City of Carlsbad Habitat Management Plan Annual Report

Reporting Year 19, November 2022–October 2023

February, 2024

Environmental Sustainability
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California Department of Fish and Wildlife

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Batiquitos Lagoon Foundation

Buena Vista Audubon

Preserve Calavera

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Acronyms and Definitions

Annual Reports – Preserve-specific annual reports, which summarize management and monitoring activities, threats, and monitoring results, are due in November of every year. Pre-HMP preserves are generally not required to prepare annual reports unless stipulated in previously negotiated agreements with the city and/or Wildlife Agencies. HMP-wide annual reports (e.g., the current report) are due to the Wildlife Agencies in December of every year. HMP annual reports summarize gains and losses in the HMP preserve system, current status of individual preserves and species, management and monitoring activities, and a financial summary. Every third year, the HMP annual report includes an analysis of species monitoring data.

ASMD – Area Specific Management Directive

BLF – Batiquitos Lagoon Foundation

Caltrans – California Department of Transportation. Caltrans is responsible for design, construction, maintenance and operation of the California State Highway System and Interstate Highway segments within the state's boundaries.

City – City of Carlsbad

CDFW – California Department of Fish and Wildlife (formerly CDFG – California Department of Fish and Game)

CNDDB – California Natural Diversity Database, operated and maintained by CDFW.

CNLM – Center for Natural Lands Management, a non-profit organization that provides management and biological monitoring of mitigation and conservation lands in perpetuity

Compliance Monitoring – Monitoring to determine if the HMP is being properly implemented pursuant to the Implementing Agreement and state and federal take authorizations/permits.

Conservation Easement (as defined in California Civil Code Section 815.1) – Any limitation in a deed, will, or other instrument in the form of an easement, restriction, covenant, or condition, which is or has been executed by or on behalf of the owner of the land subject to such easement and is binding upon successive owners of such land, and the purpose of which is to retain land predominantly in its natural, scenic, historical, agricultural, forested or open-space condition.

Critical Location – An area that must be substantially conserved for a particular sensitive species to be adequately conserved by the MHCP. Critical locations often coincide with major populations of the same sensitive species, but not all major populations are considered critical.

Edge Effects – Impacts to natural open space resulting from adjacent, contrasting environments, such as developed or disturbed land. When an edge is created, the natural ecosystem is affected for some distance in from the edge.

Effectiveness Monitoring – Monitoring habitat and species to determine if the HMP is protecting sensitive biological resources as planned and if any adaptive management is needed.

EMP – SANDAG's TransNet Environmental Mitigation Program, a funding allocation category for the costs to mitigate habitat impacts for regional transportation projects. Funding grants from this program may be used for habitat acquisition, management, and monitoring activities as needed to help implement the MHCP.

ESA – Environmental Science Associates

Existing Hardline Preserve Areas – Natural habitat open space areas, such as Ecological Reserves and Dawson-Los Monos Reserve that were preserved prior to final approval of the HMP, or areas that were previously Proposed Hardline Areas or Standards Areas that have secured preservation, long-term management and monitoring, and a non-wasting endowment to fund activities in perpetuity.

FESA – Federal Endangered Species Act

FPA – Focused Planning Area

GIS – Geographic Information System

Gnatcatcher Core Area – An area identified in the MHCP that is considered critical to the recovery of the coastal California gnatcatcher. Approximately 500 acres of core habitat must be conserved by the MHCP jurisdictions as a condition of coverage for gnatcatcher. Although the core area is located outside of the City of Carlsbad, the city is responsible for 307.6 acres of conservation.

HabiTrak – A GIS-based tool that was developed and is maintained by CDFW for habitat accounting. The tool calculates the acreage, type, and location of vegetation communities that are gained (conserved) or lost (impacted) from the HMP planning area.

HCP – Habitat Conservation Plan, a planning document required as part of an application for an incidental take permit from the USFWS that describes the anticipated effects of the proposed taking, how those impacts will be minimized or mitigated, and how the HCP is to be funded.

HMP – Habitat Management Plan; serves as the MHCP Subarea Plan, an HCP and NCCP Plan, for the City of Carlsbad.

HMP Hardline– an HMP Hardline is a preserve that has been set aside for permanent conservation and is protected by a conservation easement, which runs permanently with the land. Hardline properties cannot be developed.

HOA – Homeowners' Association

HRS – Habitat Restoration Sciences, Inc., a for-profit native habitat restoration and general engineering firm specializing in installation and long-term maintenance of natural areas.

IMG - Rare Plant Inspect and Manage Monitoring Program

Implementing Agreement – The legal agreement between the City of Carlsbad, CDFW, and USFWS that ensures implementation of the Carlsbad HMP by binding each party to perform the obligations, responsibilities, and tasks assigned and provides remedies and recourse should any of the parties fail to perform.

