusion/Recommendation 3:** The Carlsbad OSMP will be the City's framework management plan. The resource agencies, interested organizations, and members of the public have been included in the process for the development of the OSMP (see Appendix B), therefore scheduling issues and resource agency/public involvement in the development of the draft framework plan have been addressed though this OSMP development process.

Issue 4 (Key Issue): Preserve Management Plans and Area-Specific Management Directives

Carlsbad also will need to develop area-specific management directives (ASMDs) to address monitoring and management issues at the site-specific level. There is no minimum acreage for which area-specific monitoring and management directives must be prepared and all subunits of the OSMP that have been included in the HMP/MHCP must have area-specific directives. This includes parcels outside of Carlsbad in the unincorporated area known as the gnatcatcher core area. The ASMDs will be incorporated into the individual preserve management plans that will be prepared (or updated) for each subunit (e.g., Bataquitos Lagoon Ecological Reserve, Rancho La Costa Preserve, etc.) managed by a given management entity (e.g., the City, CDFG, CNLM, etc.). It will be the responsibility of the individual preserve managers to incorporate ASMDs identified in the HMP/MHCP into their preserve management plans and to submit those plans to the City and wildlife agencies for approval. The City will be responsible for developing ASMDs and preserve management plans for all open space areas it directly manages. Currently, preserve management plans have been developed for three preserve areas, two are in the process of revision, and six others are in various stages of preparation (Table 3-2). Preserve managers will be required to manage their areas in compliance with their approved ASMD, subject to modification by the Preserve Steward to address emergency situations or adaptive management needs.

TABLE 3-2.
EXISTING PRESERVE MANAGEMENT PLANS FOR OPEN SPACE IN CARLSBAD

Preserve Management Plan	Date
CNLM: Habitat Management Plan for the La Costa Preserve	Aug. 2001
CNLM: Habitat Management Plan for the Kelley Ranch Habitat Conservation Area	Nov. 2002
CNLM: Habitat Management Plan for Choumas-Pappas and Alemir Properties	June 2005
Perpetual Land Management Plan for Calavera Nature Preserve	Currently being revised
Calavera Hills Phase II Final Habitat Management Plan	Currently being revised
CDFG: Batiquitos Lagoon Ecological Reserve Management Plan	In Draft[1]
CDFG: Buena Vista Lagoon Ecological Reserve Management Plan	In Preparation[1]
CDFG: Agua Hedionda Lagoon Ecological Reserve Management Plan	In Preparation[1]
CDFG: Carlsbad Highlands/Holly Springs Ecological Reserve	In Preparation
UC Reserve: Dawson/Los Monos Natural Reserve Management Plan	In Preparation[2]

[1] T. Dillingham, CDFG (pers. com.)
[2] I. Kay, UC Natural Reserve System (pers. com.)

For most preserve areas the ASMDs will be incorporated into an overall preserve management plan and as a separately bound document (See Appendix D for guidelines on preserve management plan format and content). However, for some smaller, isolated open space areas (e.g., an isolated parcel with a critical location of a narrow endemic plant), the ASMD(s) may be submitted to the wildlife agencies as a brief form that includes the ASMD(s), a map of resources on the preserve property, describes site-specific threats to resources, and identifies site-specific management and monitoring actions to address these threats (a sample ASMD form is included in Appendix B.8 of the MHCP Vol. III).

ASMDs will be developed and implemented to address species and habitat management needs in a phased manner for individual parcels or project areas, once conserved as part of the preserve, including any species-specific management required as conditions of the take authorizations. The project CEQA document, when necessary, will include these area-specific management directives. Preserve management plans and associated ASMDs must be developed (or updated) and approved by the wildlife agencies for preserve lands within the first year after lands are dedicated to the preserve and implemented immediately upon approval of the preserve management plan or ASMD form.

Both the OSMP framework plan (generally) and preserve management plans and associated ASMDs (specifically) will address the following management and monitoring actions, as appropriate:

- fire management
- public access control
- fencing and gates
- ranger patrol
- trail placement/creation evaluation
- trail maintenance
- visitor/interpretive services
- volunteer services
- hydrological management
- signs and lighting
- trash and litter removal
- access road maintenance
- access road maintenance
- domestic animal access control enforcement of property and/or
- homeowner requirements
- removal of invasive species
- nonnative predator control
- species monitoring
- habitat restoration
- management for diverse age classes
- use of herbicides and rodenticides
- biological surveys
- species management conditions

The preparation and implementation of the framework plan (OSMP), preserve management plans, and area-specific management directives will be coordinated among managers of the subunits within each management unit, across the City, and between subareas of the MHCP to ensure that the overall needs of species and habitats are met on a regional basis. Preserve managers will be required to review and update management plans on a three-year basis and associated ASMDs as necessary in the annual preserve work plans. Status reports shall be submitted annually to the City, and every 3 years to the wildlife agencies. The reports will summarize management activities, describe management priorities for the next 3-year period, discuss restoration activities, and evaluate funding and the ability to meet resource management goals.

> **Conclusion/Recommendation 4:** Carlsbad will work with existing preserve managers, future preserve managers, and City open space management staff to ensure that ASMDs are incorporated from the HMP/MHCP into the individual preserve management plans; and the new ASMDs are developed and incorporated as needed. The City will coordinate submittal of the ASMDs and preserve management plans to the wildlife agencies according to the timetables established in the MHCP. ASMDs and preserve management plans will be updated on a 3 to 5 year basis as needed. Preserve managers will submit annual reports to the City and the City will submit summary reports to the wildlife agencies every three years, as required by the MHCP.

3.1.3 Management Gaps

Management gaps are defined as the difference between the current on the ground management that is being implemented today and the management and monitoring that is required by the HMP/ MHCP and will be implemented in the future. Management gaps are defined in terms of differences between current and future required management and monitoring activities. Therefore, it is important to understand the current levels of management that occur on existing open space throughout the City and the level of management and monitoring that will be required in the future, under the HMP/MHCP. Section 2.4 (Levels of Open Space/Preserve Management and Monitoring) describes the management level terms used here (property management, preserve management, species monitoring and management, and regional monitoring).

There are approximately 7,135 acres of open space included in the OSMP area (Figure 3-1 and Table 2-2). Currently, the managers of the largest amounts of open space in the City are the wildlife agencies, third party biological management entities, and private landowners including HOAs, which manage 18%, 20%, and 24% of the open space, respectively. The City currently manages 8% of the open space and other public/semi-public entities (e.g., SDG&E) manage 6% of the area.

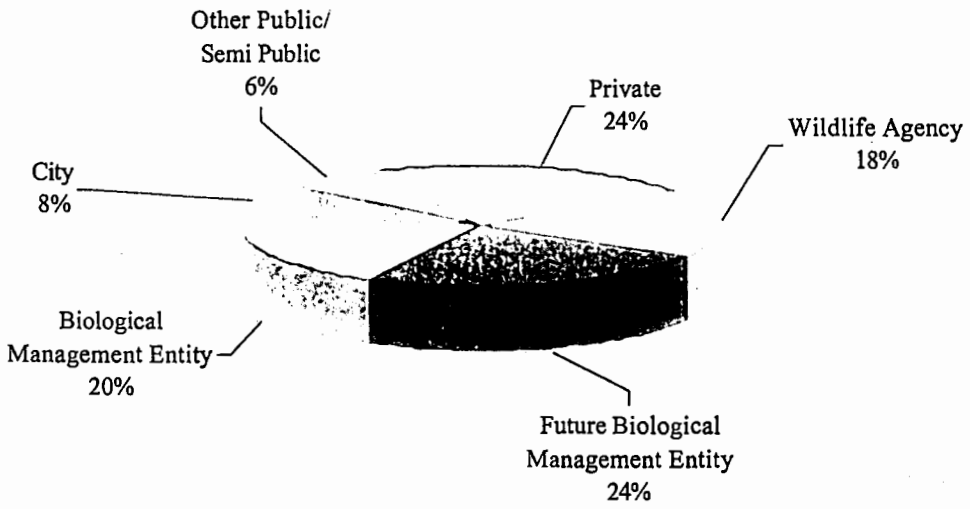

Figure 3-1. Distribution of open space management by general management entity.

Issue 5 (Key Issue): Funding to Close Management Gaps

The 604 acres owned and managed by the City and the 1,713 acres on private land make up 32% of the open space, and generally only receive property-level management. There are a multitude of private owners of open space including many HOAs. The City does not have a comprehensive list of the point of contact and specific parcels covered by most of the HOAs (D. Rideout, Carlsbad Principal Planner pers. comm.), therefore, no attempt was made at this time to contact the persons responsible for management on these properties. Instead, it is assumed that property-level management on these properties includes management of fencing, signage, fire buffers, trash, and trespassing on an as needed basis.

The City has management responsibilities on a number of open space areas throughout the City including several large open space parcels (Lake Calavera, Municipal Golf Course property, and Veterans Memorial Park). The City also holds a long-term lease on Hub Park (owned by SDG&E), and currently manages the property. Property-level management activities on these City-managed parcels focus on maintaining existing habitat values, and include trash removal, basic access controls, and fire prevention (D. Duncanson, Carlsbad Public Works Manager, pers. com.). The HMP/MHCP requires that management on the City managed and privately managed open space include the full complement of property, preserve, species management and monitoring, and regional monitoring activities. Therefore, there are significant management gaps on these areas.

There are 420 acres (6%) of open space under the ownership and management of other public or semi-public entities (e.g., SDG&E, Caltrans, North County Transit District [NCTD], State Parks). All but approximately 65 acres are the SDG&E and Cabrillo Power portions of Agua Hedionda Lagoon. Most of these parcels are managed at a property-level only. The SDG&E parcels are monitoring and managed according to the SDG&E NCCP, which focuses primarily on minimizing and remediating impacts from SDG&E operations and maintenance activities. It is assumed that CDFG will include all of Agua Hedionda Lagoon in the management plan CDFG is preparing. The Pointsettia vernal pools are conserved on property owned and managed by the NCTD, which has specific management and monitoring agreements with the wildlife agencies. NCTD will retain management responsibility for this preserve area. The City will work with the remaining public and semi-public entities to coordinate funding and management for their small parcels in the OSMP. Management gaps will occur on these public/semi-public areas once the HMP/MHCP is implemented. It is assumed the CDFG will work with SDG&E to identify funding for management of the lagoon areas. The City will work with the other entities to coordinate funding and management.

The wildlife agencies and the biological management entities manage a significant amount (38%) of open space in Carlsbad (1,254 and 1,413 acres respectively). Both management entities implement a significant amount of preserve-level management as well as species monitoring and management, depending on the resources present at a given property. There has not been a coordinated effort to implement regional monitoring in these areas prior to the development of the MHCP. There are many additional monitoring and management requirements in the HMP/MHCP that are not currently addressed at the required levels/intensities/frequencies by the third party managers or wildlife agency managers. Therefore, the combination of these additional management and monitoring requirements and the need for regional monitoring creates a management gap on these properties. The wildlife agencies have accepted responsibility for funding the management of their currently owned and managed lands at the new HMP/MHCP level. Management gaps on open space managed by third party biological managers will be the funding responsibility of the City through the regional funding source, once it is established.

Approximately 1,732 acres (24%) are currently in the standards areas of the OSMP and are assumed to be managed in the future by third party biological management entities. A portion of these areas will be developed and the remainder will be set aside as permanent natural open space. The development and permitting agreements with the wildlife agencies and the City will ensure that sufficient open space conservation and management endowments are established in conjunction with the development of these properties to cover all aspects of full HMP/MHCP required monitoring and management for all resources on these properties in perpetuity. Therefore, there are no management gaps expected on the area to be managed by future third party biological management entities. The City will require that these areas are managed by a professional biological management entity with the ability and experience to effectively management the preserve area and protect the species and habitat values in the preserves.

Note that a complete OSMP biological management and monitoring funding analysis has been prepared by CNLM and is contained in Appendix A of this document.

> **Conclusion/Recommendation 5:** The City will fund the additional monitoring and management activities needed to close the management gaps on lands it manages through annual budget appropriations or establishment of an endowment. However, as determined in the MHCP, the additional monitoring and management funding needed on the private/HOA open space must

come from a regional funding source. Until a regional funding source is available the City will inspect the HOA lands that are a part of the preserve system at least once annually to verify that property-level management is occurring. If a regional funding source is available the City will coordinate with private landowners and HOAs to use these funds to implement and oversee active biological management on these lands at the required HMP/MHCP level. Management gaps on public/semi-public lands will be closed through coordination between the wildlife agencies, the other public/semi-public entities, and the City. The City will work with existing third party biological managers to maximize efficiency in the use of current endowments, and will work with them to identify funding for any remaining management gaps (including application of the regional funding source once it is available). The wildlife agencies will retain responsibility for funding all management and monitoring on open space they currently manage. No management gaps are expected on preserve areas established in the future for management by third party biological management entities.

3.1.4 Fire Management Issues

Fire management is a critical component of management efforts in natural landscapes. The HMP/MHCP requires that the City create one or more fire management plans for its natural open space areas. This plan(s) will include measures to avoid destruction of sensitive plant species populations, to create fire management zones, and to educate fire control personnel on how to minimize impacts to sensitive species during fire suppression activities. Development of a fire management plan is a condition for conservation and management of a number of sensitive species covered by the HMP/MHCP.

Fire is an important ecological process in southern California landscapes and biological resource goals recognize that fire is a natural process in ecosystems. Many vegetation communities in the City depend on a regular cycle of burning for maintaining a balance of species, seed viability, and reproduction. As an ecological process, however, it has been drastically altered by the many effects of suburban development. Fire recurrence intervals have been shortened considerably due to accidental ignition and arson. Additionally, the close proximity of property and structures to open space and fires that occur there requires immediate suppression activities from the fire department. The natural fire cycle is affected by human activities, both by increasing fire frequency in some locations and decreasing it in others through fire prevention measures.

As a necessity, fire management must focus on two different objectives: achievement of biological resource goals, and hazard reduction for humans and their property. Fire management for human safety will continue in a manner that is compatible with conservation of biological resources. Fire management for human hazard reduction involves reducing fuel loads in areas where fire may threaten human safety or property, suppressing fires once they have started, and providing access for fire suppression equipment and personnel.

The MHCP identifies the following fire management practices as important considerations for the City's Fire Management Plan(s):

- Identify potential fuel reduction zones or firebreak locations as well as access routes for fire equipment in the event of wildland fires that pose safety concerns.

- To the degree feasible, site fuel reduction zones, firebreaks, and access routes to avoid sensitive biological resources, preferably at the top or bottom of a slope rather than across a slope. Use existing firebreaks (e.g., natural ridge lines, roads, fire roads) where available.

- In smaller fragmented preserve areas, manage fuel loads primarily for human safety, using mechanical fuel control measures such as chopping, disking and chaining, removal, and herbicides. Additional methods of value in smaller areas include mowing, trimming, and hand clearing. In general, chopping is the recommended methods based on biological and fuel reduction values and safety concerns. Investigate the use of managed goat herds for vegetation and fuel reduction (goat herds were not specifically mentioned in the MHCP, but have been used

for brush management elsewhere in California and locally, including along the urban/wildland interface in the City of San Diego between the community of Tierrasanta and the Mission Trails Regional Park.

- In larger preserve areas, such as in northeast and southeast Carlsbad, manage both for biological resource needs and for safety considerations. Where chaparral or coastal sage scrub stands are more than 20 years old, evaluate the need for prescribed burning, where practical, given safety and cost considerations. Fire management practices will be based primarily on the risks of uncontrolled wild fire in proximity to developed areas.

- Emphasize the use of "fire-safe" native plants in landscaping along preserve edges. Prohibit the use of invasive exotics, and adopt an exotic plant control plan.

Where preserve areas are planned adjacent to existing developed areas, the fuel management zone may, if unavoidable for safety reasons, encroach into the preserve. However, any such expansion of fuel management zones would require additional mitigation. Where new development is planned, brush management will be incorporated within the development boundaries and will not encroach into the preserve. The landowner and/or management entity is responsible for brush management in the City of Carlsbad. Landowners will consult with the City planning staff and fire department prior to clearing of any natural vegetation to ensure that 1) the clearing is necessary as a fire control safety issue; and 2) that the clearing does not encroach in a preserve area and/or is consistent with the City's wildlife and resource permits. All brush management activity adjacent to or in open space areas must be also be coordinated with the preserve manager for that area.

Issue 6 (Key Issue): Update of Fire Management Policies

The OSMP will address brush management and whether use of fire is necessary to manage the composition and age structure of vegetation communities. The small size of many OSMP preserve areas will make the use of fire difficult or impractical for biological management. The local fire department will be consulted so that both biological and safety goals are met. Brush management to reduce fuel and protect urban uses will occur where development is adjacent to the preserve. The City will develop a list of "fire-safe" plants and will encourage the use of "fire-safe" native plants in landscaping along preserve edges. Fire management will be consistent with the recommendations of the Wildland/Urban Interface Task Force (San Diego County Fire Chief's Association 1997) or the equivalent current accepted regional fire management guidelines document.

When fire management objectives are focused on attaining biological goals the fire management issues and actions will be incorporated into the preserve management plans developed by each preserve manager. A comprehensive update of City fire management policies will be undertaken by the City to integrate the recommendations of the Wildland/Urban Interface Task Force (or equivalent updated recommendations) with the City's own fire department policies and guidelines. Resource-specific fire management planning will be incorporated into each preserve area management plan that identifies the fire sensitive resources (habitat types and species locations) that must be addressed during and after a burn event. The City's update of fire management policies will be reviewed by the wildlife agencies.

> **Conclusion/Recommendation 6:** The City will address basic issues of fire management through a comprehensive update of City fire management policies and guidelines based on the recommendations of the MHCP monitoring plan and the Wildland/Urban Interface Task Force or the equivalent current accepted regional fire management guidelines document. Resource-specific fire management planning will be incorporated into each individual preserve area plan to coordinate and manage the protection of sensitive resources during and after a burn event.

3.1.5 Edge Effects and Encroachment

Effects on biological resources due to land uses at the edge of biological areas are commonly known as edge effects. Examples of things that cause edge effects associated with residential development include

noise and lighting impacts, increased erosion or sedimentation and siltation, increased human intrusion, exotic species invasion (plants and animals), and the disruption of the natural composition of native species (i.e., increasing human-adapted species at the expense of rarer and more sensitive species). The construction of access roads and utilities to serve residential development can also cause edge effects. Edge effects can affect vegetation communities, thus altering wildlife habitat and affect sensitive species.

Edge effects extend the human footprint beyond the area of development; however, they are more difficult to quantify because they often are not manifested in a change in the visual landscape, and often result in gradual change over a longer period of time. Furthermore, the types of edge effects are diverse and their effects are variable. For these reasons, individual preserve management plans must carefully evaluate the potential for edge effects and include activities to reduce or eliminate the impact of edge effects on species and habitats. Ongoing analysis of damaging edge effects and means to mitigate them will be carried out by the Preserve Steward on a Citywide basis.

The edge zone is the area in which land uses adjacent to open space areas have an impact on the biological value of the habitats. The edge zone varies greatly depending on the type of edge effect and the species or habitats potentially affected; therefore, it is not possible to identify a single edge zone distance for all species and habitats in all cases. As a general rule, however, the smaller an area of open space, the greater the proportion that will be affected by a given edge effect. Because some edge effects can extend for thousands of feet, there are no areas in the OSMP that are not affected by at least one type of edge effect. The types of edge effects that are the most prevalent in Carlsbad include noise, outdoor lighting, introduction of nonnative species (plants and animals, including pets), and disruption of the natural ecological community.

Because edge effects and encroachment are arguably one of the most important management issues for the Carlsbad OSMP, the various sources and mechanisms of these indirect impacts are discussed in detail below. To the extent possible, the area or distance from the adjacent land use that is impacted by the edge effect is quantified based on available data and information. An estimated range of distances is given for each impact type. When data were not available, a reasonable estimate of the distances was made. It is recognized that there is no substantial body of knowledge that currently exist addressing these concepts and issues.

Issue 7: Noise Impacts to Open Space

Residential areas are generally not substantial noise producers relative to commercial, and industrial land uses. However, noise associated with any human activity (e.g., residential, commercial, industrial land uses, and vehicular traffic) that permeates adjacent habitat may be a deterrent to some wildlife species and therefore, is an indirect impact. The study of animal response to noise is a function of many variables including characteristics of the noise and duration, life history characteristics of the species, habitat type, season and current activity of the animal, sex and age, previous exposure and whether other physical stressors (e.g., drought) are present (Manci et al. 1988).