IPM – Integrated Pest Management, a science-based, decision-making process that combines biological, physical, and chemical tools in a way that achieves control objectives while minimizing economic, health, and environmental risk.

Landowner – The legal entity that owns the land in fee-title. The landowner has the ultimate responsibility to ensure that preserve management is secured prior to habitat impacts. Often, the management responsibility is contracted to a third party.

LFMZ – Local Facility Management Zone, one of 25 Growth Management Plan sub-areas the City of Carlsbad used for planning and financing infrastructure improvements and other city services and facilities concurrent with development. Standards Area requirements are specific to the LFMZ in which the property resides.

Major Population – As defined by the MHCP, a population of sensitive species considered sufficiently large to be self-sustaining with a minimum of active or intensive management intervention (especially for plants) or that at least supports enough breeding individuals to contribute reliably to the overall meta-population stability of the species (especially for animals). A Major Population also includes smaller populations that are considered important to long-term species survival.

MHCP – Multiple Habitat Conservation Program, a subregional conservation plan prepared and administered by SANDAG that encompasses the cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista. The goal of the MHCP is to conserve approximately 19,000 acres of habitat and contribute toward the regional habitat preserve system for the protection of more than 80 rare, threatened, or endangered species. The MHCP serves as an umbrella framework to guide the preparation of city-specific plans such as the Carlsbad Habitat Management Plan.

NCCP – Natural Community Conservation Planning, a program of CDFW that takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity throughout the state. The MHCP is a sub-regional component of the statewide NCCP.

Non-Wasting Endowment – An endowment with sufficient principal that provides for the management and monitoring of a preserve in perpetuity through investment returns. The endowment is designed to increase in value over time through increasing generated revenues, and thus keeping pace with inflation. Pre-HMP preserves generally did not

require endowments to fund management, unless specified in a previously negotiated agreement with the city and/or Wildlife Agencies.

OSMP – Open Space Management Plan, which serves as the Preserve Management and Monitoring Plan referenced in Section 12.3 of the Implementing Agreement.

PAR – Property Analysis Record, a cost analysis that estimates the management and monitoring costs of a specific preserve in perpetuity, often in the form of an endowment to fund long-term management. A PAR is based on industry-accepted parameters and requires an objective cost/benefit analysis for each line item and adjusts for inflation.

PMP – Site-specific preserve management plan, which outlines the long-term management requirements for a specific preserve. The city has contracted CNLM to develop a master PMP for all city-owned preserves that addresses each preserve individually.

Preserve – Land conserved with a conservation easement, restrictive covenant, deed restriction, or transfer of fee-title to the city or CDFW that is being managed to HMP and MHCP standards. (Note: Lands already set aside for preservation through an open space easement prior to HMP adoption have limited management activities until a regional funding source is available).

Preserve Manager – The entity responsible for monitoring and managing the preserve. The majority of preserve lands are owned/managed by the city, CDFW, non-profit professional land management companies, or private HOAs. Pursuant to state due-diligence legislation that took effect January of 2007, preserve managers must be certified by either the city or CDFW before they can begin managing lands in the city.

Priority Species – Sensitive species that have site-specific permit conditions requiring populations to be tracked individually using GIS.

Proposed Hardline Preserve Areas – Areas identified in the HMP as natural habitat open space that were proposed for permanent conservation and perpetual management during the design phase of development projects but not completed prior to final approval of the HMP.

RY – Reporting Year, from November 1 to October 31.

Rough Step Assembly – A policy that requires development (losses) occur in "rough step" with land conservation (gains) during preserve assembly to ensure that development does not greatly outpace land conservation. It is generally understood by the Wildlife Agencies that losses should be no more than 10% greater than gains.

SANDAG – San Diego Association of Governments. SANDAG is the San Diego region's primary public planning, transportation, transit construction, and research agency, providing the public forum for regional policy decisions about growth, transportation planning and transit construction, environmental management, housing, open space, energy, public safety, and binational topics.

SDG&E – San Diego Gas and Electric

SDHC – San Diego Habitat Conservancy, a non-profit organization that provides management and biological monitoring of mitigation and conservation lands in perpetuity.

SDMMP – San Diego Management and Monitoring Program, a science-based program that provides a coordinated approach to management and biological monitoring of lands in San Diego that have been conserved through various programs, including the Multiple Species Conservation Program (MSCP), MHCP, TransNet Environmental Mitigation Program, and various other conservation and mitigation efforts.

Standards Areas – Areas that were included in the MHCP Focused Planning Area (i.e., considered high priority for inclusion into the preserve system), but for which projects had not been proposed prior to the city's HMP approval. Because potential protected habitat areas had not been delineated, a set of zone-specific conservation standards were established as a condition of future project approval.

Take – As defined in the Federal Endangered Species Act; to harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect a listed species or attempt to do so, including impacts to the habitats upon which these listed species depend.

UC – Urban Corps Habitat Services, a non-profit organization that provides management and biological monitoring of mitigation and conservation lands in perpetuity.

USFWS – U.S. Fish and Wildlife Service

Wildlife Agencies – Term used collectively for CDFW and USFWS

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Executive Summary

Covering the period from November 1, 2022 to October 31, 2023, this nineteenth annual Habitat Management Plan (HMP) report summarizes the preserve status, implementation activities, and preserve gains and losses that have occurred within the City of Carlsbad (city) during the current reporting period. Highlights of the HMP activities are summarized below.

Current Status of Preserves

The existing preserves continued to be managed, monitored, and/or maintained during the reporting period. Established private and city-owned Hardline Preserves were managed and monitored in accordance with their approved preserve management plans; California Department of Fish and Wildlife (CDFW) preserves were managed subject to available funding and resources; and pre-existing natural open space areas were maintained according to their respective Open Space Easements and/or Covenants, Conditions, and Restrictions, if applicable. Descriptions of the different categories of preserves are presented in Section 1.3.

Lake Calavera Mitigation Parcel

During the reporting period, zero acres of mitigation credit were debited from the mitigation parcel for city projects. To date, cumulative debits and adjustments for wetland mitigation sites are 113.9 acres, leaving a total of 92.2 acres (credits) remaining.

Gnatcatcher Core Area Conservation Requirement

As documented in a letter from the U.S. Fish and Wildlife Service (USFWS) and CDFW, dated December 19, 2019, the city has fulfilled the HMP Gnatcatcher Core Area requirement in full. The city will continue collecting HMP Mitigation Fees to pay back the General Fund (final credits were purchased with General Funds in excess of available funds in the Fee Program at the time of purchase).

Land Acquisitions

During the reporting period, there were no acquisitions of open space lands.

Habitat Gains and Losses

During the reporting period, a total of 12.8 acres of native habitat were gained and 46.5 acres (mostly non-native vegetation) were lost. Gains and losses were associated with the following projects: Aviara Apartments, Veterans Memorial Park, and Park Drive Slope and Drainage Improvement Project.

HMP Minor Amendments

During the reporting period, HMP Minor Amendments were processed for the Aviara Apartments Project and the Park Drive Slope and Drainage Improvement Project. The associated preserve areas were outside of the HMP boundary (i.e., not a Proposed Hardline or Standards Area); therefore, the Minor Amendments were processed to formally add these areas to the HMP (HMP boundary adjustment). The HMP Minor Amendment processed for Veterans Memorial Park was reported in last year's HMP Annual Report.

Preserve Management and Monitoring

Ongoing management and monitoring activities in HMP preserves conducted this year included invasive non-native species monitoring and control, installation and maintenance of fences and signage, rare plant counts and habitat assessments, vegetation mapping, sensitive bird species surveys, wildlife movement monitoring, and public outreach activities, which are summarized for each preserve area in Appendix B.

In addition, this year's HMP annual report highlights the following:

a. Triennial long-term biological monitoring report. Long-term biological monitoring is required by the HMP and implemented by the land managers and the city. The HMP requires that results of these surveys be reported every three years. This year's Triennial HMP Monitoring Report is included in Appendix C.

b. Evaluation of restoration opportunities. At the city's request, Environmental Science Associates (ESA) conducted a geographic information systems (GIS) evaluation to identify potential restoration areas within the HMP preserve. This study identified 910 acres of potential restoration, including 846 acres of uplands, 59 acres of wetlands, and 4 acres of unclassified land cover. Site surveys will be needed to assess the potential value of these areas more accurately. Study details are included in Appendix D, and results can be viewed in the HMP interactive web map.

c. Pilot Management Project. Based on the results of the city's Site Inspection Program, the city identified three areas to initiate management as part of a pilot adaptive management project. Management consists of targeted invasive non-native plant species removal within occurrences of San Diego thornmint and thread-leaved brodiaea on Rancho Carrillo Preserve, and within a native grassland area on The Ranch Preserve. The city hopes to continue for at least three more years.

d. Interactive map for dog waste study. Ongoing monitoring (and disposal) of dog waste continued within the Village H South property throughout 2023. At the city's request, ESA created an interactive web map so residents can view the amount of dog waste left by dog owners at a typical city trail that provides dog waste bags and trash cans.

Financial Summary

Habitat Mitigation Fee Program: Mitigation fees totaling $35,914.00 were collected during the current reporting period. The city has fulfilled its Core Area Credit obligation in full. However, the purchase of some credits exceeded the available Habitat Mitigation Fee funds, requiring an advance from the General Fund, resulting in a negative fund balance. The current balance of the Habitat Mitigation Fee Fund is -$1,117,671.78. In-lieu fees will continue to be collected for habitat impacts and will be used to reimburse the General Fund.