Most studies of noise impacts to wildlife have addressed aircraft or traffic noise. More studies are needed to determine the long-term effects of noise disturbance. Long-term studies have been difficult because of the effort required and the complexity of the variables affecting animal survivorship (National Park Service 1994). While data are unavailable regarding the effects of residential noises on wildlife, one can assume that louder, prolonged noise is more detrimental than quieter, short-term noise. There are a number of potential rural residential noise sources. Some of the louder possible sources include off-road vehicles (motorcycle, 88 A-weighted decibels, [dBA] at 30 feet [Truax 1999]), yard equipment such as lawn mowers or leaf blowers (90 - 110 dBA at 3 feet [Rabinowitz 2000]), and chain saws (approx.117 dBA at 3 feet [Truax 1999]). Noise levels attenuate with distance, therefore, the effects of such loud noises would be greatest nearest the residence, but could be transmitted several hundred feet or more into the natural habitat.

A threshold of 60 dBA has been established as a guideline by the wildlife agencies for noise impacts to breeding sensitive bird species; however; there is no noise standard for other species. This standard is applied primarily for the California gnatcatcher, *Polioptila californica*, and the least Bell's vireo (*Vireo*

belli pusillus) and was based on studies on the least Bell's vireo, an endangered riparian bird (SANDAG 1990). Similar studies have identified adverse affects of noise on several other species of breeding birds (Reijnen et al. 1997; Riejnen and Foppen 1995). Noise attenuates at approximately 6 dBA per doubling of distance; therefore, the sample residential noise sources given above would attenuate to the 60 dBA standard for birds within a range of 96 feet (lawn mower) to 1,536 feet (chainsaw) from the source. These attenuation distances represent the upper limit to the impact distance and may be substantially reduced when the line-of-sight to the source is blocked by terrain or vegetation density is high.

Roadway noise is the most prevalent noise source impacting the habitat of the OSMP. Since many major roads and freeways cross or are adjacent to open space areas, roadway noise will continue to be an important and problematic issue. Roadway noise is best attenuated with the construction of noise barriers, however, noise barriers are very expensive and may preclude much of the wildlife movement and gene flow between open space areas. Therefore, construction of noise barriers is not a feasible noise control measure in most areas of the OSMP.

Most residential noise sources are likely to be intermittent and infrequent in comparison with the noise associated with roadway traffic. In the rare cases that residential noise is perceived as a persistent problem and impacts habitat values, the preserve manager will need to address the situation directly with the resident producing the noise and with the support of the police department as necessary. Education of residents adjacent to the preserve about edge effects in general through public outreach will be an important component to control residential noise sources.

> **Conclusion/Recommendation 7:** The City will work with preserve managers to develop public outreach and educational materials regarding the responsibility of "neighbors" adjacent to preserves to minimize their contribution to edge effects including noise impacts. The City and preserve managers with address specific noise impact problems with the adjacent residential, commercial, or industrial noise source on a case-by-case basis. Possible solutions for attenuation of roadway noise will be investigated by preserve managers and the City where high noise levels appear to be substantially reducing the viability of habitat.

Issue 8: Lighting Impacts to Open Space

Outdoor lighting associated with residential and commercial land uses in the Carlsbad OSMP area has the potential to illuminate adjacent sensitive habitat. Lighting is of concern due to the effect on nocturnal wildlife activities. For example, outdoor lighting can inhibit wildlife movement through wildlife corridors such as creek beds if the lighting illuminates any portion of the corridor. The amount of habitat affected by lighting varies greatly depending upon surrounding terrain and vegetation, on the brightness of the lights, the direction the lights are pointed, and whether the lights are left on all night or only for short periods (e.g., triggered security lights). Outdoor lighting has the greatest potential to affect nocturnal animals, primarily mammals that forage and move through habitat corridors at night.

To minimize the effects of lighting on sensitive species, lighting will not be permitted in the preserve except where essential for roadways, facility use, and safety. Along preserve edges, major highway lighting will be limited to low pressure sodium sources directed away from preserve areas. The MHCP provides the following lighting guidelines and recommendations:

- Eliminate lighting in or adjacent to the preserve except where essential for roadway, facility use, and safety and security purposes.

- Require lighting use restrictions consistent with existing city lighting guidelines within 200 feet of the preserve. Direct lighting in adjacent areas away from the preserve.

- Use low-pressure sodium illumination sources. Do not use low voltage outdoor or trail lighting, spotlights, or bug lights. Shield light sources adjacent to the preserve so that the lighting is focused downward.

- Avoid excessive lighting in developments adjacent to linkages through appropriate placement and shielding of light sources.

The preserve manager will need to address the individual lighting problems directly with the resident producing the light and with the support of the City and police department as necessary. Education of the residences adjacent to the preserve about edge effects in general through public outreach will be an important component to control residential light sources.

> **Conclusion/Recommendation 8:** The City will work with preserve managers to develop public outreach and educational materials regarding the responsibility of "neighbors" adjacent to preserve to minimize their contribution to edge effects including lighting impacts. The City will continue to require shielding of major light sources on new development projects, with particular emphasis on light sources near preserve areas. The City and preserve managers will address specific lighting problems on a case-by-case basis.

Issue 9 (Key Issue): Landscaping and the Introduction of Nonnative Species

Introduction of nonnative species is one of the most serious edge effects at the urban/wildlands interface (Alberts et al. 1993). Landscaping (i.e., the introduction of native or nonnative plant species around developed areas) may often be in direct conflict with biological objectives of open space management. Nonnative invasive plants invade native habitats by various means. Horticultural planting of nonnatives on land adjacent to native habitat facilitates invasion, and each residence or business adjacent to a preserve area can serve as a new epicenter for the dissemination of exotic plants into the adjacent natural vegetation (Harty 1986). While the presence of nonnative plant species adjacent to open space preserve provides the source for invasion, it is the physical disturbance of vegetation at habitat edges and the altered hydrological and moisture regimes that are the primary factors facilitating invasion of most nonnative plant species. Most nonnative invasive species are readily dispersed into these altered edge habitats as seeds or plant parts that are carried by wind, water, and humans.

The successful invasion of exotic species may alter habitats and lead to displacement or extinction of native species over time. For example, exotic invasions have been shown to alter hydrological and biochemical cycles and disrupt natural fire regimes (MacDonald et al. 1988; Usher 1988; Vitousek 1990; D'Antonio and Vitousek 1992; Alberts et al. 1993). Vitousek and Walker (1989) noted that aggressive nonnative species might displace native species by altering soil fertility. As native plants are displaced, animal species that rely on the plants for food and shelter may also disappear from the local ecological community. The degree to which nonnative plants are able to leave the landscaped areas and invade the natural landscape is generally a function of the amount of irrigation used, the invasive ability of the particular nonnative plant species used in the landscaping, and time. Nonnative plants can be dispersed substantial distances and may extend over one hundred feet into the habitat depending on irrigation practices (Alberts et al. 1993).

Invasive or potentially invasive weed species known or likely to occur in Carlsbad that may pose threats to native species include but are not limited to tamarisk (*Tamarix* spp.), Pampas grass (*Cortaderia selloana*), eucalyptus (*Eucalyptus* spp.), giant reed (*Arundo donax*), mustard (*Brassica* spp.), African fountain grass (*Pennisetum setaceum*), tocalote (*Centaurea melitensis*), purple false brome (*Brachypodium distachyon*), artichoke thistle (*Cynara cardunculus*), castor bean (*Ricinus communis*), fennel (*Foeniculum vulgare*), ice plant (*Mesembryanthemum chilensis*). These and other noxious weed species, as designated by the U.S. Department of Agriculture, are subject to federally funded prevention, eradication, or containment efforts (CalEPPC 1999). Legally, a noxious weed is any plant designated by federal, state, or local governments as injurious to public health, agriculture, recreation, wildlife, or property (BLM 1999, Sheley et al. 1999 in BLM 1999). The MHCP provides the following recommendations for control of invasive exotic plants:

- Prioritize areas for exotic species control based on aggressiveness of invasive species and degree of threat to the native vegetation (see CalEPPC list, Appendix C).
- Eradicate species based on biological desirability and feasibility.
- Use an integrated pest management approach, i.e., use the least biologically intrusive control methods, at the most appropriate period of the growth cycle, to achieve the desired goals.

- Consider both mechanical and chemical methods of control. Only herbicides compatible with biological goals will be used. Only licensed pest control advisers are permitted to make specific pest control recommendations.

- Properly dispose of all exotic plant materials that are removed from preserve lands (e.g., in offsite facilities).

- Revegetate exotic weed removal areas with species appropriate to biological goals.

The City will establish policies and ordinances that support the control of species invasions in the vicinity of the OSMP area. Policies and ordinances could include:

- Prohibiting the sale of noxious weed species (see CalEPPC list, Appendix C) at nurseries in the City.

- Establishing and enforcing penalties for landowners whose landscaping activities encroach on the OSMP areas (clearing, planting, species invasion, irrigation, or pesticide/herbicide use).

- Implementing a public outreach campaign to educate residents and businesses on the importance of using "best management practices" for landscaping near OSMP areas.

Preserve management plans developed for each preserve area will identify problem species/areas. Preserve managers will develop a timeline for scheduled exotic plant species removal and subsequent revegetation that minimizes the risk of run-off and erosion problems (i.e., avoid major removal projects during the rainy season and initiate revegetation quickly).

For maximum efficiency and effectiveness, the City and preserve managers will coordinate efforts among themselves and with state and regional efforts to eliminate the most problematic invasive species. For example, the City and preserve managers could coordinate with activities of the southern California "Team Arundo" on Arundo eradication. Team Arundo formed in Orange County in 1991 to control Arundo Donax along the Santa Ana River, and has since become a statewide program. Chapters exist in the Bay Area, San Luis Obispo and surrounding counties, Greater Los Angeles County, in addition to the Santa Ana River chapter, Team Arundo El Sereno, which covers San Diego County and the Santa Ana River (led by Judy Mitchell in Fallbrook). Arundo control in the City would be most effective if coordinated with the ongoing activities and experience of Team Arundo.

The City will work with preserve managers and City staff to ensure that ornamental/nonnative landscaping is absent or minimal in all areas of the OSMP designated as natural open space under the HMP/MHCP. However, where landscaping may be required (e.g., around parking areas or nature centers), or where problems are anticipated in preserve areas due to landscaping in nearby developed areas, the following guidelines have been provided in the MHCP and will be followed:

- Prohibit the use of nonnative, invasive plant species in landscaping palettes in the OSMP area or for new public projects within 200 feet of natural open space. This includes container stock and hydroseeded material.

- Revegetate areas of exotic species removal with species appropriate to the biological goals of the specific preserve area.

- Avoid genetic contamination of native plant species by prohibiting the introduction of cultivars or native species from different geographic regions. If these introductions are similar enough genetically to native species in the OSMP area, then cross-breeding or hybridization could occur. Native species proposed for landscaping or restoration onsite will be propagated from material collected in the vicinity. Special attention will be given to the elimination of native plant

landscaping cultivars of coastal sage scrub and chaparral species taken from central or northern California locations, or from islands off the coast of southern California.

Irrigation runoff alters conditions in natural areas that are adapted to xeric (dry) conditions, thereby promoting establishment of nonnative plants and displacement of native species. In addition, irrigation runoff can carry pesticides into natural areas, adversely affecting both plants and wildlife. The City and preserve managers must work with adjacent properties to control irrigation of landscaping material within 200 feet of the preserve boundary to prevent runoff into the preserve.

Fertilizers carrying excess nitrogen are often carried by irrigation and runoff into natural open space areas. Excess nitrogen is detrimental to plant mycorrhizal growth (essential for root development and nutrient uptake in many native plant species) and fosters exotic weed invasion. The City and preserve managers will need to monitor and limit, to the degree feasible, fertilization of ornamental plants on all areas draining into the preserve, to reduce excess nitrogen runoff to areas of native vegetation. Education of the residences adjacent to the preserve about edge effects in general through public outreach will be an important component to controlling all of these landscape-related edge effects. Preserve managers will need to address the specific landscaping and invasive plant species problems directly with the property owner where the problems are occurring.

Preserve managers will be responsible for monitoring the potential for spread of invasive species along trails. Where invasive species are spreading along official trails in the preserve system these areas will be targeted for eradication of the invasive species.

Conclusion/Recommendation 9: The City will establish policies and ordinances to increase the use of best management practices in landscaping (irrigation, fertilizers, pesticides/herbicides) in the vicinity the OSMP area, and to reduce the frequency of the selling and planting of species listed as noxious weeds as identified on the CalEPPC list (Appendix C). The City will work with preserve managers to identify problem species/areas, to form a coordinated response, and to develop public outreach and educational materials regarding the responsibility of land uses adjacent to preserve to minimize their contribution to edge effects including, landscaping/invasive plant impacts. Individual preserve owner/managers will work with all property owners adjacent to the preserve to educate them regarding irrigation runoff and fertilizer use. The City would only become involved in more serious cases where problems are persistent. Monitor trails for invasive species and remove invasive species populations. The City and preserve managers will address specific problems on a case-by-case basis.

3.1.6 Animal Species Interactions

The introduction of exotic species or nonnative predators often puts native species at a disadvantage, so special management measures are needed to control exotic species and nonnative predators. Nonnative plant and animal species have few natural predators or other ecological controls on their population sizes, and they thrive under conditions created by humans. These species may aggressively out-compete native species or otherwise harm sensitive species. When top predators are absent, intermediate predators multiply and increase predation on native bird species and their nests. Feral and domestic animals, particularly cats, also prey on small native wildlife species. Agricultural areas, livestock holding areas, and golf courses provide resources for increased populations of parasitic cowbirds, which adversely affect native songbird populations. Litter and food waste from migrant worker camps and picnickers can contribute to an increase in Argentinean ant populations, which out-compete native ants, the primary food resource of San Diego horned lizards. The next several issues discussed below are also types of edge effects; however these effects occur as a result of a change in the ecological dynamics of species interactions (introduction of nonnative species or alteration of species densities), rather than a direct physical change to the habitat (e.g., noise, light, irrigation).

Issue 10 (Key Issue): Invasive Ants

The Argentine ant (*Linepithema humile*) has become virtually ubiquitous with suburban development in southern California. It is spread to new areas through the movement of soil and plant materials, often associated with landscaping activity. The Argentine ant disrupts the ecosystem in natural open space areas because it competitively displaces other native ant species resulting in substantial decline or local extinction of those ant species (Suarez et al. 1998). Native ant species have many ecological roles in the habitats of San Diego County including as seed dispersers, as agents in soil development and turnover, and as a food source for several species including the San Diego horned lizard (*Phrynosoma coronatum blainvillii*), a rare and declining species in the City of Carlsbad.

When Argentine ants are introduced to an area, they can quickly spread into the natural habitat. Increased soil moisture created by irrigation of landscaping may facilitate the invasion of the Argentine ant (Suarez et al. 1998). Linear disturbances such as roads, trails, and fence lines may also facilitate their spread (De Kock and Giliomee 1989). Although Argentine ants competitively replace the native ants, they do not replace their role in the ecosystem. Therefore, the functions of seed dispersal, soil development, and food source for other species is lost. Without these ecological services provided by ants, plant communities and the associated habitat structure may eventually change potentially resulting in the disappearance of some animal species. Argentine ants can invade up to 1 km into natural habitat (e.g., Torrey Pines State Park [Suarez et al. 1998]). However, the strongest impacts from Argentine ants are likely to occur adjacent to (<200 m) commercial/residential areas.

Red fire ants (*Solenopsis invicta*) have recently been documented in San Diego County (at a property being landscaped in San Marcos). Although they have not yet become a problem in San Diego County, there is reason to be concerned and proactive to prevent red fire ant invasions. Certain types of wildlife, such as deer, ground-nesting birds, and reptiles, are especially affected by ants during and soon after birth or hatching. While the impact of fire ants on populations of wildlife are largely undocumented, they are a likely cause of the decline of many groups of species where they have become established.

The only effective management action currently known for Argentine ants and fire ants is preventing invasion of the preserve by controlling water runoff into the preserve and inspecting landscaping for ants prior to installation. Localized treatment with pesticides may be effective in isolated cases. However, pesticides must be used cautiously and as a last resort because they will also kill native ant species that may not recolonize the treated area as quickly as the nonnative ants, thus defeating the purpose of treatment.

The City will develop a policy and guidelines for landscaping contractors working in the City to control the spread of exotic ants pests by inspecting all planting stock before it is delivered to any property in or adjacent to open space areas. Both the Argentine ant and red fire ant are known to be transported in container planting stock. Any container stock to be imported into the OSMP area or property adjacent to a preserve area must be first inspected by qualified experts to detect Argentine ants, fire ants, and any other invasive pests. The City will strongly discourage (through public outreach and education of landscape contractors and nurseries) the use of infected stock within 300 feet of the preserve. Infected stock will be property treated or disposed of by qualified experts based on Best Management Practices.

> **Conclusion/Recommendation 10:** The City will establish policies and ordinances to increase the use of best management practices in landscaping with respect to invasive ant species in the vicinity the OSMP area (e.g. see landscaping guideline provided by the MHCP, specifically with respect to minimization of irrigation runoff). The City and preserve managers will ensure that all landscaping materials used within the preserve for restoration or landscaping of facilities do not contain Argentine ants, fire ants, and any other invasive pests.

Issue 11 (Key Issue): Outdoor and Feral Animals

Predation on sensitive animal species by domestic pets (especially house cats) is an edge effect particularly associated with residential land uses. Predation by domestic cats may be limited by the presence of larger

predators such as coyotes and foxes because cats are likely to venture much shorter distances from the residences into open space areas, particularly at night when cats do the majority of their hunting (Spencer & Goldsmith 1994). Dogs allowed to run off the leash can disturb breeding birds, and may kill small mammals and reptiles (Kelly and Rotenberry 1993; Spencer and Goldsmith 1994). Unleashed, unattended dogs have been observed within reserves at a distance of greater than 325 ft from the edge, while cats have been observed within reserves more than 1 mile from human dwellings in Riverside County (Kelly and Rotenberry 1993).

The City and preserve managers can minimize the impacts on sensitive animal species by domestic pets primarily through public outreach and education to convince residents adjacent to preserves to keep pets indoors at all times (especially cats), limit hiding/stalking areas for cats near bird habitats such as feeders or other gathering places, spay and neuter pets to minimize the breeding of unwanted pets, and refrain from feeding stray cats or releasing unwanted cats into the wild. Some of these activities, such as spaying and neutering, are currently encouraged countywide and subsidized by the San Diego County Humane Society.

Leash laws will be designated and enforced in all natural open space areas. Currently, preserve managers have no ability to enforce leash laws other than through verbal reprimands and voluntary cooperation (T. Dillingham, CDFG pers. com.; M. Spiegelberg pers. com.). The City staff, police and preserve managers will investigate ways to improve enforcement of leash law in OSMP areas.

Preserve managers will document evidence of feral or domestic animal use in the preserve and fence areas between selected areas of the preserve and adjacent housing to keep pets out of particularly sensitive areas. Preserve managers will coordinate with the City and the County humane society to establish a feral animal removal program to be applied in areas where feral domestic animals are documented as a persistent problem.

> **Conclusion/Recommendation 11:** The City and preserve managers will develop a focused public outreach and education program that emphasizes the need for residents to control their pets to minimize their impact on the preserve system. Feral animals will be removed from preserve areas if possible. The City needs to work with existing preserve managers to address the issue of effective enforcement and deterrent methods. The City will increase the frequency of ranger patrols at preserves to increase public compliance with leash laws.

Issue 12 (Key Issue): Alteration of Ecological Communities

In southern California, several native mammal species that are well adapted to areas around residential development are also major nest predators, including skunks (*Mephitis mephitis*), raccoons (*Procyon lotor*), and opossum (*Didelphis virginiana*) (Soulé et al. 1988). Other human-adapted bird species such as scrub jays (*Aphelocoma californica*), ravens (*Corvus corax*), and crows (*Corvus brachyrhynchos*) are also frequent nest predators. Even though these are native species, they become the agents for human-caused ecological disturbances because the presence of human activities may artificially increase their populations resulting in population decreases in other species. For example, as these species increase their population densities near residential development, the greater bird community suffers increased nest predation and subsequent population declines. Research has shown significantly higher density of many of these species in habitat nearer residential development (Odell and Knight 2001).

A second phenomenon known as mesopredator release (Soulé et al. 1988) occurs when patches of habitat become too small, fragmented and isolated to support larger carnivores such as coyotes (*Canis latrans*). Without the coyote, populations of the smaller nest predators increase significantly with a corresponding decrease in the abundance and breeding success of smaller vertebrates (birds, mammals, and reptiles). Crooks and Soulé (1999) documented this effect in coastal canyons of San Diego County where they found significantly higher predation rates by house cats in areas where coyotes were absent.