Preserve Management Endowments: During the reporting period, a total of $985,872 was spent by the land managers on management and monitoring activities on 28 preserves that comprise 2,831 acres (does not include most Ecological Reserves owned by CDFW or unmanaged preserves). Endowments for endowment-funded properties totaled $21,559,877.

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1.0 Plan Administration

1.1 Introduction

The Habitat Management Plan (HMP) is a citywide conservation plan that describes how the City of Carlsbad (city) will comply with state and federal environmental laws while remaining consistent with the city's General Plan and Growth Management Plan. The HMP was developed in coordination with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) (collectively, the Wildlife Agencies) as part of a regional planning effort under the North County Multiple Habitat Conservation Program (MHCP). Annual tracking and reporting of habitat gains, losses, management, and monitoring is required by Sections 12.1 and 12.2 of the Implementing Agreement (Nov. 12, 2004); the Federal Fish and Wildlife 10(a)(1)(B) Permit No. TE022606-0 (Nov. 12, 2004); and the NCCP Permit No. 2835-2004-001-05 (Nov. 15, 2004). This annual report covers year 19 of the 50-year HMP permit period.

1.2 HMP Compliance Monitoring and Effectiveness Monitoring

1.2.1 HMP Conservation Goals

To evaluate the city's compliance with the HMP and the effectiveness of the MHCP/HMP program with respect to natural resources protection, it is necessary to understand the underlying goals of the plan, which are summarized below (see HMP p. A-2 for a complete list):

- Conserve the full range of vegetation community types, with a focus on sensitive habitat types.
- Conserve populations of narrow endemic species and other covered species.
- Conserve sufficient habitat, functional biological cores, wildlife movement corridors, and habitat linkages, including linkages that connect coastal California gnatcatcher (*Polioptila californica californica*) populations and movement corridors for large mammals, to support covered species in perpetuity.
- Apply a "no net loss" policy to wetlands, riparian habitats, and oak woodlands.
- Implement appropriate land use measures to ensure the protection of preserve lands in perpetuity.
- Meet conservation goals stated above while accommodating orderly growth and development in the city.
- Coordinate and monitor protection and management of conserved lands within the preserve system.
- Minimize costs of Endangered Species Act related mitigation and HMP implementation.

1.2.2 Compliance Monitoring

Compliance monitoring is required by the HMP-related permits and Implementing Agreement to ensure that the city is doing what it agreed to do from a regulatory perspective, such as conserving particular species locations and acres of habitat, monitoring the condition of the habitat and species, and performing required management actions (MHCP Vol. I). The Preserve Steward assists the city by working with the preserve managers to ensure coordinated management across the city. Habitat tracking results are provided in Section 1.4; regulatory compliance is discussed in Section 1.5 and **Appendix A**; management and monitoring activities are summarized in Section 2.0 and **Appendix B**; and the Triennial HMP Monitoring Report is included in **Appendix C**.

1.2.3 Effectiveness Monitoring

Effectiveness monitoring, also known as biological, ecological, or validation monitoring, determines the effectiveness of the conservation program by evaluating if the preserve assembly and management actions are achieving the HMP/MHCP goals within the city and across the MHCP planning area. The preserve-level monitoring program is used to evaluate the effectiveness of management at specific preserve areas (MHCP Vol. III). At the subregional (MHCP-wide) level, effectiveness monitoring evaluates the status and trends in populations of covered species, and assesses how well the conservation strategy is working to maintain natural ecological processes (MHCP Vol. III).

Monitoring the effectiveness of the MHCP and HMP is more challenging than compliance monitoring because the biological goals are broad and may take many years or decades before trends in species populations and habitat conditions are detectable. Species and habitat monitoring and monitoring to evaluate the effectiveness of management are being conducted on individual preserves as well as on the regional landscape level. This work is being done through a partnership with the city, Preserve Steward, preserve managers, Wildlife Agencies, and San Diego Management and Monitoring Program, which has developed regional and site-specific monitoring and management strategic plans and protocols for conserved lands across San Diego County.

1.3 Current Status of Preserves

This section contains: (1) a description of the different categories of preserves within the HMP preserve system, (2) an accounting of the mitigation credits at the city's Lake Calavera Mitigation Parcel, and (3) the status of the Gnatcatcher Core Area requirement.

1.3.1 Categories of HMP Preserves

Lands within the HMP preserve system can be grouped into four categories: (1) established private and city-owned Hardline Preserves; (2) CDFW Ecological Reserves; (3) pre-existing natural open space preserves; and (4) future preserves (Proposed Hardline Preserves and Standards

Areas). These categories of preserve lands are distinguished by the level of management, ownership, and/or status as described below and shown in **Figure 1**.