The MHCP includes the following recommendations to monitor and control native predators:

- Monitor population levels of selected native predators (bobcat, coyote).

- Institute an educational program to explain the role and necessity of large native predators within the ecosystem and the need to protect them from disturbance.

- If key native predator species (coyote, bobcat) are extirpated from the preserve, initiate a program to control mesopredators (gray fox, skunks, raccoon, and opossum).

The brown-headed cowbird (*Molothrus ater*) is also well adapted to human-altered environments including areas around residences. The brown-headed cowbird is another problematic species for native songbirds because it is a nest parasite that lays its eggs in the nests of host species. The cowbird chick displaces the young of the host species such that, in areas where cowbird parasitism is widespread, the populations of the host species can be significantly reduced. Cowbird parasitism has been a major problem for sensitive bird species in southern California (Kus 2000), including the endangered least Bell's vireo and southwestern willow flycatcher (*Empidonax traillii extimus*). MHCP requires that cowbird trapping be initiated if parasitism rates exceed 10% of monitored nests of native species. Preserve managers will include methods to monitor and document the extent of cowbird parasitism on target species nests in the preserve as an area-specific directive in preserve management plans.

> **Conclusion/Recommendation 12:** The City and preserve managers need to include area-specific directives in their preserve management plans to periodically monitor the native species that often become abundant in edge-effected habitat. Control and removal programs will be initiated for any of these species that are shown to be causing the decline in other sensitive species conserved and managed under the HMP/MHCP. The monitoring and control of these species will be implemented within an adaptive management context.

3.1.7 Public Access and Recreation

Public access is appropriate in the OSMP area for passive recreational uses and to promote understanding and appreciation of the natural resources. Excessive or uncontrolled access, however, can result in habitat degradation through trampling and erosion (e.g., along trails) and disruption of breeding and other critical wildlife functions at certain times of the year.

Passive recreational activities (e.g., hiking, bird watching) are anticipated within the preserve and are generally compatible with HMP/MHCP conservation goals. In general, passive activities pose a significant threat to biological resources when the level of recreational use becomes too intense or in areas of sensitive resources. Active recreational activities such as picnicking, equestrian use, and mountain biking may also occur in or adjacent to the preserve, if restricted to selected areas. These activities are conditionally compatible with biological objectives of the MHCP.

The MHCP recommends that construction of new facilities to support recreational uses (including access roads, parking lots, service facilities, maintenance buildings, and landscaping) will be prohibited in the natural habitat within the HMP/MHCP. Construction of these facilities can cause further habitat fragmentation and can result in increased traffic, auto emissions, and petrochemical runoff; pesticide and fertilizer runoff; use of invasive nonnative plants in landscaping; use of outdoor lighting; and changes in local drainage patterns. These activities may have adverse impacts to air and water quality as well as wildlife use of the area and will not be sited within the preserve boundaries.

There may be some instances where construction of a well-planned facility (e.g., a trailhead, small parking area, education/information kiosk, and trash dumpsters) may eliminate other more destructive patterns of use (e.g., parking in habitat, creation of multiple trails, and littering) and will help educate the public on appropriate uses and good stewardship practices.

Issue 13 (Key Issue): Off-road Vehicles

Illegal off-road vehicle use has been a persistent and highly destructive activity in many of the larger open space areas of the City. Off-road vehicles are prohibited anywhere within city limits; however,

enforcement of existing laws has been difficult. Adverse impacts of off-road vehicle use include reductions in air quality due to automotive exhaust and creation of dust, soil erosion and sedimentation into local waters, noise, and habitat degradation. Disturbance from off-road vehicles can also disrupt breeding activities. For these reasons, off-road vehicle use is not compatible in the preserve. In addition to the severe impacts on native habitats, soil stability, and water quality, illegal off-road vehicle use is a safety hazard to other members of the public.

Illegal off-road vehicle use has occurred within the City's undeveloped areas for a long time; however, as areas become designated as preserve areas it has become increasingly important to regulate vehicle access and enforce existing laws. A number of newspaper articles in the North County Times have highlighted the problems associated with controlling off-road vehicle use in Carlsbad (e.g., NC Times 11/29/01, 8/4/02). As an example, the open space around Mount Calavera has had a number of problems with illegal vehicle activity in recent years. The Calavera Nature Preserve, managed by The Environmental Trust, has had repeated off-road vehicle damage to sensitive habitat restoration areas. The Carlsbad Highlands Ecological Reserve, managed by CDFG, has had perpetual problems with illegal vehicle use. CDFG cites limited manpower for enforcement and funding for signage, gate, and barrier repair/installation as the primary reasons the problems persist.

To address these problems, the City has established an Off-road Law Enforcement (ORLE) team to better monitor and respond to illegal activities in open space areas. ORLE team members, who ride off-road motorcycles, respond to complaints of illegal off-road activity and contact/cite the offenders. In addition to enforcement, ORLE officers frequently locate stolen and abandoned vehicles, trash dumpers, and coordinate with the fire department in the event of wild fires.

The City will investigate ways to design legal public use access from new developments that will prohibit illegal off-road vehicle access into the preserve system.

> **Conclusion/Recommendation 13:** To better address illegal off-road vehicle use, the City and preserve managers will work with the (Off-road Law Enforcement) ORLE team to develop a coordinated response plan. The coordinated response plan will consist of regular communication between preserve owner/managers and the ORLE Team to identify problem areas and plan enforcement efforts. Since illegal off-road activity tends to shift from location to location depending on enforcement, the coordination efforts will identify new "hot spots" with the goal of eliminating all such activities from the preserve system. In addition, all preserve entrances will include signage prohibiting off-road vehicle activity and providing a non-emergency phone number for members of the public to directly notify the Carlsbad Police and ORLE team when illegal activity is observed. Public outreach and education will be an important part of the effort to reduce illegal off-road vehicle use.

Issue 14 (Key Issue): Illegal Dumping

Littering and illegal dumping are acts of improper disposal of trash. However, there are subtle differences. Litter is primarily small items that are scattered about, including items such as paper, food containers, beverage containers, convenience products, newspapers, vehicle debris and cardboard. Littering can be an intentional act or it can be accidental. While litter is often easy to remove, keeping an area litter free can be costly and time consuming.

Illegal dumping is always an intentional act and is done for many reasons – cost, convenience, ignorance, habit, profit, or to hide other illegal activities. Illegal dumping often involves large items or large quantities of small items, including appliances, tires, bags of daily trash, furniture, and other household wastes. Illegal dumpsites are often difficult and costly to clean up, and they take a greater toll on the environment and surrounding communities.

Illegal dumping in Carlsbad includes old appliances, abandoned vehicles, yard waste, construction waste, and miscellaneous household waste. The Off Road Vehicle Law Enforcement (ORLE)

team of the Carlsbad police department have the primary responsibility for identifying and reporting incidents (Sgt. J. Chapman, pers. comm.) along with other concerned members of the public. As the City has continued to develop and build out the extent of illegal dumping has decreased (due to the reduction in clandestine open space areas for dumping); however, a noticeable increase occurred with the closing of the San Marcos landfill in 1997, which left no convenient legal dumping location. Incidents of illegal dumping dropped again once the City opened a waste transfer station open to the public (Sgt. J. Chapman, pers. com.).

Illegal dumping in the Carlsbad OSMP area can have a number of negative effects:

- Pollute ground and surface water. Rain or runoff washes over trash and percolates into groundwater, and trash is often tossed directly into streams.
- Directly impact habitat.
- Injure wildlife directly through entanglement, etc. or indirectly through ingestion of toxic waste material or contaminated water.
- Introduce other human health and safety hazards.
- Decrease the value of the property that contains the trash and adjacent properties.
- Attract other crime. "If it's safe to dump here, it's safe to do other illegal activities here."
- Discourage new residents and businesses.
- Take away tax dollars that could be better spent to serve the community.
- Decrease community worth, which further impacts other social aspects of an area.
- Spoil the beauty of the land.

Illegal dumping typically occurs in areas where the perpetrators think they are hidden from detection; therefore, prohibiting vehicle access to more remote areas of open space will limit the number of incidents. Signage with clearly posted fines for illegal dumping and a tipster hotline number will also act as a deterrent in other more accessible areas. Creation of a sense of personal responsibility and stewardship in the local residents adjacent to preserve areas through the education and outreach component of the HMP/MHCP and OSMP implementation can create a 'neighborhood watch' mentality that will increase the frequency of reporting tips along with the deterrent effects on likely polluters. As an example, The Escondido Creek Conservancy (TECC) has a Trash Hotline to report incidents of illegal dumping. Then the TECC schedules regular "Clean Up" days where local residents volunteer to help remove trash and debris.

> **Conclusion/Recommendation 14:** The City and preserve managers will ensure that potential dumpsites (relatively remote/hidden sites) in the OSMP area are inaccessible to vehicles through maintenance of gates and barriers. The City and preserve managers will establish an illegal dumping tipster hotline and post this phone number along with a non-emergency police number for real-time enforcement response. Substantial fines will be established, posted on signs, and enforced. The City and preserve managers foster a sense of community stewardship in the OSMP preserve system and "empower" the residents living near and using the open space to notify the City and law enforcement of any illegal activities including illegal dumping.

Issue 15 (Key Issue): Management of Recreational Uses

The primary purpose of the open spaces is to meet the biological requirements of the HCP. Activities within the preserves will be those that are shown to not have a negative impact on the covered species. The location, type, timing, and frequency of activities (passive or active) in the preserve can all be modified to reduce or remove impacts and stressors to sensitive species. The impact of recreational activities will be evaluated through adaptive management and adjusted according to the monitoring data.

Passive and active recreational use in the OSMP area will managed to accommodate the diversity of compatible recreational uses but must also be consistent with the protection and enhancement of biological resources. Passive recreation includes activities such as walking, jogging, hiking, and bird watching. Active recreation includes activities such as mountain biking, equestrian use, and picnicking (picnicking is

considered an active use due to the prolonged and repetitive impacts on focused areas (typically grasslands and meadows) used for picnicking). Existing recreational facilities will be managed to promote the maintenance of habitat value surrounding these facilities. Passive recreation will be encouraged within the preserve areas but must be managed and directed away from the sensitive resources. Additional future active recreation projects will be accommodated outside the preserve on land not required to meet covered species habitat needs.

The preserve management plans that will be developed/updated for each preserve area will include a recreation plan component the addresses recreational issues and allowable use areas. The City and preserve managers need to establish consistent rules for recreational use so that members of the public can be knowledgeable without being confused by rules that change depending on the preserve management entity. The MHCP includes the following guidelines for the recreation component of the preserve management plan:

- Determine appropriate levels of passive and selected active recreational activities within the preserve, depending on the resources to be protected, season, and successional stage of the vegetation.

- Prohibit recreational activities that require construction of new facilities or roads.

- Develop design standards for new trail construction that address the avoidance of sensitive species, unique habitats, wildlife corridors, erosion control, and access to major features.

- Establish a recreational area patrol to regulate use of the OSMP area.

Specific Recreational Activities

- Passive Uses

    a. Limit or restrict passive uses in critical wildlife areas during the breeding season, as determined appropriate.

    b. Minimize adverse effects of passive recreation, such as trampling vegetation and erosion.

    c. Provide litter control measures, such as closed garbage cans and recycling bins, at access points in the OSMP area.

- Day Use

    a. Site picnic areas at the edges of the preserve.

    b. Collect garbage frequently and instruct day users not to feed wildlife.

- Equestrian Use

Trails may vary in width and surface material, depending on site-specific factors. Bicycles will generally be allowed on all trails except where specifically prohibited. Equestrian use of trails is generally prohibited, although there may be some future trails that will be designed for equestrian use. If and when the City determines that equestrian uses are allowed within the preserve, the following guidelines will apply:

a. Prohibit horses in riparian areas. Construct trails away from riparian or other sensitive habitat. Provide alternative sources of water, where possible.

b. Mulch trail surfaces to minimize erosion. Do not use materials for trail mulch that are a source of seed of invasive exotic species. Prohibit use of eucalyptus chips that could suppress native plant growth adjacent to trails.

c. Limit equestrian use to specified trails that are wider than foot trails (minimum 8 feet wide) to prevent trail edge disturbance and on grades no greater than 25%. If trails become degraded due to heavy use, rotate or limit use during certain seasons to minimize further degradation.

d. Prohibit corrals, arenas, stables, and other associated equestrian facilities within the preserve. Locate staging areas for trailheads adjacent to existing roads and away from sensitive resource areas.

- Mountain Biking

a. Limit mountain bike trails to areas not highly susceptible to erosion and out of wetlands and other sensitive areas.

b. Construct trails wider than foot trails (minimum 6 feet wide) to prevent trail edge disturbance and on grades no greater than 25%.

c. Rotate bike use by closing trails periodically to prevent trail degradation if a problem develops.

d. Construct barriers to restrict access to sensitive areas.

Public Access

- Ensure that public access to OSMP areas included in the HMP/MHCP is consistent with the protection and enhancement of biological resources. Monitor existing access areas to ensure that they do not degrade or inhibit biological values, and prioritize future access areas for protection of biological resources.

a. Seasonally restrict access to certain trails if deemed necessary to prevent disturbance of breeding activities.

b. Close unnecessary trails to minimize biological impacts. Abandon and revegetate steep eroding trails.

c. Locate new trails away from sensitive resources or restrict their use so that covered species are not adversely affected.

d. Construct trails to any prominent features or viewpoints that are likely to attract hikers, thereby preventing extensive trampling and compaction.

e. Install water breaks on steep trails to prevent accelerated runoff and erosion.

f. Establish patrols to identify trail maintenance needs, garbage, vandalism, and habitat degradation and to enforce land use restrictions.

The Carlsbad Citywide Trails Program was established to plan and develop the circulation element trails (trails intended to supplement roads, enabling pedestrians and bicyclists to travel around the city) and the City's plan for recreational trails throughout the OSMP. Eventually, there will be up to 68 miles of recreational trails throughout the City. The City and existing preserve managers will develop and maintain approximately 25 miles of trails, while developers will build the other 43 miles as a part of the open space easements associated with new development. The City's trails team is in the process of working with developers and homeowner's associations to get new trails built as development occurs. It will be

important for the City's trails team to coordinate with preserve managers and other City staff to ensure that the MHCP guidelines for recreational uses are adhered to when new trail alignments are identified and developed. The placement and use of trails will be planned, monitored and managed so that that the trails don't not adversely affect sensitive species. Trail placement and use will be consistent with other management activities in the preserves and will be evaluated with adaptive management.

> **Conclusion/Recommendation 15:** The City and preserve managers will incorporate the MHCP guidelines for recreational uses into each preserve management plan. The MHCP guidelines will be used to establish a consistent set of rules for the OSMP citywide, to avoid confusion for members of the public. The City trails team and preserve managers will review the compatibility of the Carlsbad Citywide Trails Program and update or realign trails as needed in the plan to meet the biological protection goals and guidelines of the HMP/MHCP.

Issue 16 (Key Issue): Enforcement

Enforcement is a critical component of the OSMP and implementation of the HMP/MHCP. Enforcement programs are needed to ensure compliance with land use plans and restrictions, such as zoning, and to ensure that fire management and recreational uses are compatible with preserve goals. Enforcement has been an underlying part of the solution for many of the other issues discussed in this report (e.g., illegal off-road vehicles, illegal dumping, encroachment and some edge effects).

Enforcement of the City's laws and preserve and open space regulations falls into two categories of offences. First are the minor infractions, such as hiking on a closed trail, walking a dog off a leash, and over-watering the adjacent landscape. Minor infractions can be handled by the preserve manager through discussion and education of the offending party. The City and preserve managers will work together and with local community groups on a public education program to explain goals and regulations as well as educate the public on the area's resources. The City needs to work with existing preserve managers to address the issue of effective enforcement and deterrent methods.

Major infractions include illegal off-road vehicle use, illegal dumping, vandalism, and illegal encampments (itinerant workers and transients). Involvement of law enforcement officials will be necessary to address most all major infractions. Often the perpetrators of major infractions are not caught due to the delay in response time. However, more coordination and delineation of jurisdiction and enforcement authority may improve the frequency with which these perpetrators are caught and punished (creating a real deterrent for future infractions). The City, preserve managers, and police department will establish a coordinated response plan to address these issues.

The OSMP funding analysis (Appendix A of this document) identifies the need for one full-time supervising ranger/officer and four full-time rangers/officers with law enforcement training to effectively enforce applicable laws and safety in the OSMP area (as per conversations with and recommendations by Lt. Mike Ference, CDFG, and Supervising officer Dave Felt of the City of Carlsbad). The Rangers will coordinate with law enforcement agencies, including the City of Carlsbad's Police Department, Department of Fish and Game Wardens, and city police and parks officers. All staff vehicles will be equipped with radios and/or cellular telephones to report trespass and vandalism to security personnel or the Police Department. In addition to contributing to the species and habitat conservation goals of the HMP/MHCP, a strong security presence also enhances the experience of the public who are legally using the OSMP area and enhances the quality of life for residents of neighboring properties. The City of Carlsbad will work cooperatively with adjacent jurisdictions to establish and enforce consistent rules and regulations, and to cooperatively identify problem enforcement issues or repeat violators.

The ultimate level of enforcement of OSMP compliance with the HMP/MHCP lies in the implementing agreement with the wildlife agencies, because degradation of resources could result in loss or revocation of federal and state take authorizations. The City will maintain compliance with the HMP/MHCP permit conditions and the associated implementing agreement through the implementation of the OSMP and the actions of the City and other designated preserve managers. The annual reporting process will provide the wildlife agencies with the necessary management and monitoring data and preserve management status and

tracking data to evaluate compliance and/or the need for additional consultation and enforcement. In addition, the City and preserve managers will contact the wildlife agencies to resolve particular species and habitat issues on an as needed basis (e.g., to develop consensus on adaptive management strategies, to revise field survey protocols, to address a problematic invasive species problem, etc.).

> **Conclusion/Recommendation 16:** The City and preserve managers will pool their funding resources to hire five officer/rangers who will assist in preserve enforcement throughout the OSMP area. The City, preserve managers, and police department will establish a coordinated response plan to address these issues, and will work together and with local community groups on a public education program to explain goals and regulations as well as educate the public on the area's resources. The City needs to work with existing preserve managers to address the issue of effective enforcement and deterrent methods. The City will increase the frequency of ranger patrols at preserves to increase public compliance with leash laws, trespassing, and other illegal activities.

Issue 17 (Key Issue): Itinerant Worker and Transient Camps.

Itinerant (agricultural) workers and transients sometimes maintain shelters and living areas illegally within habitat areas. Such living areas have a detrimental effect on native vegetation and wildlife use, including an increase in refuse, poaching of wildlife, increased fires, and raw sewage disposal that can pollute water resources. These camps often become an eyesore and reduce the aesthetic value of open space, and create a significant safety risk for preserve managers and others using hiking and biking trails. The volume of refuse generated attracts black rats, which contribute to the decline of native rodent populations. Although scattered living areas will be difficult to control, villages of transients are incompatible with the biological, open space, and recreational goals for the OSMP area and will be removed.

The major location that homeless transients set up illegal encampments is in the riparian and scrub habitat along the Buena Vista Creek near Haymar Drive and the Plaza Camino Real and Vons shopping centers (Sgt. J. Chapman, pers. com.). While not as numerous as the agricultural worker camps, the homeless transient camps cause considerable habitat damage due to the volume of material that these people bring into the natural habitat areas. The itinerant worker camps are established in a number of locations, generally near the agriculture areas in which they work, with one of the largest encampments occurring on the canyon slopes south of Agua Hedionda lagoon.

While the impacts to the habitat are significant and incompatible with open space goals, the social, economic and ethical issues regarding how best to solve this problem are complex. According to an article in the North County Times (2/5/02) the itinerant farm worker makes up the majority of the more than 700 homeless that live in Carlsbad. Carlsbad police estimated in this article that only about 20 individuals are homeless transients, leaving 97% of Carlsbad's homeless identified in as itinerant workers. The City has removed camps and their residents in the past; however, these actions are likely to result in even more damage to the open space because most of those who are evicted have no other alternative and eventually end up establishing a new camp elsewhere.