Established Private and City-Owned Hardline Preserves

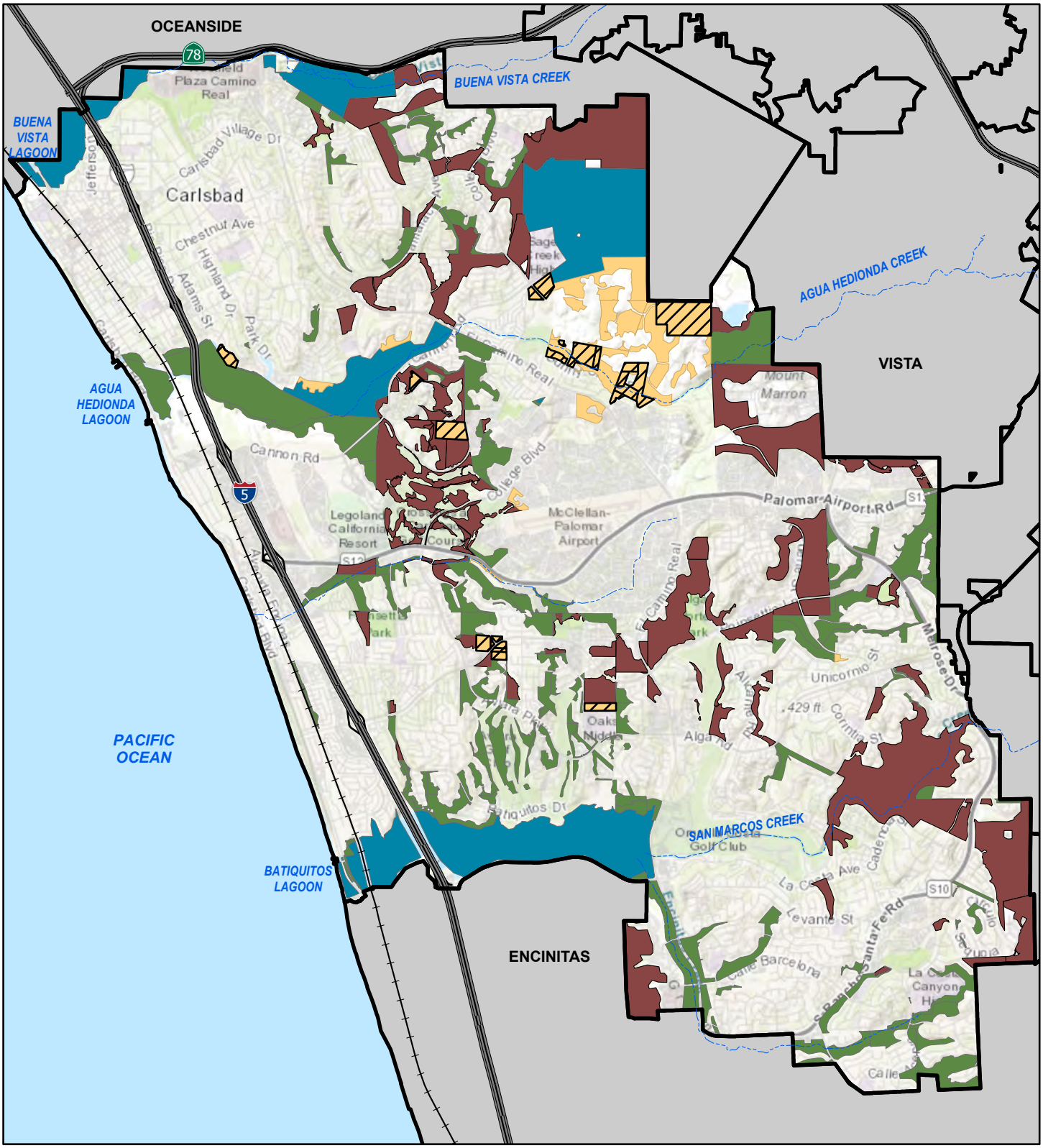
These Hardline Preserves were established during or after the adoption of the HMP. They have approved preserve management plans implemented by preserve managers and are funded through non-wasting endowments or, in the case of the city-owned preserves, through annual budget appropriations. The city requires site-specific annual reports for these preserves. The property owners for these preserves are a preserve management entity, homeowners' association (HOA), or the city. Except for some city-owned properties, these Hardline Preserves are protected by recorded conservation easements. Examples of these preserves include Rancho La Costa, Carlsbad Oaks North, Lake Calavera, and The Crossings.