Illegal camps are established in the canyons throughout the City because those living there see no other alternative. The high cost of housing and the limited availability of beds in shelters (50 beds and room for only about 25 additional temporary cots according the 2/5/02 NC Times article) leave these low-paid workers with little option. Therefore, alternative housing options must be established before additional camps can be removed. Currently, La Posada de Guadalupe, a 50-bed men's homeless shelter intended for immigrant workers and run by the Catholic Charities in Carlsbad, is the only shelter directly addressing this issue. The City continues to provide significant financial support to this shelter; however, the need for shelter still far outweighs the supply, resulting in continued impacts to habitat and open space value.

The City has been working on developing solutions for this issue with the police department, the shelter operator, and the County's Regional Task Force on the Homeless, a partnership of agencies and public groups. Due to the complexities involved, it is unlikely that the problem of illegal encampments will be

permanently solved with long-term solutions in the near future. However, the City will work to implement short-term measures to minimize the further degradation of open space.

Because confrontation of residents of illegal encampments may involve a number of complex issues ranging from health and safety to legal and civil rights, preserve managers should not attempt to confront individuals alone. Instead, preserve managers and other members of the public will contact the City regarding the location of an illegal encampment and coordinate any action or response through the City, police, and other qualified entities.

> **Conclusion/Recommendation 17:** The City will continue to work with local and regional agencies to find long-term solutions for housing of low-income itinerant workers and transients. The City will also work quickly to implement short-term solutions so that further habitat degradation is ceased. Note that a continued decline in habitat quality without active intervention from the City could result in the loss of one or more endangered species permits. The City will coordinate with all preserve managers to establish a protocol for reporting and handling illegal encampments to protect the health, safety, and legal rights of everyone involved. Preserve managers and rangers will notify the police department and the City when illegal encampments are discovered and will work with the City to remove structures and debris and revegetate the disturbed areas as necessary.

3.1.8 Biological Monitoring Responsibilities and Adaptive Management

Carlsbad must implement actions to ensure that conservation goals are met in the HMP portions of the OSMP area. The HMP/MHCP has established specific conservation goals and strategies to ensure the persistence or expansion of covered species, including key landscape or habitat attributes or ecosystem processes deemed necessary for long-term regional persistence (MHCP Volume II). Implementing actions to achieve the conservation goals or strategies by the City of Carlsbad is the basis for issuance of take authorizations under the HMP and MHCP plans. These implementing actions include monitoring and management of the preserve. The MHCP biological monitoring and management program has been structured to allow the wildlife agencies and the City (as a take authorization holder) to (I) evaluate compliance with HMP/MHCP conservation requirements (i.e., "compliance" or "implementation" monitoring) and (2) assess covered species population trends and additional key factors associated with species-specific conservation goals and strategies (i.e., "effects and effectiveness" monitoring) within the subregion and individual subareas.

Issue 18 (Key Issue): Coordination of Monitoring and Management Responsibility

The NCCP process and conservation guidelines require regular monitoring of covered species populations and their habitats. These surveys will supplement existing project-specific monitoring activities, such as that conducted by CDFG at Batiquitos Lagoon. The portions of the OSMP area included in the HMP/MHCP preserve must be monitored to assess the status and trends of resources within the preserve. Biological monitoring will evaluate whether the preserve system is meeting HMP/MHCP conservation targets for covered plant and animal species and their habitats, address specific questions regarding species population status and ecosystem functions, identify threats to covered species and their habitats, and help identify management needs. Monitoring will also identify issues requiring focused research to meet species-specific conservation goals and permitting conditions. The MHCP Biological Monitoring and Management Plan (MHCP Volume III) outlines the issues to be addressed by the long-term monitoring program. In addition, individual preserve management plans that include area-specific management directives will be prepared by preserve managers for individual preserve areas and will fully address preserve-level monitoring and management. It will be critical that monitoring and management is coordinated across the preserve system (across the OSMP area and the MHCP preserve network) for monitoring data to be collected and interpreted in a meaningful and useful way. As the permit holder under the HMP/MHCP, the City of Carlsbad has the responsibility to ensure that preserve managers coordinate among themselves (e.g., within a management unit), with monitoring and management in adjacent MHCP subareas, and with the wildlife agencies to efficiently monitor and manage species and habitats.

The introductory chapter of the OSMP addresses the process and structure by which the biological monitoring and management responsibilities will be distributed and coordinated among the City, preserve managers, and the wildlife agencies. The City will establish the role for a Preserve Steward, a City-contracted consultant or employee to oversee the City-wide monitoring, management, and maintenance of the preserve system. The preserve steward will be responsible for frequent communication with preserve managers, the City, and wildlife agencies, will provide science-based technical support to Preserve Managers for survey design, data collection and analysis, and will support the City in compliance monitoring (review of predevelopment plans and post-construction review).

As part of the annual reporting process, each preserve manager will be required to submit a Work Plan to the Preserve Manager and wildlife agencies for the coming year that identifies, describes, and prioritizes proposed surveys and adaptive management activities to be conducted in response to specified monitoring schedules or management circumstances. These work plans will be adjusted as needed in response to Preserve Steward and wildlife agency comments. For more urgent situations that cannot wait for inclusion in the annual work plan, ad hoc meetings with the Preserve Steward and wildlife agencies will be called.

A biological monitoring report will also be prepared every 3 years by the wildlife agencies to present data on the habitats and species monitored. To support this effort, every 3 years the managers of each preserve area will submit a report (including an updated preserve management plan) to the wildlife agencies that summarizes management activities, describes management priorities for the next 3-year period, reports on restoration activities, and evaluates funding and the ability to meet resource management goals.

In addition, coordination with other cities will be critical to the success of the preserves. The MHCP calls for creation of a subregional structure for coordination between the North County Cities. For this reason, it is planned that this first OSMP, as a "first step" for the MHCP, will become a model and template for other cities and will be refined and adjusted based on experience and the evolving subregional implementation structure.

Note that where the City is mentioned throughout the OSMP with respect to preserve monitoring and management it is implied that that it is the City with the support of the Preserve Steward to provide science-based guidance and oversight to the OSMP implementation.

> **Conclusion/Recommendation 18:** The process and structure for coordination and implementation of the OSMP is defined in detail in the introductory chapter of the OSMP. The City of Carlsbad will be responsible for coordinating with other cities in the MHCP to implement monitoring and management across the MHCP preserve network. The City will create the role of a Preserve Steward to oversee and support the science-based implementation of the OSMP. The preserve steward along with the USFWS and CDFG will provide oversight, including review of surveys, preserve management projects, and approval of results and reports generated by the monitoring program. The City of Carlsbad and its preserve steward and preserve managers are responsible for preserve level monitoring and management for the OSMP area, preparation of the preserve area plans specifying the monitoring and management activities for a given preserve area, and preparation of annual reports to the wildlife agencies summarizing monitoring and management actions and results.

Issue 19: Trigger for Adaptive Management

The City, the preserve steward, and preserve managers in the OSMP area are responsible for managing individual preserve areas to ensure that conservation goals of the HMP/MHCP are met. Monitoring at the preserve area scale needs to be focused on obtaining information for management purposes. Managers must monitor the status and trends of covered species and collect data on key environmental resources within preserve areas to select, prioritize, and measure the effectiveness of management activities. In most instances, the array of threats or stressors of preserved habitats, their mechanisms of action, and the responses of the habitats and associated species are not completely understood at this time. Therefore, individual preserve management plans must comprehensively address management and monitoring issues

for each preserve area. Information collected within the preserve areas will be aggregated for analysis at the MHCP subregion and ecoregion scales.

Information gained through monitoring will inform management decisions through the adaptive management process. Adaptive management acknowledges the lack of complete knowledge and understanding of a system at the outset of management actions. Adaptive management is a means to learn more about the system through the implementation of management actions and the monitoring of management results. Management actions can then be adapted to optimize management goals by incorporating new information gained through an iterative implementation and monitoring process. There are six main steps in adaptive management: (1) identification of the problem or management goal; (2) design of the management action or implementation plan; (3) implementation; (4) monitoring of management results; (5) evaluation of the results relative to the desired management goals; and (6) adjustment of management actions. The trigger for a change in the management approach/actions occurs when management results have not achieved the desired management goals. The assumptions underlying management goals must be stated explicitly and considered as hypotheses to be tested by carefully designed and implemented monitoring programs that are, in effect, management experiments. Ideally, management actions would be designed and implemented with experimental control sites and replication that would allow statistical interpretation of management results. This may be possible for some management actions in some preserve areas, but not a realistic expectation for all management actions across the whole OSMP area. At a minimum, careful measurement of key environmental and biological variables before and after the management action can provide some insight into the effects of management at that particular site.

For the OSMP area, an adaptive management approach will provide correcting actions where monitoring shows that (1) resources are threatened by land uses in and adjacent to the preserve, (2) current management activities are not adequate or effective, or (3) enforcement difficulties are identified. The preserve steward will work with preserve managers to identify specific adaptive management triggers for key management issues and target species to be addressed in the preserve management plans and area-specific management directives.

> **Conclusion/Recommendation 19:** The City of Carlsbad, the preserve steward and other preserve managers in the OSMP area will apply an adaptive management approach to all management activities. Corrective actions within an adaptive management context will be undertaken as soon as possible to prevent further degradation and more costly remedies later. If management targets (e.g., habitat condition, invasive species eradication, etc.) are rapidly deviating from desired goals, the preserve manager and/or City will contact the wildlife agencies and other issue experts to seek the best available advice as soon as possible.

Issue 20 (Key Issue): Data Management

Data collected for preserve-level monitoring and management will, in most cases, be linked to a GIS database to facilitate adaptive management decisions and monitoring analysis. It will be important for some data types (i.e., species and habitat monitoring) to be collected using methods standardized across the MHCP subregion such that subregional trends in species populations and vegetation communities can be analyzed. Furthermore, data will be systematically collected to facilitate the City's annual reporting requirements. The MHCP Monitoring Plan (MHCP Volume III) includes many sample datasheets, species monitoring guidelines, and recommended vegetation mapping methods. Preserve managers will be required to use these standardized methods and data formats to facilitate integration and management of the data.

GIS data will be managed and maintained by City staff with a GIS technical background to ensure that the data are input and managed properly according to accepted GIS data standards (e.g., maintenance of metadata, updates, backups, and overall database structure). The City will investigate ways in which the OSMP GIS database can be efficiently linked to the data collected by preserve managers. If data and management results are frequently updated into the OSMP GIS database, the City's annual reporting and the wildlife agency subregional status and trends analyses will be made much easier. The OSMP GIS database could be linked to the Internet through an OSMP webpage enabling 1) the preserve managers to

"upload" their data and monitoring results, 2) the City to coordinate monitoring and management among preserve areas, and 3) the City to provide data and information to interested members of the public regarding OSMP monitoring and management activities.

> **Conclusion/Recommendation 20:** The City will require that preserve managers within the OSMP area adhere to all the MHCP established monitoring methods and use the standardized data collection formats. The City will investigate the development of a GIS database management tool that is accessible through the Internet and, if developed, will use this tool to efficiently maintain current data, coordinate management and monitoring, and provide information to the public.

Issue 21 (Key Issue): Coordination of Lagoon Management

There are numerous ongoing lagoon management activities occurring in all three of Carlsbad's lagoons (Batiquitos, Agua Hedionda, and Buena Vista Lagoons) including management of sediment transport and hydrology, species monitoring, exotic species control, and recreation. Although CDFG is the primary management entity of the majority of the lagoon habitat (essentially all of Buena Vista and Batiquitos and the eastern portion of Agua Hedionda; see Figure 2-3), it is still important for the OSMP to provide coordination and guidance for the secondary management entities (e.g., Buena Vista Lagoon Foundation) and other important lagoon managers (i.e., SDG&E/Cabrillo Power).

Dredging has become an important management tool at all three lagoons, either to remove accumulated sediment in the basin or to open the tidal channel to improve tidal flushing and water quality. Dredging has also been used to create beach/dune habitat for nesting birds including snowy plovers and least terns. Sedimentation within Buena Vista, Batiquitos, and Agua Hedionda lagoons accumulate sediment from their tributary creeks and from long-shore sand movement at the mouths of the lagoon. Future planning and implementation of dredging activities will be coordinated through the OSMP so that dredging objectives are met without interfering with other biological management responsibilities under the HMP/MCHP. Of particular importance in this respect is the desired future condition of Buena Vista Lagoon. If undertaken, dredging to restore tidal influence will have a major effect on the habitat and species composition as portions of the existing freshwater marsh system convert back to brackish or saltwater marsh.

Species monitoring and management at the lagoons will continue to be the primary responsibility of CDFG in areas where it is the primary management entity. The Ecological Reserve Management Plans for each of these three lagoons will include area-specific management directives and species monitoring protocols that are consistent with the requirements of the HMP/MHCP.

Generally, exotic species monitoring and control is an expected component of every preserve manager's preserve management plan (e.g., Arundo control at Buena Vista Lagoon). Infrequently, however, an invasive species is introduced into an area and spreads (or has the potential to spread) so rapidly and destructively that the control and eradication of the species must be addressed with the highest urgency and priority. When *Caulerpa taxifolia*, a highly invasive and destructive seaweed, was found in Agua Hedionda lagoon, it was clear that immediate state and federal action was needed to address the problem.

Caulerpa has become a devastating invasive species in the Mediterranean Sea. Around 1984 this species apparently escaped or was released from an aquarium into Mediterranean waters. By 1997 it was reported to have blanketed more than 11,000 acres of the northern Mediterranean coastline and has recently been reported off northern Africa. In areas where the species has become well established, it has caused ecological and economic devastation by overgrowing and eliminating native seaweeds, seagrasses, reefs, and other communities. In the Mediterranean, it is reported to have harmed tourism and pleasure boating, devastated recreational diving, and had a costly impact on commercial fishing both by altering the distribution of fish as well as creating a considerable impediment to net fisheries.

Eradication efforts in southern California (Agua Hedionda Lagoon and Huntington Harbor, where it was also found) are currently underway under the direction of the Southern California Caulerpa Action Team, a broad-based task force assembled from federal and state resource and regulatory agencies and the City, exotic species experts and marine resource scientists. These scientists and managers are cautious, but

hopeful that complete eradication can be achieved with ongoing monitoring and treatment. Under State law (Assembly Bill 1334), the sale, possession, and transport of *Caulerpa taxifolia* was prohibited throughout California in September 2001.

Issues regarding dry land recreation activities at the lagoons are addressed under several other issues above (e.g., public access, trials, off road vehicles, and management of recreational uses). Aquatic recreation is prohibited in Batiquitos and Buena Vista Lagoons, but is allowed on the inner lagoon of Agua Hedionda. A youth camp, private marina and public boat launch on Agua Hedionda provide canoeing/kayaking and motorized water sports actives. Active aquatic recreation including kayaking is not allowed on Batiquitos or Buena Vista Lagoons, but is a frequent illegal activity according to Seth Schulberg of the Batiquitos Lagoon Foundation (N.C. Times, 3/16/01). The City and CDFG will investigate the need for additional signage regarding areas where aquatic recreation is prohibited, since it appears that the majority of violations are innocent misunderstandings (N.C. Times, 3/16/01).

The following assumptions were critical to the justification for conservation of lagoon species in the MHCP; and therefore need to be adopted and carried forward by the OSMP to maintain compliance with the HMP/MHCP:

- Maintain connections between coastal lagoons and inland habitats, primarily for coyote movement, as a specific element of the MHCP preserve design. It is assumed that this will allow top predators to control mesopredators in the lagoons systems, and nest predation on ground-nesting birds will be reduced.

- Maintain adequate buffer areas around salt marsh and mudflat habitats to minimize disturbances and edge effects and to help maintain water quality. Conserve and manage wetland habitats upstream from coastal wetlands to help maintain water quality.

- Manage newly created dredge spoil islands for the western snowy plover and least tern to provide cover materials, suppress weed growth, and control predation and human activity. Minimize human disturbance to increase the likelihood of elegant tern recolonization and breeding.

There are several lagoon-specific management actions recommended by the MHCP monitoring plan (MHCP Volume III) to address the issues identified above and to minimize potentially negative impacts, including:

- Establish boardwalks to protect habitat from trampling.
- Create or enhance protected beach areas, tidal creeks, or islands to provide breeding areas for covered bird species.
- Restore saltmarsh habitat and adjacent uplands.
- Provide shoreline stabilization to control erosion.
- Remove trash, including water-borne debris in breeding areas, during the non-breeding season.
- Dredge the mouth of the lagoon to keep it open.

Conclusion/Recommendation 21: The City will work with the various lagoon management entities to coordinate dredging activities to meet the goals of hydrology/sediment management and biological conservation. The OSMP will be used as a tool to facilitate this coordination. CDFG will maintain the responsibility for species and habitat monitoring and management and the Southern California Caulerpa Action Team will continue to lead Caulerpa eradication efforts. The City will assist in monitoring and enforcement of the state ban on sale, transport, and possession of Caulerpa through periodic monitoring and informational outreach to pet stores and through educational outreach to the general public. The City will work with CDFG to improve enforcement of boating regulations on the lagoon areas where it is prohibited.

Issue 22: Restoration

Restoration is the process of reestablishing or enhancing historic biological functions and values to degraded habitats. Restoration methods range from active revegetation to passive management. Generally, labor-intensive restoration methods involving active revegetation take less time to achieve biological goals but at greater cost than more passive management techniques, such as fencing to limit further disturbance.

Active revegetation and restoration projects rely on techniques that encourage natural regeneration or use intensive horticultural methods such as planting, seeding, transplanting, and salvaging. The source of seeds and plants used for such projects has tremendous genetic implications. Non-local planting stock can introduce novel, undesirable, or maladapted genotypes into the ecosystem. Use of non-local stock may also result in mortality or problems with growth and reproduction. Thus, active restoration programs will use propagules from sources close to the restoration site. Planting stock must also be inspected for invasive pests, such as Argentine and fire ants, and any infested stock must be removed from the vicinity of the OSMP area and properly treated or disposed.

In most OSMP areas there are ample opportunities for restoration and/or habitat enhancement. Therefore, restoration will be an important component of the area-specific management directives and goals of each preserve areas preserve management plan. For many preserve areas restoration may be prescribed on an as-needed basis to revegetated non-permanent trails and disturbed areas to enhance habitat quality and reduce the extent of nonnative seed sources within the OSMP area. There will be a larger and more focused restoration component for other preserve areas within the OSMP. A restoration component is often a part of the development and mitigation agreements that have established the preserve areas. For the four existing preserve management plans, Habitat Management Plan for the La Costa Preserve (CNLM), Habitat Management Plan for the Kelley Ranch Habitat Conservation Area (CNLM), Perpetual Land Management Plan for Calavera Nature Preserve (TET), and Calavera Hills Phase II Final Habitat Management Plan (TET), only the Calavera Hills Phase II has a focused restoration component (Area K abandoned easement restoration). A focused restoration plan was prepared to implement the Area K restoration project. The remaining areas of these four preserve management plans will be restored/enhanced on an as-needed basis.

The Batiquitos Lagoon Enhancement Project has been implemented and is in the restoration monitoring phase of the project. It is assumed that ongoing monitoring and management of this project will be addressed by the Batiquitos Lagoon Ecological Reserve Management Plan once it is completed.

There is a requirement under the HMP/MHCP for an additional 104 acres of coastal sage scrub to be restored within the City of Carlsbad to contribute to the recovery and conservation of the California gnatcatcher and other scrub habitat species. The HMP identifies six Local Facilities Management Zones (Zones 5, 8, 14, 15, 17, and 18) as areas where coastal sage scrub restoration is recommended. The City and preserve managers will need to incorporate coastal sage scrub restoration plans into the preserve management plans for these areas. The restoration of 104 acres will be funded though the regional funding source; therefore, it will not begin until after the regional funding mechanism is established.

Detailed restoration management plans will be prepared, as part of area-specific management directives, according to the MHCP guidelines for restoration within the MHCP preserve area (MHCP Volume III).

> **Conclusion/Recommendation 22:** The City and preserve managers will need to incorporate restoration and enhancement into the individual preserve management plans. Additionally, detailed restoration management plans will need to be prepared for individual restoration projects for restoration required by project-specific mitigation, for the 104 acres of coastal sage scrub restoration through the OSMP area, and for additional restoration needs identified by preserve managers. Restoration management plans will be consistent with the guidelines provided in MHCP Volume III. The restoration of these 104 acres will occur once a regional funding source is available.

Issue 23: Erosion Control

Erosion is promoted by the combination of erodible soils, steep slopes, soils with low water-holding capacity, sparse to no vegetation, and hydrologic condition of the soils. Erosion can be aggravated by human disturbance and fire-control activities. Erosion hazards to biological resources include pollution and sedimentation of important water sources and the loss of vegetative cover from landslides.