California Department of Fish and Wildlife Ecological Reserves

These Hardline Preserves were established prior to or subsequent to the adoption of the HMP and are all owned and managed by the State of California. According to the HMP Implementing Agreement, the level of management and monitoring of the CDFW preserves is based upon the available state funding and resources. Except for the Buena Vista Creek Ecological Reserve, there are currently no finalized long-term management plans for the CDFW Ecological Reserves in Carlsbad. Management is guided by draft plans, which have not been submitted to the city. CDFW obtains State Wildlife Grant funding annually for management and monitoring activities on CDFW's preserves. Management accounts have been established for Carlsbad Highlands Ecological Reserve and Agua Hedionda Lagoon Ecological Reserve. The Batiquitos Lagoon Ecological Reserve is managed and monitored by CDFW and funded through a mitigation account established by the Port of Los Angeles and held by CDFW. The Buena Vista Creek Ecological Reserve is managed by Center for Natural Lands Management (CNLM), a non-profit land management entity, through a contract and funded by a non-wasting endowment held by CNLM. The city receives some CDFW monitoring data for the lagoon preserves and a CNLM-prepared annual report for the Buena Vista Creek Ecological Reserve.

Pre-Existing Preserves

Pre-existing preserves, which predate the HMP, include conserved habitat areas within subdivisions or master plan communities (owned by the respective HOA), the University of California's Dawson-Los Monos Reserve, and areas owned by Cabrillo Power, San Diego Gas and Electric (SDG&E), and the San Dieguito Union High School District. The lands were included in the HMP preserve system because of their onsite biological resources and ecological value. Generally, these preserves do not have preserve management plans, active management, or biological monitoring. "Stewardship"-level maintenance of the property is the responsibility of the property owner. Generally, maintenance consists of trash pickup and access control, such as



Legend

- Established Private and City-owned Preserve
- California Department of Fish and Wildlife Ecological Reserve
- Pre-existing Natural Open Space Preserve
- Future Preserve Proposed Hardline
- Future Preserve Standards Area

0 6,400 Feet

City of Carlsbad

City of Carlsbad
Categories of HMP Preserves

Figure 1

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Date: 1/17/2024

trespass issues and fence maintenance. The HMP envisioned that future management and monitoring of these lands would be financed through a regional funding source; however, that funding source has not materialized. The preserves owned by HOAs are protected by an Open Space Easement recorded on the Final Map for the associated development. The Dawson-Los Monos Reserve is owned by the Regents of University of California and has no open space or conservation easement protection. Examples of the HOA-owned preserves include Calavera Hills Phase I, Aviara Master Association, and Arroyo La Costa.

Future Preserves (Proposed Hardline and Standards Areas)

In Carlsbad, most HMP preserves are established as part of the development process. Future preserves (target conservation areas) are identified in the HMP as Proposed Hardline and Proposed Standards Areas. Development projects have not yet occurred on these lands and, therefore, preserves have not been formally established. As a condition of approval for any future development on the property, the developer will be obligated to establish the preserve by preparing a preserve management plan approved by the city and Wildlife Agencies, identifying a qualified land manager, funding long-term management through a non-wasting endowment or other secure financing mechanism, and recording a conservation easement to protect the preserve from future development. Examples of these future preserves include Mandana and Kato Properties.

1.3.2 Lake Calavera Mitigation Parcel

The city-owned Lake Calavera Mitigation Parcel, also known as the Lake Calavera Preserve, provides mitigation as needed for upland habitat impacts related to city construction projects. Credits are deducted on an acre-for-acre basis, regardless of the type of habitat being impacted, except for impacts to gnatcatcher-occupied coastal sage scrub, southern maritime chaparral, and maritime succulent scrub. No credits can be sold to outside entities.

The HMP (Section D.3.B) states that there are 266.1 available acres on Lake Calavera Preserve and the Implementing Agreement (Section 10.7) states that there are 206.1 acres. The Wildlife Agencies and city have agreed to use the more conservative 206.1 acres stated in the Implementing Agreement for tracking purposes.

In addition to using Lake Calavera Mitigation Parcel for upland mitigation credits, the city, in coordination with the Wildlife Agencies and wetland permitting agencies, has used the property for wetland mitigation through active habitat creation, restoration, and/or enhancement of disturbed wetland areas within the preserve. Once an area has been mapped and identified as mitigation for a city project, it is no longer eligible for future mitigation credits and the acreage of the mitigation site is debited from the available balance. During the reporting period, no credits were deducted from the mitigation parcel for city projects. Cumulative upland debits and

adjustments for wetland mitigation sites to date are 113.89 acres, leaving a total of 92.21 acres of mitigation credits remaining (**Table 1**).

Table 1. Mitigation Acreage at Lake Calavera Mitigation Parcel RY 19 (2022–2023)

Credits and Debits	Acres
Initial Credits	**206.10**
Total acres of credit available as of November 1, 2022	92.21
Year 19 Deductions (Nov. 2022–Oct. 2023) *None*	*0.00*
Total acres of credit available as of October 31, 2023	**92.21**

1.3.3 Gnatcatcher Core Area Conservation Requirement

When the HMP was being developed, the Wildlife Agencies determined there was not enough coastal sage scrub habitat in the city to conserve the coastal California gnatcatcher. Because of this limitation, the city was required to preserve an additional 307.6 acres of coastal sage scrub in the Gnatcatcher Core Area, a large block of high-quality habitat southeast of the city that is regionally important for the long-term survival of the species.

As documented in a letter from USFWS and CDFW dated December 19, 2019, the city has fulfilled the HMP Gnatcatcher Core Area requirement in full. HMP habitat mitigation fees will continue to be collected to offset the associated costs incurred by the city (see Section 3.1.2 for more details).

1.4 Habitat Gains and Losses

Pursuant to the HMP and Implementing Agreement, the city is required to provide an annual accounting of the amounts and locations of habitat lost and conserved over time due to public and private development projects and land acquisition. This information will be used to demonstrate to the Wildlife Agencies that: (1) the HMP preserve is being assembled as anticipated; (2) the habitat conservation goals of the HMP are being achieved; and (3) habitat conserved is in rough step with development. HabiTrak is a geographic information systems (GIS) database tool that was designed to satisfy these tracking and reporting requirements by providing standard tracking protocols and reporting output. It uses standard baseline spatial databases (e.g., vegetation, preserve boundaries, and parcel boundaries) and development project footprints to prepare standardized tables and maps for annual reporting.

1.4.1 Target Acreage

Some of the habitat types used in the standard HabiTrak table outputs are more specific than those used in HMP Table 8. To facilitate compliance monitoring of habitat conservation, **Table 2** compares target conservation acreages for habitat categories in HMP Table 8 to habitat categories used in HabiTrak. Note that the GIS data layers used for this analysis includes more detailed habitat categories.

Table 2. HMP Target Conservation of Habitats
(Comparison of Habitat Categories in HMP and HabiTrak)

HMP Table 8		HabiTrak	
Habitat Type	**Target Acres[1]**	**Habitat type**	**Target Acres[1]**
Coastal sage scrub	2,139	Maritime succulent scrub	29
		Coastal sage scrub	2,003
		Coastal sage-chaparral scrub	107
		Subtotal	*2,139*
Chaparral	676	Chaparral	676
Southern maritime chaparral	342	Southern maritime chaparral	342
Oak woodland	24	Coast live oak	20
		Other oak woodland	4
		Subtotal	*24*
Riparian	494	Riparian forest	82
		Riparian woodland	17
		Riparian scrub	395
		Subtotal	*494*
Marsh	1,252	Southern coastal salt marsh	143
		Alkali marsh	9
		Freshwater marsh	165
		Freshwater	53
		Estuarine	789
		Disturbed wetland	93
		Subtotal	*1,252*
Grassland	707	Grassland	707
Eucalyptus woodland	99	Eucalyptus woodland	99
Disturbed lands	745	Agriculture	185
		Disturbed Land	244
		Developed	316
		Subtotal	*745*
Total Target Conservation within Carlsbad	**6,478[2]**	**Total Target Conservation within Carlsbad**	**6,478[2]**
Gnatcatcher Core Area Requirement	308	Not tracked in HabiTrak	N/A
Total HMP Target Conservation	**6,786[2]**		

[1] Rounded to the nearest acre.
[2] Note that the target acreage includes 100% of all Standards Area parcels. However, a portion of these parcels are expected to be developed; therefore, the final total will be slightly less than the target value.

1.4.2 Land Acquisitions

No open space properties were acquired by the city during this reporting period.