Management and repair of erosion problem areas will generally be handled by individual preserve managers on a case-by-case basis. Preserve managers will develop and implement an erosion control plan for high priority erosion control areas as part of area-specific management directives in individual preserve management plans. In general, this will include establishing physical features to slow surface flow and dampen initial precipitation impact, and revegetation of eroded surfaces for long-term protection. In steep areas, rock areas, and areas of high storm flow, permanent rock or concrete revetments may be required to stabilize undesirable erosive forces. In most cases preserve managers will be able to control and/or eliminate erosion problems; however, severe erosion problems may occasionally occur (e.g., with a major storm event and/or slumping and slope failure). In these rare cases the City will need to coordinate emergency measures possibly with the assistance of other agencies (i.e., ACOE and USFWS) to repair major erosion damage.

The following guidelines are provided in the MHCP (Volume III) for erosion control within preserve areas.

Identify and Prioritize Areas for Erosion Control

- Identify areas of moderate to severe erosion within and adjacent to the preserve.
- Determine causes of erosion and current or potential adverse or beneficial effects on habitat within the preserve.
- Rank identified erosion areas according to threats to biological resources. Include an assessment of cost for erosion control measures.

Address Slope Stabilization and Surface Drainage

- Prepare contingency native seeding plans for highly erosive areas temporarily disturbed by fire.
- Prohibit bare surface grading for fire control on slopes. Ensure that all techniques implemented for fire control leave (or replace) adequate vegetation cover to prevent surface erosion.
- Ensure that all areas identified for revegetation are adequately stabilized by either a binder or straw cover after planting to minimize surface erosion.
- Ensure that no new surface drainage is directed into the preserve.

Conclusion/Recommendation 23: The City and preserve managers will need to incorporate erosion control plans into the individual preserve management plans. The City will assist in coordination and repair of severe erosion problems. Erosion control and management plans will be consistent with the guidelines provided in MHCP Volume III.

Issue 24 (Key Issue): Public Information, Education, and Beneficial Use of Open Space

Public support is essential for the successful long-term funding and management of the OSMP preserve system. City residents derive many beneficial uses of the open space that will be protected within the OSMP area, including trail use for hiking, biking, and bird watching or simply the enjoyment of the scenic beauty preserved in vistas from roadways and backyards. Public education is a critical issue for preserve management because a well-informed public is a good steward and partner in preserve protection.

Currently, the primary mechanisms for public information and education are handled voluntarily by the local environmental interest groups and secondary management entities (e.g., Preserve Calavera, Batiquitos Lagoon Conservancy, and Buena Vista Lagoon Conservancy). These groups provide information and education to the public about habitat protection and recreation (including recreation restrictions) as well as provide information to the City and wildlife agencies regarding open space management issues and violations (e.g., illegal off road vehicle use). These groups are each only focused on a specific portion of the OSMP and do not comprehensively address all of the public education and information needs (due to funding limitations and/or mission of organization). Additionally, signage and informational/educational kiosks provide supplemental sources of public information and are maintained at a number of the actively managed preserve areas.

The City of Carlsbad has a series of "Let's Talk About..." flyers that address some of the important open space issues such as parks, trails, and open space. These flyers are available at the City offices and through the City website and provide a very good overview of some of the basic open space issues.

Most of the OSMP issues addressed in this report have an important public education/information component to the solution. Therefore, there is a substantial need for a comprehensive public education and information program to be established Citywide. This program will be managed and implemented by the City in coordination with the other preserve managers and the other environmental organizations, conservancies, and interest groups. This program will include, but not be limited to, the following tools to improve public knowledge, involvement, and cooperation with open space conservation:

- Expand the "Let's Talk About..." series to include every issue addressed in this report that requires public outreach and education in the solutions (e.g., domestic pets in preserves, landscaping and irrigation, off road vehicle use, etc.).
- Public service announcements and public access/local television programs featuring open space issues in Carlsbad.
- Distribution of public outreach materials through HOAs, shopping centers, and service groups
- Establish an OSMP website with information on open space issues, management of each preserve area, links to GIS data in the OSMP Inventory, species and habitat information, and recreational information.
- A Carlsbad Open Space Schools program to educate school children about the open space in their neighborhoods and the species and habitats that are their "neighbors".
- Signage and educational kiosks to inform those using the trail systems;
- Public outreach to encourage "best management practices" of residences living near preserves to control edge effects such as beneficial landscape practices and domestic pets allowed to roam in the preserves; and
- Volunteerism and involvement of school and community groups to foster a sense of stewardship in the preserves.
- Establish a "hotline" for members of the public to report violations in the preserve and other preserve-specific problems.

Conclusion/Recommendation 24: The City will develop a citywide public information and education program to comprehensively address the public education and information needs as described above. Local public outreach to the immediate neighbors or other public users of the preserve will be conducted by each preserve manager as needed. The preserve manager will solicit assistance from the City-wide program as necessary and vise versa.

Issue 25: Fencing and Signs

Fencing plays an important role in the use of the landscape by humans, domestic animals, and wildlife. Fencing can restrict grazing and control human access, particularly off-highway vehicles. Fencing can direct wildlife to road undercrossings and prevent road kills. However, fencing also can restrict normal wildlife movement, restrict access to food and water, and force wildlife onto roads.

The City and preserve managers will install and maintain fencing where it is needed to protect resources, but will remove existing fencing where it occurs within the OSMP area and has no obvious need or function.

Fencing will be used to funnel wildlife away from at-grade road crossings and toward undercrossings; fencing at wildlife undercrossings will be 6 feet high (10 feet high if mule deer and/or mountain lion have been identified in the area), use a mesh with openings no greater than 4 inches square, and will ideally be buried at least 12 inches below ground to prevent wildlife crawling or digging beneath the fence and to minimize management costs (e.g., due to erosion beneath the fence). To protect particularly sensitive species or habitats, the City and preserve managers will use perimeter fencing or between public access areas (e.g., trails) and sensitive resources (e.g., vernal pools).

For fencing designed to keep wildlife off roads, some design standards will be included for allowing escape routes in the event that large animals are trapped by the fence within the roadway corridor. Successful designs have included occasional dirt ramps or one-way gates.

Preserve managers will limit human access to designated trails using natural vegetation, topography, signs, and limited fencing, and will design and locate fences within the preserve so they do not impede wildlife movement.

Signs educate, provide direction, and promote the sensitive use and enjoyment of the OSMP area, but they can also inadvertently invite vandalism and other destructive behavior. Signs that explain the rules and restrictions of a preserve area are most effective at public entrance points. Signs for educational nature trails and on roads near wildlife corridors (to reduce road kills) also will be posted at appropriate locations.

The City and preserve managers will establish signs for access control and education at the periphery of the preserves that are open to human access. Signs will be posted to prohibit firearms and unleashed pets and for educational nature trails.

Signs will be limited at sensitive species locations so as not to attract attention to sensitive species; signage may invite disturbance of their habitat. Temporary signs will be used to indicate habitat restoration or erosion control areas, and barriers and informational signs will be used to discourage shortcuts.

The City and preserve managers will also provide educational brochures, interpretive centers, and signs to educate the public about the resources and goals of the OSMP, HMP and MHCP. This effort will be coordinated through the recommended citywide public information and education program.

> **Conclusion/Recommendation 25:** Signage and fencing are the responsibility of the primary management entity for each preserve area. The City will work with each preserve manager to develop standardized signage and OSMP rules and regulations to avoid confusion. Signage and fencing will be installed and/or maintained as described above and in the MHCP (Volume III).

Issue 26: Preserve Assembly and Integration with Habitrak

It is assumed that the City will use *HabiTrak* for preparing annual reports of habitat development and preserve assembly for the wildlife agencies. The HMP/MHCP must be monitored over time to determine if the implementation measures are achieving the goals and objectives of the plan. Included in this monitoring is an accounting of the gains and losses of habitat as development proceeds and new open space is dedicated.

GIS accounting of the acreage, type, and location of habitat (vegetation communities) and covered species conserved and destroyed by permitted land uses and other activities, is required to be tabulated annually for the Carlsbad HMP area and every 3 years for the MHCP as a whole.

A committee of City of San Diego, County of San Diego, SANDAG, and wildlife agency staff has developed a GIS-based tool for this purpose (HabiTrak), which will be used for habitat accounting by the City of Carlsbad for the HMP. Carlsbad will be responsible for the annual accounting of the acreage, type, and location of vegetation communities and selected covered species conserved and destroyed by permitted land uses and other activities within its subarea. Habitat accounting will also be used to track conservation of vernal pools. Records will be maintained in ledger and digital map (GIS) format. This information will be submitted to the wildlife agencies as part of an annual public report to demonstrate compliance with the terms and conditions of the HMP, implementing agreement, and take authorization. Carlsbad will hold annual public workshops to brief interested citizens on the progress of preserve assembly.

The Habitrak system is GIS based, therefore, it will be relatively straightforward to apply the Habitrak system to the OSMP area if the City decides to develop the GIS database management tool for coordination of data and reports from all preserve managers.

> **Conclusion/Recommendation 26:** The City will coordinate with preserve managers to establish a schedule and deadlines for reporting of data and project status with preserves so that citywide data are available to the City with sufficient time to update the Habitrak accounting system and prepare the City's annual reports.

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Dr. Wayne Spencer, Ph.D., a conservation biologist and conservation planner at the Conservation Biology Institute provided technical review and helpful comments on the OSMP Focused Issues Report, the primary document used to develop the OSMP.

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APPENDIX A.

Carlsbad OSMP Funding Analysis

City of Carlsbad Open Space Management Plan
Funding Analysis

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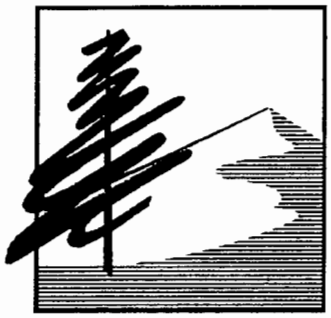

May, 2004

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I. Introduction

The City of Carlsbad's Habitat Management Plan (HMP) is an ambitious effort to conserve viable populations of over 41 plant and wildlife species that represent Carlsbad's natural heritage. At the same time it provides a blueprint for both conservation and development for other jurisdictions nation-wide for the foreseeable future. The HMP is thus a critically important plan for the City of Carlsbad's economic well being and maintenance of quality of life for its residents. However, without successful implementation, the HMP is no more than an expensive planning exercise. Implementation involves both converting lands at risk into a conservation ownership, and managing those lands to insure the threats to their ability to provide habitat for native animals and plants are controlled in perpetuity. While acquiring land for conservation is an important milestone, it is just the first step. Ultimately the success of the HMP will be measured by how well those threats to the land's natural integrity are managed or eliminated. This will be the most challenging, and perhaps in the long term, most costly aspects of the HMP, especially depending on who implements this plan and how funds are managed. An accurate forecasting of the implementation costs is thus essential, and with out that forecast there is no way to develop funding programs to insure that the benefits of this plan are realized.

The Carlsbad HMP covers a total of 7,135 acres of open space (5,748 acres of natural habitat) and is the MHCP subarea plan for the City of Carlsbad. In this draft document the Center for Natural Lands Management (CNLM, the Center) provides a realistic estimate for the costs of implementing the biological monitoring and management components of the Open Space Management Plan (OSMP), which includes 100% of the HMP area plus an additional 1,805 acres not included in the HMP. These estimates are based on over a decade of experience CNLM has in managing natural areas in California, and using the Property Analysis Record (PAR) software the Center developed exactly for this purpose. The PAR itemizes costs in a manner that allows an objective analysis over the cost estimates and a cost/benefit analysis for each line item as a contribution to the success of the HMP. The PAR also allows for inflation and insures that the "buying power" of each line item is maintained through time. The cost estimates included here are constrained by assumptions that are detailed below. Knowing these assumptions insures that debate and cost comparisons are consistent (comparing apples with apples).

CNLM encourages an open dialogue with the City of Carlsbad, the public and wildlife agencies regarding the cost estimates and identified tasks delineated in this document. Through that dialogue we hope to come to a consensus regarding both assumptions and the outline of implementation strategies. With that consensus a final, defensible, cost estimate can be developed.

II. Assumptions for Cost Analysis

This cost analysis incorporates several assumptions that were discussed and agreed upon between the Center, TAIC and the City of Carlsbad (City). Public meetings were held to solicit ideas and information useful to the cost analysis. Any changes to these assumptions would require a re-evaluation of the cost estimate.

Assumptions

Land Assumptions:

1. Total project acres: 7,135 acres of which 5,748 acres is considered natural.
2. Project Area: City owned open space + Biological management entity open space (e.g., CNLM) + Unassigned private open space + Portions of the standards areas of the HMP + Private open space (mainly HOA's) + State and Federal Wildlife Agency owned land.
3. 50 year permit- management in perpetuity
4. Taxes, district fees and other levies are the responsibility of the land owner and are not included in this analysis.
5. All stormwater conveyance structures will belong to the City, with open space managers having no responsibility of any kind for these structures.
6. Fuel management (Fire breaks between homes and preserve lands) is the responsibility of the developer/HOA/property owner and are not part of this analysis.

Funding Assumptions:

1. Funding will be through interest earned on endowments, grants and fees. City appropriations will be needed to fund management gaps.
2. Fuel management (Fire breaks between homes and preserve lands) costs are not included in analysis.
3. Management tasks and goals will follow the focused management issues report (TAIC), the MHCP, the final MHCP Monitoring and Management Plan and the Carlsbad HMP.
4. Cost analysis will be based on the General Management Entity level (of the focused management issues report).
5. Major lagoon management tasks, such as dredging, habitat restoration and creation, water quality analysis, sediment analysis or other such items is not included. Cost analysis focuses on monitoring tasks within this habitat community.

Biological Management and Monitoring Assumptions:

1. Monitoring guidelines based on Final MHCP Monitoring and Management Plan and the MHCP. Cost analysis based on the preserve level and sub-regional level of monitoring and management requirements of the NCCP.
2. Species included in the analysis include those proposed for coverage, those contingent on other MHCP Subarea Plans being Permitted and those Contingent on Funding for Management.
3. No wetlands will be created under this project, restoration is only a part of habitat enhancement.
3. Habitat enhancement includes fire, invasive exotic control and cowbird control.
4. The City is obligated to restore approximately 104 acres of coastal sage scrub habitat within the City; however, this restoration will be funded by the MHCP regional funding source and not undertaken until that funding source is established.
5. Annual reports will be provided to City by the individual management entities. The City will report to the wildlife agencies annually and cumulatively every three years.
6. Fencing and gating and their maintenance included in this analysis.
7. GIS coordination, data collection and analysis to be done by preserve staff. City and wildlife agencies are repository of data.
8. Habitat management requirements (as per PAR):
    a. Capital improvements (fences and gates)
    b. Biological monitoring
    c. Habitat maintenance (erosion control, fire management, non-native plant and animal control, etc)
    d. Public services (enforcement, outreach, recreation, etc)
    e. Reporting

Recreation Assumptions:

1. Public trails will be created under the supervision of management entities and will be composed of dirt and/or decomposed granite.
2. No motorized vehicles will be allowed within preserve areas.
3. No hunting, shooting or paint-ball combat will be allowed.
4. A few informational kiosks/or "nature" centers may be necessary, but their funding is not part of this analysis.
5. Recreation will be considered "passive" only, and will include hiking and wildlife viewing and mountain bike riding only in designated areas.

III. Cost Justification

The following cost justification is based on the assumptions outlined in the previous sections. The cost breakdown is divided into sections which are termed Capital Improvements, Biological Monitoring, Habitat Maintenance, Public Services, Reporting, Field Equipments and Operations. The dollar amount required for management is based on the following analysis, with each section header matching the PAR spreadsheet.

A. Capital Improvements

This section deals with the cost analysis estimated for fencing and gating. Each management entity will be responsible for these costs.

Fencing

Fencing will be an important aspect of land management, since unauthorized use can destroy sensitive resources. Several assumptions have been made for the cost analysis. Fencing discussed in this section is limited to the perimeter of preserve areas. Interior fencing, such as post and cable to keep people out of sensitive areas, is covered and included under the category of "Trails Maintenance" in the Public Services section of this analysis. The total perimeter of all parcels is about 231 miles. However, the entire perimeter of each parcel will not need to be fenced as there may be steep topography, homes, etc. Therefore, this cost analysis assumes that about 1/10 of the entire perimeter, or about 23 miles (121,440 linear feet) will need to be fenced in some fashion. A combination of smooth and barbed wire fencing, chain link, 6 foot post and cable, and other methods of fencing will be required for the preserve. The following table summarizes the breakdown of each category:

Breakdown of Fencing Requirements
(CNLM Cost)

% of Total Fencing	Type of Fence	Linear Feet	Cost per Linear Foot (Source)
60%	Wire fence: combo of barbed and smooth strand wire	72,864	$2.45 (Atlas Fence)
10%	Chain link, not coated	12,144	$9.85 (Atlas Fence)
20%	post and cable 6'-3 strand	24,288	$12.00 (Atlas Fence)
10%	other (bollards, boulder, etc)	12,144	$8.00 (Sustaaler)

Gates

Gates will be required to block necessary roads and allow access for the preserve managers and emergency services personnel. High quality pipe gates firmly planted into the ground are recommended since they are most resistant to vandalism and destruction. A typical pipe gate with one swinging arm that covers span of 16 feet will cost about $2,500 including installation (source: Atlas Fence). It is estimated that about 50 gates will be required for this project. These gates will need to be serviced annually and replaced every 20 years.

Maintenance

In addition to initial infrastructure costs, this cost analysis assumes yearly maintenance costs of fences and gates. Maintenance can be handled by site Rangers and/or others by fence contractors. It is assumed that about 10% of all fences and gates will be vandalized per year and require maintenance.

B. Biological Monitoring

This section deals with each aspect of biological monitoring outlined in the MHCP Monitoring and Management Plan (Plan). It summarizes the objectives and requirements of each type of monitoring task (i.e. vegetation, birds etc.), and estimates the number of hours required by management staff. In order to minimize confusion, and to simplify monitoring efforts, this analysis assumes the following breakdown in tasks:

1. Vegetation Community Monitoring
2. Vernal Pools
3. Plant Species Monitoring
4. Reptile and Amphibian Monitoring
5. Bird Monitoring
6. Mammal Monitoring
7. Invertebrate Monitoring
8. Abiotic Variables
9. Adaptive Management

Hourly estimates for each of the tasks discussed below is based on the field experience of CNLM preserve managers. Every attempt is made to be as accurate as possible. Data entry, analysis and reporting is assumed to take 25% of total field time for all tasks and is an estimate based on CNLM's experience.

NOTE: In some cases MHCP covered species are not known to occur within Carlsbad or only few individuals have been located. This cost analysis attempts to allow funding flexibility if unknown covered species or larger populations of known species are located in the future. Costs are either directly estimated within the task category, or can be taken from "adaptive management" or "contingency" funds.

Vegetation Community Monitoring

The MHCP Monitoring and Management Plan (Plan) calls for all vegetation communities to be mapped initially, and then every 5 years. The Plan does not identify more specific vegetation monitoring protocols in most vegetation communities. The Plan outlines vegetation monitoring for the riparian community; however, it directs these actions to specific locations in the MHCP area and none of these areas are within the City of Carlsbad. Therefore, this cost analysis includes the initial cost of mapping all vegetation communities and has this action repeated every 5 years. If we assume that 20 acres can be mapped per hour, then roughly 357 hours will be required every 5 years to map vegetation communities. The cost of acquiring new aerial photography every 5 years is included in the "Field Equipment" section of this document.

Vernal Pools

The MHCP Monitoring and Management Plan outlines monitoring protocols to measure hydrology and water quality variables within vernal pools (covered species monitoring cost justification provided in separate sections of this report). There are three vernal pool complexes in the Carlsbad area (Poinsetta Avenue, College Boulevard, and El Camino Real). The objectives of vernal pool monitoring are:

1. Monitor duration of inundation and develop a hydrograph of each pool.
2. Record area of inundation.
3. Record water quality variables including temperature, dissolved oxygen and conductivity in each pool.

This cost analysis assumes that it will require an average of six visits per vernal pool complex per year to monitor vernal pool variables (minimal monitoring required in low rain years, and more in heavy rain years.). Each visit will require 8 hours to measure all variables and note and report data (USFWS standard

field forms are filled out in the field and can be attached to annual reports). Therefore, 144 hours per year (8 hours per visit X 6 visit/site X 3 sites) will be required to measure vernal pool variables in Carlsbad.

Vegetation Community Monitoring
Summary of Personnel and Hours

Personnel/Tasks	**Hours**
Plant Ecologist / vegetation mapping every 5 years	357 hrs/ 5 years
Vernal Pool Biologist / measure vernal pool variables	144 hrs/ year
Plant Ecologist / data entry and reporting*	89 hrs/ year

*based on 25% of the total field hours.

Equipment required for vegetation monitoring and vernal pool water analysis includes aerial photographs, temperature gauges and water quality meter, depth rulers, transect tapes.

Plant Species Monitoring

Coastal Sage Scrub, Chaparral and Grassland Vegetation Communities

The following plant species are considered covered by the MHCP and/or the HMP and are found within the coastal sage scrub, chaparral and grassland communities:

San Diego throrn-mint	*Acanthomintha ilicifolia*
San Diego Ambrosia	*Ambrosia pumila*
Thread-leaved brodiaea	*Brodiaea filifolia*
Orcutt's spineflower	*Chorizanthe orcuttiana*
Del Mar Mesa Sand Aster	*Corethrogyne filaginifolia* var. *filaginifolia*
Short-leaved dudleya	*Dudleya blochmaniae* ssp. *blochmaniae*
Del Mar manzanita	*Arctostaphylos glandulosa* ssp. *crassifolia*
Encinitas baccharis	*Baccharis vanessae*
Wart-stemmed ceanothus	*Ceanothus verrucosus*
Summer holly	*Comarostaphylis diversifolia* spp. *diversifolia*
Sticky dudleya	*Dudleya viscida*
Cliff spurge	*Euphorbia misera*
San Diego barrel cactus	*Ferocactus viridescens*
Nuttall's scrub oak	*Quercus dumosa*
Torrey pine	*Pinus torreyana* ssp. *torreyana*
San Diego goldenstar	*Muilla clevelandii*

The distribution and abundance for each sensitive plant species as described in Carlsbad's HMP is taken into consideration to generate the necessary field hours to complete each monitoring task. In some cases, species have not been found within Carlsbad. The hourly estimates provided below should allow for sufficient time to monitor newly discovered populations or species. Additional funding can also be drawn from contingency or adaptive management allocations.

A. Covered plant species monitoring objectives include:

1. Annually track the distribution of the San Diego thornmint, San Diego Ambrosia, Orcutt's spineflower, and Del Mar mesa sand aster. Also, map and quantify population densities of these species.

2. Determine the distribution and abundance of Del Mar manzanita and Encinitas baccharis every 5 years.
3. Annually conduct presence-absence surveys for wart-stemmed ceanothus, summer holly, Blochman's dudleya, sticky dudleya, cliff spurge, San Diego barrel cactus, Nuttal's scrub oak and torrey pine. .

The MHCP Monitoring and Management Plan calls for annual monitoring for plant species listed in A1. The most common species within this list is the San Diego thornmint. The other species either are rare and may not occur in Carlsbad. This cost estimate estimates that 80 hours of field time will be required per year to quantify the population sizes of these plant species

The Plan outlines a simple inventory effort for plant species listed in A2. Each of these species is to be monitored every 5 years at which time each population size is estimated and their distribution is mapped. This cost estimate assumes that 40 hours every 5 years will be required for this task.

The Plan calls for annual presence-absence surveys for species listed in A3 that were not also listed in A1 or A2. Most of these plant species are perennial so there are few monitoring constraints. This cost analysis assumes 80 hours per year will be required for this task.

Riparian Vegetation Communities

The following plant species is considered covered by the MHCP and/or the HMP and are found within riparian vegetation communities:

San Diego Marsh-elder *Iva hayseiana*

A. Covered plant species monitoring objectives include:

1. Annually track the population of San Diego Marsh-elder.

This cost estimate assumes that 40 hours per year will be required to survey for San Diego Marsh-elder.

Oak Woodland

The following plant species is considered covered by the MHCP and/or the HMP and is found within the Oak Woodland community, but is not known to occur within Carlsbad: Surveys for this species will be included in this analysis because individuals may be found or reintroduced in the future.

Engelmann oak *Quercus engelmannii*

A. Covered plant species monitoring objectives include:

1. Annually monitor the populations of Engelmann oak.

This cost estimate assumes that 25 hours per year will be required to monitor Engelmann Oak.

Vernal Pools

The following plant species is considered covered by the MHCP and/or the HMP and is found within the Vernal Pool community:

Thread-leaved brodiaea	*Brodiaea filifolia*
San Diego button celery	*Eryngium aristulatum* var. *parishii*
Little mousetail	*Myosurus minimus* ssp. *apus*
Spreading navarretia	*Navarretia fossalis*
California Orcutt grass	*Oructtia californica*

A. Covered plant species monitoring objectives include:

1. Annually monitor the populations of covered and narrow endemic plant species within the vernal pool community.

The Plan requires annual monitoring of sensitive plant species found in vernal pools. There are only three vernal pool complexes in the Carlsbad area, which will not require a large monitoring effort. This cost analysis assumes that 80 hours per year will be required for vernal pool plant monitoring.

Equipment required for plant species monitoring includes transect tapes, and PVC pipe (for quadrats).

Plant species management and conservation

Although no specific plant management and conservation actions are detailed within the MHCP Monitoring and Management Plan or HMP, it is assumed that sensitive plant species populations will need to be enhanced created, and/or restored. These actions will require seed collection, plant propagation, site evaluations, planting and monitoring. This cost estimate assumes that 300 hours per year will be required for plant management and conservation. Weed maintenance costs of any enhancement activities is covered within the non-native plant removal section of this document. It is assumed that soils will be taken from existing preserve areas.

This cost analysis assumes that plant propagation will be contracted out to a plant nursery and assumes an average price of about $4.00 per plant (as per RECON Environmental Inc, pers. comm.). An estimated 1000 plants will need to be propagated annually, or about $4,000 (this cost is included in the "Habitat Maintenance" section of the PAR).

Seed banking is covered in the Habitat Maintenance section of this report.

Plant Monitoring Summary of Personnel and Hours

Personnel/Tasks	**Hours**
Botanist / Annual monitoring of covered species	345 hrs/ year
Botanist / monitoring of Encinitas Baccharis and Del Mar manzanita	40 hrs/ 5 years
Botanist / Plant species management and conservation	300 hrs/ year
Botanist (data analysis and reports)*	163 hrs/yr

*based on 25% of field time

Reptile and Amphibian Monitoring

Amphibians

The Carlsbad HMP list does not specify any covered amphibian species. The arroyo southwestern toad (*Bufo microscaphus californicus*) and southwestern pond turtle (*Clemmys marmorata pallida*) were originally considered, but both of these species are not known to occur in Carlsbad and thus were not covered. Another sensitive amphibian species, the western spadefoot toad (*Scaphiopus hammondii*), will not be covered by the HMP, but is mentioned in the MHCP Monitoring Plan as a species to be monitored. Western spadefoots have been found at Box Canyon, (Spiegelberg (CNLM), pers. comm.). This cost analysis assumes annual monitoring for only the western spadefoot toad and does not include the arroyo

southwestern toad or southwestern pond turtle because they do not occur in Carlsbad and are unlikely to occur due to lack of suitable habitat.

The objective for the amphibian monitoring program is to:

1. Monitor vernal pool areas for the presence-absence of western spadefoot toads.

This cost analysis assumes that 60 hours per year will be required to survey Carlsbad's vernal pools for western spadefoot toads. Additional survey data for spadefoot toads is likely to be collected from the reptile arrays (see below). In addition, these reptile arrays should also capture non-covered amphibian species, such as salamanders and tree frogs.

Other amphibian species that will require monitoring are the non-native bullfrog, and African clawed frogs (see exotic species monitoring in MHCP monitoring Plan). The bullfrog is known from San Marcos Creek (CNLM, pers. comm.) and may occur elsewhere. These species will need to be removed if possible.

Equipment needed for spadefoot toad monitoring will include dip nets.

Reptiles

One reptile species is covered under the MHCP, the orange-throated whiptail. However, other reptile species that are considered sensitive may occur, such as the coast horned lizard, and thus will require some level of monitoring. The MHCP monitoring plan calls for mapping sensitive species as they are observed during surveys, and also to construct pit-fall arrays in certain locations in north county San Diego. Pit-arrays will not only capture sensitive species, but will address most of the reptile community.

A. Objectives for this monitoring and management program are to:
   1. Monitor for herpetofauna at selected upland areas using pit-fall arrays (sub-regional monitoring and management.
   2. Note the presence of sensitive or covered reptile species during other surveys (i.e. during bird surveys)

The MHCP Monitoring Plan calls for pit-fall arrays to be constructed at the La Costa/University Commons Area, the Calavera Lake/Carlsbad Highlands area in Carlsbad and "stepping stone" habitat in Carlsbad (A1). The Plan calls for a minimum of 10 pit-fall arrays at each location (stepping stone areas need to be determined and may be spread across the city). The Plan calls for two trapping periods to be conducted every other year. Each trapping period is 5 days in length. This cost analysis assumes that each set of ten arrays can be checked by two people in one day. Therefore, a total of 10 days per person per survey year will be required for each location, or 30 days per person per year (60 days for two people per year). A total of 480 hours will be required every other year for pit-fall array monitoring.

The cost analysis also includes the cost of installation and maintenance of the pit-fall arrays (see field equipment). The total labor involved in installation is estimated at about 5 days for 10 pit-fall arrays, or 15 days total for all arrays. This is equivalent to 120 hours. 40 hours per year are allocated for maintenance.

This cost analysis does not include additional time to note the presence-absence of sensitive reptile species (A2), as these hours will be covered by other monitoring actions (i.e. during bird surveys)

Reptile and Amphibian Monitoring
Summary of Personnel and Hours

Personnel/Tasks	Hours
Herpetologist / Pit-fall arrays	480 hrs every 2 years
Pit-array installation, maintenance	120 hrs 1st yr, 40 hrs/yr
Herpetologist / Spade-foot toad	60 hrs/yr
Herpetologist / data analysis and reporting*	75 hrs/yr

* based on 25% of total field time

Field equipment required includes 5 gallon buckets, drift fencing, sponges (for each bucket) and miscellaneous array construction supplies.

Bird Monitoring

Seventeen bird species are identified in the HMP for inclusion as covered species. These species inhabit several different vegetation communities and are many times widespread across the proposed conservation area. Federally and state-listed species include the coastal California gnatcatcher (*Polioptila californica californica*), the least Bell's vireo (*Vireo bellii pusillus*), and the southwestern willow flycatcher (*Empindonax traillii extimus*). Other important species include the peregrine falcon (*Falco peregrinus anatum*) and Cooper's hawk (*Accipiter cooperii*). In general, birds fall into the categories of resident passerines, neo-tropical migrants, raptors and aquatic (open water, fresh water marsh etc) species.

The MHCP Monitoring and Management Plan outlines a strategy for avian monitoring based on single species and community level management. Therefore, bird surveys will include focused surveys for species such as the gnatcatcher and community level surveys for birds found in specific habitat types such as coastal sage scrub.

This cost analysis assumes that no additional funding will be required for the monitoring of other bird species that are not covered by the HMP, but are listed as covered by the MHCP. Many of the latter species can be located during monitoring efforts outlined below and no additional survey time will be required.

The following breakdown was used to calculate the number of hours needed to complete bird surveys.

Coastal California gnatcatcher, coastal cactus wren and the coastal sage scrub, chaparral, and grassland communities

A. Covered bird species monitoring objectives include:

1. Annually monitor for the presence of coastal California gnatcatchers and coastal Cactus wren (cactus wren is not covered by the HMP, but is included in this analysis).
2. Annually monitor for the presence of other covered species (i.e. rufous-crowned sparrow and golden eagle).

B. Avian coastal sage scrub community monitoring objectives include:

1. Monitor the avian bird community to determine species richness and changes over time, and to determine relative abundance at specific locations throughout the reserve.

The PAR budgets assumes (as per the Plan) that monitoring for gnatcatchers and cactus wrens (A1) will include five site visits per year (as per USFWS 2004 HCP survey requirements) with at least a 7 day interval between visits. The PAR budget uses both the coastal sage scrub and coastal sage scrub/chaparral acreage, or about 2,109 acres for the analysis and that both species can be monitored concurrently (far fewer acres of cactus wren habitat than gnatcatcher habitat within Carlsbad's coastal sage scrub). The PAR budget assumes that each surveyor can cover about 100 acres of coastal sage scrub per survey day and that roughly 105 days/year will be required for these surveys (21 days/survey area X 5 survey areas/ year) which is equivalent to about 840 hours/year (8 hours/day X 105 days/year).

The PAR budget assumes that monitoring for other covered species (rufous-crowned sparrow and golden eagle) within the coastal sage scrub (A2) will occur concurrently with the gnatcatcher and cactus wren surveys, so no additional time will be required. However, additional time will be required for these species in the chaparral and grassland communities (chaparral, grassland, southern maritime chaparral) which include a total of 1,763 acres. The PAR budget assumes that each surveyor can cover about 150 acres of these habitat types per day and that roughly 36 days per year will be required for these surveys (12 days/survey area X 3 survey area/year) which is equivalent to about 288 hours per year (8 hours/day X 36 days/year). These hours should be sufficient regardless of what methodology is being used (i.e., point counts, transects, etc)

For the avian community monitoring within coastal sage scrub (B2), the Plan specifically notes the La Costa Villages Management Unit, the Calavera Lake/Carlsbad Highlands area and "Stepping-stone coastal sage scrub habitat through Carlsbad" as target locations. The total acreage used for this analysis will be based on 560 acres for the La Costa Villages MU, 378 acres for the Calavera Lake/ Carlsbad Highlands area and 1/3 of the remaining coastal sage scrub areas or about 353 acres for "stepping stone" areas. This equates to a total of 1,291 acres of coastal sage scrub for "community monitoring." The PAR budget assumes that a point count methodology will be employed and that about 250 acres can be surveyed per day. This will require about 5 days of surveys per survey area and will be repeated five times per year within the spring months for a total of 25 survey days or about 200 hours/year.

<u>California Gnatcatcher Dispersal</u>

The Plan mentions the need to study dispersal of California gnatcatcher within several locations in north San Diego County, including the La Costa Villages, Calavera Hills and "stepping stone" locations in Carlsbad. Unfortunately, no detailed methodology is provided. Therefore, the following assumptions are made:

1. Banding efforts will include banding adults and fledglings (not nestlings) and will focus on the above listed areas (stepping stone areas to be determined).
2. Since all suitable gnatcatcher habitat will be surveyed annually, no additional survey time is required to find gnatcatcher pairs or to locate banded birds. However, extra time will be required to locate family groups and read color bands.
3. Banding efforts will continue for three years followed by three years of "re-location". After a six-year period, banding efforts will continue for another three years followed again by three years of "re-location." This cycle will repeat itself every six years.

Therefore it is assumed that about 100 days per year will be required for banding efforts, including time for locating family groups and reading color bands. This equates to about 800 hours per year (2,400 hours total over three years; 100 days/year X 3 years X 8 hours/day). (It is assumed that about 25 family groups will be banded).

<u>Least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat, Cooper's hawk and the riparian and oak woodland vegetation communities.</u>

A. Covered bird species objectives within the riparian community include:

1. Annually monitor for the presence of least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat and Cooper's hawk.

2. Nest monitor populations of least Bells' vireo and southwester willow flycatcher to determine brown-headed cowbird parasitism rates.

The PAR budgets assumes (as per the Plan) that monitoring for covered riparian bird species (A1) will include three site visits per year with at least a 7 day interval between visits. The PAR budget uses the riparian scrub, woodland and forest, and oak woodland acreage, or about 520 acres for the analysis and that all species can be monitored concurrently. The PAR budget assumes that each surveyor can cover about 50 acres of riparian habitat per survey day and that roughly 30 days/year will be required for these surveys (10 days/survey area X 3 survey/year) which is equivalent to about 240 hours/year (8 hours/day X 30 days/year).

The Plan also discusses the need to study certain populations of covered riparian bird species, including detailed nest monitoring to study covered species population demographics and cowbird parasitism as well as vegetation change analysis. The Plan does not identify areas of study within the Carlsbad area for these types of study. However, the Plan specifies that cowbird trapping should be initiated if parasitism rates for the vireo and flycatcher exceed 10%. There are no recorded flycatcher locations in Carlsbad and only few vireo locations (2 pair reported as of 2001, B. Kus, USGS pers. comm.). Therefore, this analysis will assume that 15 pair of vireo (and any flycatchers) will be monitored annually for cowbird parasitism (since there is more potential habitat). Each pair will be visited twice per month from March 15 to July 15 (4 months), or about 8 visits total. Five pair of vireo (or flycatcher) will be visited per day. Therefore, about 24 days or 192 hours will be required annually to nest monitor vireos.

<u>California least tern, western snowy plover, Belding's savannah sparrow, large-bill savannah sparrow, light footed clapper rail, and other covered species within the lagoon environment</u>

A. Covered bird species objectives within the lagoon community include:

1. Annually conduct surveys for California least tern and western snowy plover.
2. Annually conduct surveys for Belding's savannah sparrow.
3. Annually conduct surveys for Large-billed savannah sparrow if species is found to be present
4. Annually conduct surveys for light-footed clapper rail.
5. Annually map the location and distribution of other covered (non-shorebird or waterfowl) avian species within the lagoon environment.
6. Annually survey for waterfowl and shorebirds in appropriate habitat.

The Plan calls for annual surveys in the month of April for California least terns and western snowy plovers (A1). Goals are to map locations of birds and record number of breeding pairs. Monitoring for nest productivity of these species is also outlined in the Plan, but only if funding is available. This cost analysis only covers annual surveys within the month of April. This cost analysis assumes that two surveyors can accomplish these goals with 12 visits each within the month of April, or 24 days total. This equates to 192 hours per year.

The Plan calls for annual surveys in the month of March to determine the number of breeding Belding's savannah sparrow (A2). There is approximately 137 acres of suitable habitat within Carlsbad for this species. This cost analysis assumes that two surveyors can monitor for the Belding's savannah sparrow with 8 visits each within the month of March, or a total of 16 days total. This equates to 256 hours per year.

The Plan calls for annual surveys for large-billed savannah sparrow (A3). If the species is found to be present, surveys will continue annually. This species occurs within the salt marsh habitat or about 137 acres within Carlsbad. Surveys occur in the month of January. This cost analysis assumes that two surveys can monitor for large-billed savannah sparrow with 8 visits each within the month of January, or a total of 16 days total. This equates to 256 hours per year.

The Plan calls for annual spring counts for clapper rails at each lagoon and appropriate habitat between March and May (A4). This species is found within the salt marsh habitat or about 137 acres within Carlsbad. This cost estimate assumes weekly visits to both the Agua Hedionda lagoon and the Batiquitos lagoon from March to May. Protocol surveys call for monitoring periods to include the early morning (two hours after sunrise) and late afternoon (two hours before sunset). This cost analysis assumes that both morning and afternoon surveys will be conducted requiring 6 hours per day. Therefore, a total of 12 visits per area will be required, or 72 hours per area for a total of 144 hours for clapper rail surveys per year.

The Plan does not specify monitoring protocols for other covered avian species within the lagoon community, such as the brown pelican, white-faced ibis and peregrine falcon (A5). Therefore, this cost analysis will make some assumptions for survey method and time required. It is assumed that 6 surveys per year (3 spring and 3 fall) per lagoon area will be required and that each lagoon will need to be broken down into two units for a total of 12 survey days per lagoon or 24 days total. Therefore, 192 hours per year will be required for these bird species.

The Plan calls for annual surveys once in the winter and once in late summer for shorebirds and waterfowl (A6). This cost analysis assumes that the Lagoons will be broken down into four units each with each unit requiring one day for surveys per period (winter and late summer). Therefore, 16 survey days will be required, or the equivalent of 128 hours per year for shorebird and waterfowl surveys.

The Plan also calls for estimating the mammalian and avian predator activity at each lagoon. This cost analysis assumes that these measures can be taken within the time periods allocated for all surveys. Therefore, no additional hours are required.

Bird Monitoring
Summary of Personnel and Hours

Personnel	Hours
Ornithologist (CSS, chaparral and grassland)	1,328 hrs/year
Ornithologist (Riparian habitats and oak woodland)	240 hrs/year
Ornithologist (Vireo and flycatcher nest monitoring)	192 hrs/year
Ornithologist (Lagoons)	1,168 hrs/year
Ornithologist: (Data Management/Report Writing for non-banding field work)*	732 hrs/year
Ornithologist (banding studies)	2,400 hrs/ across three years
Ornithologist (Data Management/Report Writing for banding studies)**	240 hrs/year

*based on 25% of total monitoring hours; ** based on 10% of total banding hours

Equipment needs for bird surveys include handheld computers, GPS, tape player and binoculars.

Mammal Monitoring

There are no species of mammals that are considered covered under Carlsbad's HMP. Therefore, it is assumed that no focused surveys for regionally sensitive or MHCP Species will be required. However, the MHCP Monitoring Plan does call out for wildlife corridor studies, which are included in this analysis.

Wildlife Corridors

As per the Plan, each critical wildlife corridor "pinch-point" or underpass as outlined in the Plan will need to be monitored for wildlife movement. This would cover the mule deer and mountain lion (and of course many other species, such as bobcat, raccoon, skunk etc). Track stations and remotely triggered camera stations will be used at each station and sampled for two 5 day periods during each year. There are 8 "pinch-point" or underpass locations identified in the Plan as being located in Carlsbad. Therefore, 10 days per point will be required per year, or 80 days total. This is equivalent to 640 hours per year.

Total hours required for this effort is provided in the following table:

Mammal Monitoring
Summary of Personnel and Hours

Personnel	**Hours**
Mammalogist (wildlife corridors)	640 hours/yr
Mammalogist Data Management/Report Writing*	160 hours/year

Based on 25% of wildlife corridor working hours

Equipment needs for mammal work includes small mammal traps, bait, remote cameras, and tracking station chalk.

Invertebrate Monitoring

Five invertebrate species are considered covered by Carlsbad's HMP, the Harbison's dun skipper, the Hermes copper, the Riverside fairy shrimp, the San Diego fairy shrimp, and the salt marsh skipper. However, only three of the species, both fairy shrimp and the salt marsh skipper are known to occur and the others are not likely to occur (HMP, 1999). At this time, only the vernal pools on Poinsettia Lane are known to have San Diego and Riverside fairy shrimp, although the other vernal pool locations have the potential to support these species.
Objectives for invertebrate species include annual monitoring and habitat assessments. Habitat assessments for these species is included in the vegetation monitoring section of this document.

Fairy Shrimp

Management of fairy shrimp populations will focus on management of the vernal pool watersheds. Watershed management will include weed control and soil and water quality monitoring (see other sections for these details). All vernal pools will be sampled annually. USFWS protocols will be following for these surveys (i.e. includes measuring pool temperature, depth etc). This cost analysis assumes that 5 survey days will be required per pool complex each year, or a total of 15 days. This equates to 75 hours per year for fairy shrimp surveys.

Hermes Copper

Hermes Copper is not known or expected to occur in Carlsbad nor is there suitable habitat. Therefore, no funds are allocated to management of this species in Carlsbad.

Harbison's dun skipper

There are no documented locations of Harbison's dun skipper in the City of Carlsbad. However, suitable habitat is likely to occur. This species is found in riparian areas where its larval host plant San Diego sedge (*Carex spissa*) is present. Surveys for this species should begin with survey for its larval host plant. If the host plant is located, adult surveys should be initiated. Surveys for the dun skipper and its host plant are estimated to require about 60 hours per year.

Salt Marsh Skipper

The salt marsh skipper is likely to occur in the salt marsh areas of Carlsbad. Annual surveys for this species are required. There are 137 acres of salt marsh within the City. This cost estimate assumes that 3 surveys per year will be required per year and that a surveyor can cover 40 acres per day. Therefore, roughly 10 survey days will be required, or 80 hours per year.

Invertebrate Monitoring
Summary of Personnel and Hours

Personnel	Hours/Year
Entomologist fairy shrimp surveys	75 hours/ year
Entomologist Salt marsh skipper and Harbison's dun skipper	140 hours/ year
Entomologist (data analysis and reporting)*	54 hours/ year

*Assumed at 25% of total field time.

Equipment required for insect work includes dip net, vials, alcohol and hand lens.

Other Insects

Southern California has seen many harmful and potentially harmful non-native insects introduced during the past century. Two species that are most threatening to native species include the red imported fire ant and the Argentine ant. Both species are associated with human activities and are particularly problematic in the more urbanized areas. As the City of Carlsbad becomes more urbanized and much of the reserve lands effectively become islands within an urban matrix, the threats from these two ant species will grow. These ants are capable of eradicating native insect fauna, as well as causing severe negative impacts on reproductive success of ground and near-ground dwelling birds and reptiles. Monitoring for these ant species, in conjunction with monitoring the native ant fauna, will be used as one measure of the impacts of urbanization and habitat fragmentation on the ecosystem condition within the reserve system.

The MHCP calls for general visual surveys for the presence of non-native ants. However, these surveys should be coupled with some kind of formal survey method. Therefore, this cost analysis assumes that general visual surveys will be conducted in addition to more detailed sampling using pit-fall traps. Ants will be monitored using pitfall traps arranged in a subset of reserve parcels, concentrated in urbanized areas and large reserve systems. A total of 200 hours per year is dedicated to monitoring ant populations using general surveys and pit-fall traps.

Other Insect Work
Summary of Personnel and Hours

Personnel	Hours
Entomologist (ant surveys)	200
Entomologist (data analysis and report writing)*	25

*based on 25% of the field time

Equipment required for insect work includes microscope (1), micro-dissection kit, alcohol, pins (500/year), vials (250/year), jars, and pitfall traps (250/year).

Abiotic Variables

Climate

The MHCP Monitoring Plan finds that no additional in field weather information will need to be collected and that data can be collected from existing weather stations in the area. However, some time will be needed for data analysis purposes. This cost estimate assumes that 50 hours per year will be required to assimilate and store weather data and to conduct appropriate analyses.

Adaptive Management

Inventory and monitoring are used to track the condition of targeted habitats and populations relative to the ecological goals that have been set for them. Adaptive management is a process whereby evaluation of monitoring results are compared to the goals or defined "measures of success" so that management practices can be changed or modified as needed.

There are several ways to establish a cost for adaptive management. CNLM has included adaptive management costs in two ways. CNLM has asked clients for a one time fee up front which is invested and held until needed, or has included the cost as a yearly fee that can be set aside or spent as necessary (both are considered different from "contingency" as contingency should be used for unforeseen costs while adaptive management is a crucial part of ongoing management). This cost analysis assumes a yearly adaptive management cost will be required and assumes that it will be 10% of the total cost of all ongoing biological monitoring.

Science Oversight

This cost analysis assumes 500 hours per year for Science Oversight by a Science Director or experienced ecology professional.

C. Habitat Maintenance

Habitat maintenance includes tasks that are associated with enhancing and protecting existing habitat within the preserve from threats such as non-native plants and animals and erosion. Habitat restoration, which is not part of this cost analysis, involves more tasks and work than maintenance and includes tasks such as plant propagation, irrigation, invasive control and monitoring. The following sections outlines a cost justification for non-native plant and animal control, cowbird trapping, and non-native ant control and management, as these threats are the most commons to the preserves and are outlines several times in the MHCP Monitoring Plan. This section also includes a seed banking provision, as seed banking will be an important management tool and is mentioned as a necessity in the MHCP and MHCP Monitoring and Management Plan.

Non-native plant removal and non-native animal control

Non-native plant removal

This cost analysis assumes that there will be many parcels with non-native plant disturbance, that many parcels will be invaded by non-native plant species in the future, and that non-native plant removal will most likely be a continual process in perpetuity. The common non-native plant species in the dominant

habitats (coastal sage scrub, grassland and chaparral) are usually non-native grasses, mustard (*Brassica* ssp), thistle (*Centaurea melintensis*) and of course, many others. Non-native plant species that are likely to occur in riparian areas include arundo (*Arundo donax*), pampas (*Cortaderia selloana*) and acacia (*Acacia* spp.).

Since non-native plants are likely to always be an issue to some degree, this PAR analysis assumes a upfront cost (I and C) and then ongoing maintenance (ongoing). This analysis assumes that a small staff of laborers will be needed either seasonally or full-time for the duration of management. Approximately 300 hours a year would need to be dedicated to a botanist or plant ecologist, who determines which areas need non-native plant removal work. This botanist would then have a staff of up to 5 laborers whose job is to remove the non-native species (8,900 hours total per year). Alternatively, the money needed for the laborers could be used to hire a non-native plant removal contractor. Regardless, the PAR budget reflects the need for a non-native plant removal staff. These laborers can also be used for other habitat maintenance tasks, such as planting sensitive plant species as part of the plant conservation plan or erosion control.

Non-natives are a particular problem for several listed plant species, such as the San Diego thornmint and thread-leaved brodiaea. These locations will require measurements of native vs. non-native cover and frequency and will involve very careful and surgical removal process. Time and cost required for cover analysis is described in the plant species monitoring and management section of this report.

This cost estimate does not include the removal of the non-native plant species *Caulurpa taxifolia* which is currently being removed from Agua Hedionda Lagoon and is known to be a large problem worldwide. Cost estimates for surveys of this species were estimated by Merkel and Associates for the Center and totaled about $600,000 per year for presence-absence monitoring (per Lagoon). Maintenance and removal costs were estimated at $10,000 per incidence. As per Merkel and Associates, the State Regional Water Quality Control Board and California Coastal Commission are providing removal grants and funding for this task.

Non-native Plant Removal
Summary of Personnel and Hours

Personnel	Hours
Plant ecologist/Botanist (coordination)	300 hours/year
Technicians/laborers (3 full-time)	8,900 hours/year

Equipment needs for non-native removal include weed-whips, gardening tools, chain saws and other tools. The budget includes the rental of mowers for removal of non-native grasses.

Brown-headed cowbird trapping

Brown-headed cowbirds are known to cause declines in nesting success of many bird species. To counter this problem, biologists have created cowbird traps, which significantly reduce rates of parasitism. In San Diego County, cowbirds tend to flock around farmlands and agriculture and thus impact habitat areas near these human resources. It is very likely that cowbird trapping programs will be a necessary management tool during the bird breeding season for some locations within Carlsbad's reserve (i.e. Macario Canyon). The PAR assumes that approximately 10 will need to be purchased or constructed and replaced every 5 years (or about 1 trap per 50 acres of riparian habitat). The estimate assumes that these traps will need to be manned 7 days a week for up to 5 months out of the year, for a total of 1,120 hours (56 hours/week x 20 weeks= 1,120 hours) per person. The budget includes the cost of bait and other supplies needed for cowbird trapping.

Brown-headed Cowbird Trapping
Summary of Personnel and Hours

Personnel	Hours
Ornithologist (supervision)	40 hours/year
Technicians/Assistant Preserve Managers	1,120 hours/year
Reporting	40 hours/ year

Non-native ant species

The cost justification for monitoring non-native ant species is covered in the Entomology section of this report. Once the distribution and abundance of non-native ant species is determined an eradication method will need to be employed.. There are several methods, and most require killing ants with basic traps, poisons or manual removal. The labor hours for such ant removal efforts can be drawn from the labor hours used for non-native plant control. Therefore, no additional hours are required.

Fire and Fuel Management

Fuel Management

As per the assumptions given to CNLM, no fuel management between preserve land and homes is part of this cost analysis.

Fire Management

Fire management is a critical component to all management efforts in natural landscapes. To be in compliance with the HMP, the City of Carlsbad will need to update fire management policies for its natural open space areas. Updated policies should include measures to avoid destruction of sensitive plant species populations, to create fire management zones, to educated fire control personnel, etc. This cost estimate includes the cost of renting heavy machinery to cut fire breaks (see equipment cost section), since it is likely that fuel breaks will be required in some portions of the preserve system. However, all costs associated with updating policies will be borne by the City and is not part of this analysis.

Erosion Control

Erosion control for this cost estimate is meant to cover relatively "small" erosion control problems. For example, erosion repairs along degraded habitat or near unused or old trails. It does not include the construction of erosion control devices, such as cement berms or culverts, or any measures that would require permits, engineering and major contracting. This cost estimate assumes that most erosion control measures will include sand bags or similar erosion control measures and will require the work or equivalent cost of about 1 full-time person (1,780 hours)

Seed Banking

The MHCP and MHCP Monitoring and Management Plan briefly state the need for seed banking as part of an overall plant conservation and management strategy. The cost for seed banking will depend on the number of species and seeds collected per species. The cost for long term (indefinite) seed storage at the Zoological Society of San Diego's Botanical Conservation Center is $2500 per accession. This cost estimate assumes that 4 accessions will be required in the first 10 years of management and then 1 accession per 15 years will be required in perpetuity. The cost includes seed viability testing and initial processing, but assumes that staff biologists will collect all seed material in the field.

D. Public Services

Patrolling, Trespass and Recreation Enforcement

The most prominent and deleterious threats to the natural resources in the City of Carlsbad is the direct impacts of human activities, particularly illegal off-highway vehicle (OHV) trespass. To a lesser extent, direct impacts from off-trail activities by otherwise legal public users of the reserve lands threaten the integrity of the habitats and sensitive species that rely on those habitats. Negative impacts from these activities have the potential to cause significant drains on financial resources intended for management of the biotic resources if the illegal activities are not prevented and controlled. Fences and signs alone will not deter trespass. Prevention will require a highly visible presence of a security force. In addition to contributing to the species and habitat conservation goals of the MHCP, a strong security presence also enhances the experience of the public legally using the reserve system and enhances the quality of life for residents of neighboring properties.

This cost analysis accounts for one full-time supervising officer and four full-time rangers/officers with law enforcement training to effectively enforce applicable state laws and safety in the various lagoons and open spaces in Carlsbad (as per conversation with and recommendation by Lt. Mike Ference, CDFG, and Supervising officer Dave Felt of the City of Carlsbad). The Rangers will coordinate with law enforcement agencies, including the City of Carlsbad's Sheriff's Department, Department of Fish and Game Wardens, and city police and parks officers. All staff vehicles will be equipped with radios and/or cellular telephones to report trespass and vandalism to security personnel or the Sheriff's Department.

The Security staff will also be responsible for directing maintenance crews to points of illegal entry, and will coordinate the language on boundary signs. Rangers will have the responsibility to coordinate with the City Parks Department to identify multi-use areas and associated restrictions. These restrictions will be preserve area-specific and in some cases will be seasonal around periods of sensitive species activity. Rangers will work with the GIS and database management staff to maintain accurate overlays and information files that identify and distinguish between public-accessible and public-inaccessible areas.

Trail Maintenance

The cost analysis assumes that 68 miles of trail exist or are planned within the City of Carlsbad's reserve system (as per "Carlsbad Avenue" brochure published by City of Carlsbad). This cost analysis assumes that maintenance of unimproved trails will cost about $4,000/mile (quote as per Fred Burnell, City of Carlsbad Parks Supervisor) and that 20% of the trails will be maintained annually.

Signing

Various signs will be needed for access control, public information and education. Small (24 inches by 24 inches), general signs such as "Habitat Conservation Area", "No Motorcycles", and "No Trespassing" will be required for almost all preserves. Larger, or more prominent preserves will require larger redwood signs for the public benefit. The number of signs required per site will vary on access limitations and proximity to urban areas. Small sites near homes may require many signs along the perimeter, while larger sites far from urban areas will likely only need a few signs at main access points, or along fence lines. This analysis assumes that some general signage (i.e. "Habitat Conservation Area" etc) will be needed of the total perimeter of all the parcels (231 miles) and at every 300 foot intervals. This would result in needing about 4,065 signs. This analysis also estimates that 1000 miscellaneous signs ("no motorcycles", "no dumping") will be required and that 50 larger redwood signs will be required for the more prominent preserves.

Public Outreach

Public outreach is an important aspect of land management. Neighbors and visitors need to know what permitted activities are allowed, where trails are located, what resources are present, and how they can

participate in assisting in management activities. A public outreach coordinator for all of Carlsbad's open space would be ideal. This individual can coordinate the dissemination of pamphlets and mailers, nature walks and other public education activities. This cost analysis assumes that a full-time public outreach coordinator will be required (1780 hours).

E. Reporting

GIS / GPS / Database Management

A Geographic Information System (GIS) and its accompanying Global Positioning System (GPS) will be used for two principal purposes: 1) the mapping of resources (e.g. study sites, boundaries, roads, fires & fire management units, adjacent properties, acquisitions, habitats & restoration efforts, water resources, infrastructure, sensitive species' locations, human impacts, public use areas, sensitive soils' locations, wildlife movement); and 2) habitat change analyses. The data generated for the geospatial analyses required under the MHCP, along with the large data sets gathered during biological inventory and monitoring efforts will require a half-time (890 hours) GIS/Database Manager. This position will also be responsible for gathering and maintaining data sets from external sources, such as weather station data, standardizing data for transfer from field biologists to archives, and transferring data to the central CDFG archive. The materials and labor hours needed by field personnel to collect geospatial data are embedded within the biological monitoring budgets.

Equipment and software will include:

1. Latest microcomputer platform running an OS that is compatible with ArcGIS/ArcINFO.
2. Production hardware: color laser printer capable of printing on legal size paper, large format plotter, and a binder.
3. Color, high-resolution, single-pass color scanner, with software.
4. ArcGIS/ArcINFO GIS system software with accompanying extensions for 3-D analysis. High-end graphics software (e.g. Adobe Illustrator), and similar photo manipulation software (e.g. Corel PhotoPaint, Adobe PhotoShop).
5. Database software
6 Digital aerial imagery

GIS equipment costs are included in the Office Maintenance and Field Equipment sections of the PAR.

Annual Reports

Annual reports detailing all management activities and a financial summary is required under the MHCP program. Annual reports are submitted to the appropriate wildlife, other public agencies and interested parties.

Annual reporting and data analysis is built into the hourly estimates for each biological monitoring activity. However, there will be a need for someone to compile and review all the information needed for the final yearly reports. In addition, there is a need for hours to be allocated for updated management plans, annual plans and general correspondence.

A project coordinator will be required for oversight of the management of the Preserve, its employees, and to coordinate reports, meetings and other activities. This cost analysis assumes that 250 hours per year will be required for the principal manager of the preserve system for reporting and coordination.

A summary of hours required for Reporting is tabulated below:

Reporting
Summary of Personnel and Hours

Personnel	Hours per Year
GIS / GPS / Database Management Specialist	890 hrs/yr
Project Manager (Reporting and coordination)	250 hrs/yr

F. Office Maintenance

The cost to maintain a field office is included in this cost estimate and assumes an office space, computers and peripherals, and general office supplies.

G. Field Equipment

A summary of field equipment needed to perform management and monitoring requirements under the HMP and MHCP Monitoring Plan is provided in the previous sections. This information was used to compile the following tables, which detail all equipment needed to complete biological monitoring, equipment cost, and a source to justify that cost.

FIELD EQUIPMENT COST ANALYSIS

	Total Cost/Year	Cost ($)	per	Frequency (years)	Quantity	Activity	Source
Entomology							
pit cups	$15.00	0.15	each	3	300	pitfalls for ants	estimate
insect pins	$80.00	0.08	each	1	1000	curating	Forestry Suppliers, Inc
micro-dissection kit	$1.60	16.00	each	10	1	curating	Forestry Suppliers, Inc
specimen cabinet with drawers	$17.16	429.00	each	25	1	specimen storage	Forestry Suppliers, Inc
hand lens	$1.07	5.35	each	10	2	field sampling	Forestry Suppliers, Inc
alcohol	$13.75	13.75	gallon	1	1	curating	BioQuip
ethyl acetate	$8.15	8.15	quart	1	1	field sampling	BioQuip
Plastic vials	$11.50	5.75	Dozen	5	10	Field sampling	Forestry Suppliers, Inc
Sampling net	$17.00	8.50	Each	2	4	Vernal Pools	Forestry Suppliers, Inc

FIELD EQUIPMENT COST ANALYSIS (continued)

	Total Cost/Year	Cost ($)	per	Frequency (years)	Quantity	Activity	Source
Ornithology							
cowbird traps	$1,000.00	500.00	each	5	10		Varanus Bio
cowbird bait	$50.00	50.00	each	1	1		estimate
binoculars	$90.00	150.00	each	5	3		Ben Meadows
tape player	$20.00	20.00	each	5	5	species survey	estimate
Botany/Weed Control							
Skip loader rental	$1,500.00	300.00	day	1	5	fire breaks /roads/ mowing	Coyote Rentals
mower rental	$1,500.00	150.00	day	1	10	exotics removal	Coyote Rentals
chainsaw	$99.60	249.00	each	5	2	exotics removal	Forestry Suppliers, Inc
weed whip (manual)	$6.40	16.00	each	5	2	exotics removal	Ben Meadows
weed whacker (gas)	$149.40	249.00	each	5	3	exotics/ brush removal	Home Depot
assorted hand tools	$100.00	100.00	each	1	1	exotics removal	estimated
Roundup	$3,240.00	108.00	gallon	1	30	exotics removal	Home Depot
backpack sprayer	$55.00	55.00	each	3	3	exotics removal	Home Depot
plant press	$52.95	52.95	each	10	1	sampling	Forestry Suppliers, Inc
Aerial photographs	$400.00	2,000	Each	5	1	Vegetation mapping	estimate
Mammals							
Sherman trap	$725.00	14.50	each	5	250	trapping	Sherman
bait	$360.00	360.00	season	1	1	trapping	estimate
Remote cameras	$175.60	439.00	each	5	2		Forestry Suppliers, Inc.
Herpetology							
snake hook	$21.50	21.50	each	5	5	snakes	Forestry Suppliers, Inc
power auger	$75.00	600.00	each	8	1	pitfall installation	Coyote Rentals
pitfall array	$1,200	200.00	each	5	30	pitfall traps	estimated
General Biology							
flagging stakes	$250.00	10.00	bundle	1	25	field sampling	Ben Meadows
ribbon flagging	$19.50	1.30	roll	1	15	field sampling	Ben Meadows
notebooks	$200.00	10.00	each	1	20	field sampling	Ben Meadows

FIELD EQUIPMENT COST ANALYSIS (continued)

	Total Cost/Year	Cost ($)	per	Frequency (years)	Quantity	Activity	Source
GPS	$1,600.00	4,000.00	each	5	2	mapping	ASC Scientific
hand-held computer	$300.00	300.00	each	5	5	field sampling	Office Depot
50m tape	$22.77	37.95	each	5	3	field sampling	Forestry Suppliers, Inc
100m tape	$236.85	78.95	each	5	3	field sampling	Forestry Suppliers, Inc
tree tags	$87.00	4.35	50	1	20	perennial monitoring	Forestry Suppliers, Inc
PVC pipe	$4	20	Total	5	1	Relevé sampling	Estimate
Water Quality							
Water meter	$155.80	779.00	each	5	1	vernal pools	Forestry Suppliers, Inc
depth meter	$8.99	89.95	each	10	1	vernal pools	Forestry Suppliers, Inc
TOTAL ANNUAL COST =	$13,870.59						

The total equipment cost is $34,495.7 for all supplies if purchased in the first year. The yearly cost is $13,870.59.

Field equipment also includes the cost of vehicles used for Rangers/Officers and for field biology staff. This cost estimate assumes 5 vehicles for Rangers/Officers and 4 field vehicles for all other staff. Each vehicle is a Toyota 4X4 extra-cab. It is assumed that each vehicle will travel 8,000 miles per year and that each vehicle makes 18 miles/ gallon, or a total of 444 gallons of fuel per year.

H. Operations

Contingency and Administration

As a final budget item, the Center includes a provision for contingencies at a rate of 10% of the budgeted expenses to provide a cushion for extra and unforeseen costs. There is also a provision for administrative overhead of 24% Administrative overhead costs include costs of maintaining and renting an office, office supplies, and costs of operation including legal work, financial work, insurance, endowment management, annual financial reports and tax filing. Administrative costs are considered separate from "field office" costs.

IV. Labor Rate Assumptions

The following table summarizes the labor rate assumptions used for this cost analysis. These costs usually vary from organization to organization which should be considered during discussion of this cost analysis.

Summary of Labor Rates

Position	Salary	Hourly Rate**
Science Director	$75,000	$50.73
Preserve Manager	$65,000	$44.51
Assistant Preserve Manager	$45,000	$32.08
Supervising Ranger	$50,000	$35.19
Ranger	$45,000	$32.08
Public Outreach Coordinator	$45,000	$32.08
Labor	$30,000	$22.76
Technical Support	$30,000	$22.76
GIS Specialist	$50,000	$35.19

** Includes benefits, including health care, 3% matching in a 401k, vacation (120 days), sick (96 hours) and holiday (84 hours) time that an employee of the Center is entitled to at the current time.

V. Results and Conclusions

Results

At this time there are many different organizations within the City that own land that is part of the City's natural open space. Organizations include non-profit land managers, homeowners associations (HOA), the State and the City. Some organizations are already funded and are currently conducting management activities and others have yet to participate.

The following funding analysis was determined by generating a total cost to manage the entire OSMP preserve area (7,135 acres) and then breaking down this total cost into 6 separate sub-totals based on the landowners organizational type, referred to as "General Management Entity (GME)". Examples of general management entities include non-profit, non-governmental organizations such as the Center, state agencies, such as CDFG and home owners associations. The 6 general management entities and the percent of open space they are responsible for are:

1) Biological Management Entity (20% - 1,413 acres), such as the Center;
2) The City of Carlsbad (9% - 604 acres);
3) Future Biological Management Entity (i.e. unassigned properties) (24% - 1,732 acres);
4) Other public or semi-public entities, such as Cabrillo Power (5% - 420 acres);
5) Private owners, such as Home Owners Associations (24% - 1,713 acres);
6) Wildlife agencies, such as CDFG (18% - 1,254 acres).

The total Preserve Management Cost and Cost by Category, and the Labor Hours Summary is provided in the following three tables and is based on the PAR found in Appendix 1. The total number of individuals required to manage the open space included in the City's OSMP preserve system is estimated to be approximately 12 personnel. Biological monitoring and rangers require the most time for management activities.

Total OSMP Preserve Management Cost

The following cost summary is based on the entire 7,135 acres in the Carlsbad OSMP preserve system taken as one unit and is based on a capitalization rate of 4.5%:

Funding Requirements	
Initial & Capital Costs	$4,172,200
Ongoing yearly costs	$1,882,398
Annual Stewardship on a per acre basis (current dollars)	$263

Total OSMP Preserve Management Cost by Category

Cost Category	Initial and Capital ($)	Ongoing ($)
Site Construction/Maintenance	811,743	102,394
Biological Surveys	435,724	319,319
Habitat Maintenance	610,575	299,806
Public Services	705,741	409,581
General Maintenance	4,000	4,000
Reporting	128,099	122,165
Office Maintenance	78,172	47,674
Field Equipment	278,176	68,551
Operations	6,564	6,564
Contingency and Administration	1,113,402	502,340
Total	**4,172,200**	**1,882,398**

Labor Hours Summary

Position	Yearly Hours*	Number of Personnel Required**
Preserve Manager	8,596	4.8
Assistant Preserve Manager	1,160	0.7
GIS Specialist	890	0.5
Science Coordinator	500	0.3
Public Outreach Coordinator	1,780	1.0
Ranger Supervisor	1,780	1.0
Rangers	7,120	4.0
Habitat Maintenance Laborers	10,680	6.0
Total:	**32,506**	**18.3**

*Termed "Ongoing" within the PAR.
**Typical hours per year for one individual is about 1,780. Does not include overhead staff.

Breakdown by General Management Entity

The following tables summarize the cost by General Management Entity. This cost is generated in several ways. For the most part, all tasks itemized in the Total Preserve Management Cost (Appendix 1) are divided by the acreage of habitat found in each General Management Entity. For example, if a GME has 20% of the coastal sage scrub found in Carlsbad, and a task is determined by the acreage of coastal sage scrub, then that GME will receive 20% of the cost. The following categories and the tasks within them (in parenthesis) are broken down by percent acreage of habitat type within each GME, or percent of total acreage within each GME:

1. Site Construction and Maintenance (all tasks)
2. Biological Surveys (tasks based on acreage which are required for all GME's).
3. Habitat Maintenance (all tasks)

4. Public Services (all tasks)
5. General Maintenance (all tasks)
6. Reporting (all tasks)
7. Office Maintenance (all tasks)
8. Field Equipment (all tasks)

If a task is not determined by acreage of habitat then the cost proportion is determined by the number of estimated hours required within a GME. All of these types of cost breakdowns occur within the Biological Survey category. An example of such a break down is Reptile Pit-array monitoring. The MHCP Monitoring and Management Plan calls for reptile Pit-arrays within certain specified regions of Carlsbad which requires that the cost is proportioned into the GME's that fall in these regions.

All endowment costs are based on a capitalization rate of 4.5%.

The entire cost breakdown (each PAR) by task for GME's 1 through 6 can be found in Appendices 2 through 7.

1. Biological Management Entity (1,413 acres)

Funding Requirements	
Initial & Capital Costs	$878,993
Ongoing yearly costs	$368,667
Annual Stewardship on a per acre basis (current dollars)	$261

Breakdown by category

Cost Category	Initial and Capital ($)	Ongoing ($)
Site Construction/Maintenance	162,348	20,478
Biological Surveys	121,605	67,472
Habitat Maintenance	120,318	1,042
Public Services	141,148	81,916
General Maintenance	800	800
Reporting	25,619	24,433
Office Maintenance	15,634	9,117
Field Equipment	55,635	13,710
Operations	1,312	1,312
Contingency and Administration	234,570	98,383
Total	**878,993**	**368,667**

Labor Hours Summary

Position	Yearly Hours*	Number of Personnel Required**
Preserve Manager	1,791	1.0
Assistant Preserve Manager	188	0.1
GIS Specialist	178	0.1
Public Outreach Coordinator	356	0.2
Ranger Supervisor	356	0.2
Rangers	1,424	0.8
Habitat Maintenance Laborers	1,851	1.0
Total:	**6,144**	**3.4**

*Termed "Ongoing" within the PAR.
**Typical hours per year for one individual is about 1,780. Does not include overhead staff.

2. City of Carlsbad (604 acres)

Funding Requirements	
Initial & Capital Costs	$396,992
Ongoing yearly costs	$180,625
Annual Stewardship on a per acre basis (current dollars)	$300

Breakdown by category

Cost Category	Initial and Capital ($)	Ongoing ($)
Site Construction/Maintenance	73,056	9,215
Biological Surveys	51,021	36,397
Habitat Maintenance	58,904	27,729
Public Services	63,516	36,862
General Maintenance	360	360
Reporting	11,528	10,994
Office Maintenance	7,035	4,102
Field Equipment	25,035	6,169
Operations	590	590
Contingency and Administration	105,942	48,201
Total	**396,992**	**180,625**

Labor Hours Summary

Position	Yearly Hours*	Number of Personnel Required**
Preserve Manager	944	0.5
Assistant Preserve Manager	229	0.1
GIS Specialist	80	0.1
Public Outreach Coordinator	160	0.05
Ranger Supervisor	160	0.05
Rangers	640	0.4
Habitat Maintenance Laborers	833	0.5
Total:	**3,048**	**1.7**

*Termed "Ongoing" within the PAR.
**Typical hours per year for one individual is about 1,780. Does not include overhead staff.

3. Future Biological Management Entity (1,732 acres)

Funding Requirements	
Initial & Capital Costs	$953,837
Ongoing yearly costs	$411,650
Annual Stewardship on a per acre basis (current dollars)	$238

Breakdown by category

Cost Category	Initial and Capital ($)	Ongoing ($)
Site Construction/Maintenance	194,818	24,575
Biological Surveys	69,757	56,265
Habitat Maintenance	146,538	63,407
Public Services	169,377	98,299
General Maintenance	960	960
Reporting	30,743	29,319
Office Maintenance	18,761	10,941
Field Equipment	66,762	16.452
Operations	1,575	1,575
Contingency and Administration	254,543	109,853
Total	**953,837**	**411,649**

Labor Hours Summary

Position	Yearly Hours*	Number of Personnel Required**
Preserve Manager	1,609	0.9
Assistant Preserve Manager	272	0.15
GIS Specialist	213	0.12
Public Outreach Coordinator	427	0.24
Ranger Supervisor	427	0.24
Rangers	1,708	1.0
Habitat Maintenance Laborers	2,221	1.3
Total:	**6,880**	**4.0**

*Termed "Ongoing" within the PAR.

**Typical hours per year for one individual is about 1,780. Does not include overhead staff.

4. Other Public or Semi-Public Organization (420 acres)

Funding Requirements	
Initial & Capital Costs	$233,607
Ongoing yearly costs	$123,618
Annual Stewardship on a per acre basis (current dollars)	$294

Breakdown by category

Cost Category	Initial and Capital ($)	Ongoing ($)
Site Construction/Maintenance	40,587	5,119
Biological Surveys	41,908	41,273
Habitat Maintenance	28,732	11,413
Public Services	35,287	20,479
General Maintenance	200	200
Reporting	6,405	6,108
Office Maintenance	3,908	2,279
Field Equipment	13,908	3,427
Operations	328	328
Contingency and Administration	62,340	32,988
Total	**233,607**	**123,617**

Labor Hours Summary

Position	Yearly Hours*	Number of Personnel Required**
Preserve Manager	999	0.56
Assistant Preserve Manager	56	0.03
GIS Specialist	44	0.03
Public Outreach Coordinator	89	0.05
Ranger Supervisor	89	0.05
Rangers	356	0.20
Habitat Maintenance Laborers	462	0.25
Total:	**2,041**	**1.2**

*Termed "Ongoing" within the PAR.

**Typical hours per year for one individual is about 1,780. Does not include overhead staff.

5. Private/HOA (1,713 acres)

Funding Requirements	
Initial & Capital Costs	$939,810
Ongoing yearly costs	$397,174
Annual Stewardship on a per acre basis (current dollars)	$232

Breakdown by category

Cost Category	Initial and Capital ($)	Ongoing ($)
Site Construction/Maintenance	194,818	24,574
Biological Surveys	59,472	45,653
Habitat Maintenance	146,538	63,407
Public Services	169,377	98,299
General Maintenance	960	960
Reporting	30,743	29,319
Office Maintenance	18,761	10,941
Field Equipment	66,762	16,452
Operations	1,575	1,575
Contingency and Administration	250,799	105,990
Total	**939,810**	**397,174**

Labor Hours Summary

Position	Yearly Hours*	Number of Personnel Required**
Preserve Manager	1,371	0.77
Assistant Preserve Manager	272	0.15
GIS Specialist	213	0.12
Public Outreach Coordinator	427	0.24
Ranger Supervisor	427	0.24
Rangers	1,708	1.0
Habitat Maintenance Laborers	2,221	1.24
Total:	**6,642**	**3.73**

*Termed "Ongoing" within the PAR.
**Typical hours per year for one individual is about 1,780. Does not include overhead staff.

6. Wildlife Agency (CDFG) (1,254 acres)

Funding Requirements	
Initial & Capital Costs	$768,960
Ongoing yearly costs	$349,247
Annual Stewardship on a per acre basis (current dollars)	$279

Breakdown by category

Cost Category	Initial and Capital ($)	Ongoing ($)
Site Construction/Maintenance	146,113	18,430
Biological Surveys	91,960	72,258
Habitat Maintenance	109,544	47,196
Public Services	127,033	73,724
General Maintenance	720	720
Reporting	23,057	21,989
Office Maintenance	14,070	8,205
Field Equipment	50,071	12,339
Operations	1,181	1,181
Contingency and Administration	205,206	93,200
Total	**768,960**	**349,246**

Labor Hours Summary

Position	Yearly Hours*	Number of Personnel Required**
Preserve Manager	1,879	1.1
Assistant Preserve Manager	197	0.11
GIS Specialist	160	0.10
Public Outreach Coordinator	320	0.18
Ranger Supervisor	320	0.18
Rangers	1,281	0.72
Habitat Maintenance Laborers	1,666	0.94
Total:	**5,825**	**3.33**

*Termed "Ongoing" within the PAR.
**Typical hours per year for one individual is about 1,780. Does not include overhead staff.

Endowments

The Center receives its funding through "non-wasting" endowments provided by the landowner at the time a preserve is created. The City of Carlsbad may choose to create an endowment to fund its reserve management in perpetuity. The following tables provide the endowment requirements for the City owned land under two scenarios: 1) if the City holds the endowment and assumes a 2.5% capitalization rate and 2) if a non-governmental organization holds the endowment and assumes a 4.5% capitalization rate.

1. Endowment required for City owned land assuming City holds endowment (2.5% capitalization rate):

Funding Requirements	
Initial & Capital Costs	$396,992
Ongoing yearly costs	$180,625
Annual Stewardship on a per acre basis (current dollars)	$300
Endowment	$7,225,000
Total	$7,621,625

2. Endowment required for City owned land assuming non-governmental organization holds endowment (4.5% capitalization rate):

Funding Requirements	
Initial & Capital Costs	$396,992
Ongoing yearly costs	$180,625
Annual Stewardship on a per acre basis (current dollars)	$300
Endowment	$4,013,889
Total	$4,410,881

Discussion

The cost analysis provided above can be compared to the costs that existing management entities are using to manage dedicated natural open space areas. The Center for Natural Lands Management owns and manages the Kelly Ranch Habitat Conservation Area and the La Costa Villages (Rancho La Costa) Habitat Conservation Area. The Center spends about $212 per acre per year at Kelly Ranch and about $70 per acre at La Costa Villages. It is common to have a higher cost per acre for smaller properties than for larger.

Comparisons with Existing Funding Sources

Management Entity	Preserve Name (acreage)	Existing Annual Expenditures per acres	Funding Analysis Estimate	Shortfall ( ) or Windfall
CNLM	Kelly Ranch (55)	$269	$263	$8
CNLM	Ranch La Costa East (622)	62	263	(201)
CNLM	Rancho La Costa West (438)	61	263	(202)
TET	Batiquitos (0.7)	161	263	(102)
TET	Bressi Ranch (185)	98	263	(65)
TET	Brodiaea Preserve (1.0)	225	263	(38)
TET	Calavera Nature Preserve (107)	239	263	(24)
TET	Calavera West Nature Preserve (137)	180	263	(83)

Comparison by Category for Rancho La Costa (CNLM)

Cost Category	CNLM Funding per acre per year	Funding Analysis per acre per year	Shortfall ( ) or Windfall
Site Construction/Maintenance	4.2	14.5	(10.3)
Biological Surveys	18.6	47,8	(29.2)
Habitat Maintenance	3.6	36.1	(32.5)
Public Services	8.1	58.0	(49.9)
General Maintenance	0.1	0.1	0
Reporting	4.5	17.3	(12.8)
Office Maintenance	1.2	6.5	(5.3)
Field Equipment	2.2	9.7	(6.5)
Contingency and Administration	20.1	69.7	(49.6)

The annual cost for La Costa Villages is about 1/4 that was estimated by this cost analysis (GME 1). This is for several reasons. First, the cost for several tasks, such as fencing, public outreach and patrolling, was based on higher numbers than what the Center received for La Costa Villages. Second, the MHCP Monitoring and Management Plan (Pan) was finalized after the Center reached a financing agreement for La Costa Villages. The Plan includes tasks, such as bird banding studies and cowbird trapping, which were not part of the Center's cost and turn out to be quite costly. Lastly, this cost analysis includes a yearly trail maintenance cost (under Public Services) that contributes considerably to the overall costs. The Center did not receive a large amount of funds for trails maintenance.

In sum, this cost analysis reflects realistic and complete cost estimate for managing land in the City of Carlsbad. The Center attempts to achieve this goal during negotiations with land developers, but many times is forced to cut back on certain items such as trail maintenance and public outreach in the end as these are important but not necessarily "required" monitoring and management items (i.e. biological monitoring of covered species is required and easily justified). If the cost of cowbird trapping and

gnatcatcher dispersal studies is removed from this cost analysis, the amount of money received for biological surveys for Rancho La Costa is very comparable with this cost analysis.

Conclusions

This document presents a cost justification and budget for the City of Carlsbad's natural open space preserve areas. The budget is intended to provide a basis for decision-making, but should be viewed as preliminary. The City should be aware that this cost analysis is based on the Center's financial model which differs from other groups in the area. Therefore, costs could be higher or lower depending on each organization's costing and financial structure. In addition, the endowment figures provided assume a 4.5% capitalization rate, which is higher than the 2.5% rate that would be required if the state or City held the endowment funds, which would result in higher endowment requirements.

The Center's analysis was constrained by use of assumed site conditions and some assumed monitoring and management guidelines. At the completion of reserve build out, the actual site conditions, division of responsibility and cost framework may differ from those envisioned by planners at the early stage in establishment of the Preserve. However, the MHCP Biological Monitoring and Management Plan, and the proposed management scenario in this document, are designed with the flexibility to meet those changes.

The time lag between this cost estimate and the actual establishment of the Reserve will influence the final management cost. Inflationary adjustments to the costs presented here will need to be included in the final contribution.

References

Habitat Management Plan for Natural Communities in the City of Carlsbad. December, 1999, with addendum.

MHCP Biological Monitoring and Management Plan. March, 2003.

Multiple Habitat Conservation Program Volume II.