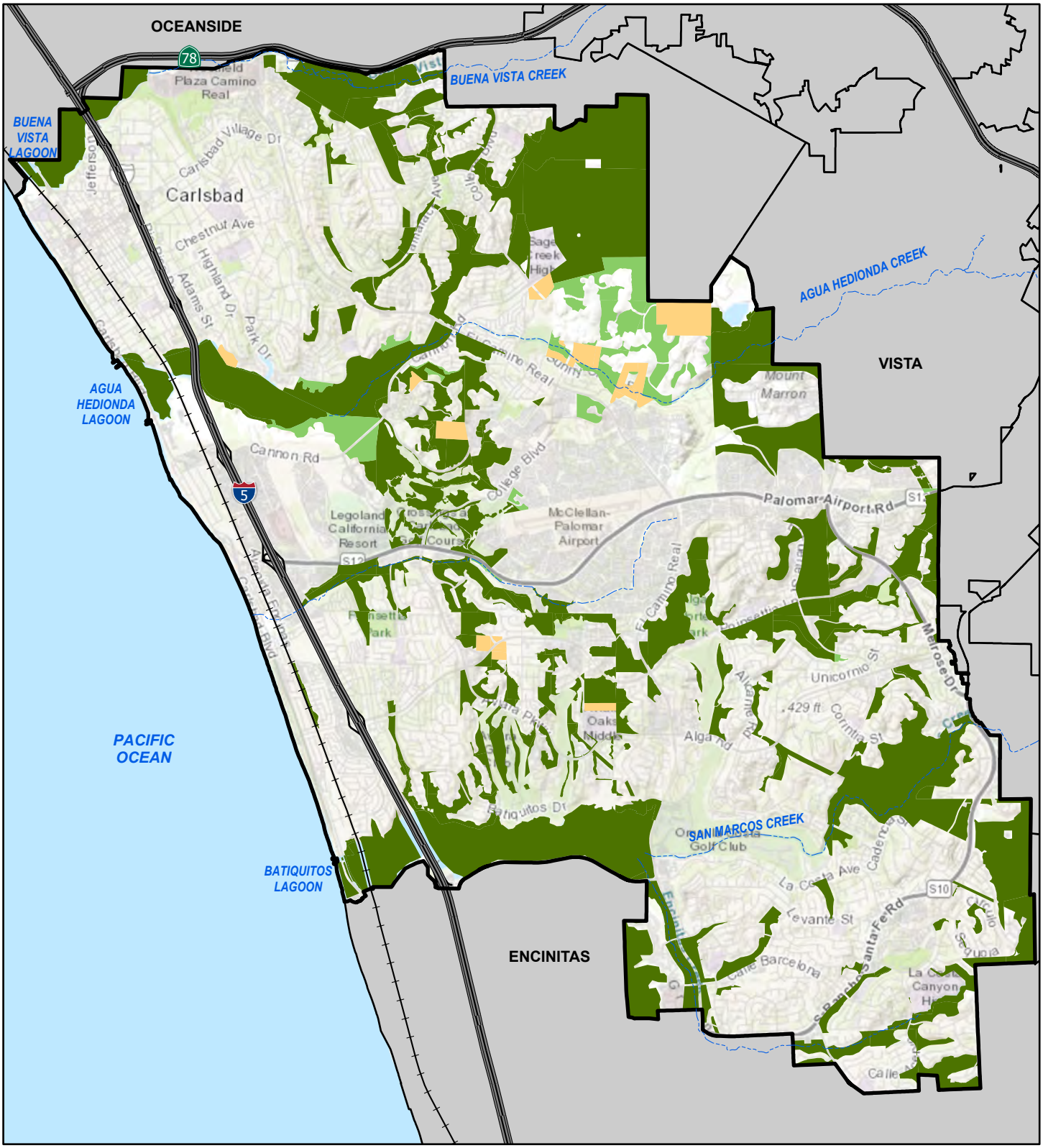
1.4.3 Habitat Gains and Losses

During the reporting period, a total of 12.8 acres have been gained (net gain) and 46.5 acres have been lost, as described below. Since the adoption of the HMP, approximately 6,208 acres have been gained and approximately 1,807 acres have been lost. **Figure 2** shows the current status of the preserve system. **Figure 3** shows this year's gains and losses and is described below.

Aviara Apartments Project. A total of 1.6 acres were gained and 7.7 acres were lost associated with the Aviara Apartments Project, which is located in the "developable" portion of the HMP (referred to as "Outside Preserve" in HabiTrak Reports). Because the habitat area will be fully funded for HMP-level long-term management and protected with a conservation easement, it will be added to the HMP Hardline Preserve. Gains consisted of 0.2 acres of southern willow scrub, 0.5 acres of coastal sage scrub, and 0.9 acres of disturbed land; losses consisted of 0.1 acres of coastal sage scrub and 7.6 acres of developed, disturbed, and non-native land cover. The gain/loss for the Aviara Apartments Project is associated with an HMP Minor Amendment that was approved by the Wildlife Agencies on April 6, 2023 (see Section 1.5.1 below).

Veterans Memorial Park Project. The Veterans Memorial Park is a city project that was anticipated in the HMP. Veterans Park Preserve and Macario Canyon Preserve were established at the inception of the HMP in anticipation of the park. The final project design will result in a gain of 12.86 acres of mostly coastal sage scrub habitat and a loss of 38.8 acres of mostly non-native grassland or disturbed land. A total of 3.36 acres of the loss occurred within the HMP hardline boundary, resulting in a net gain of 9.50 acres. These gains and losses are associated with an HMP Minor Amendment (boundary adjustment) that was approved by the Wildlife Agencies on April 27, 2022 and reported in last year's HMP annual report. Gains and losses were not previously submitted to CDFW through HabiTrak because the project design had not yet been finalized.

Park Drive Slope and Drainage Improvement Project. The purpose of this project is to repair a fragile bluff and improve site drainage. Project impacts will be mitigated at the city-owned The Crossings golf course property on an area that was revegetated to coastal sage scrub habitat during construction of the golf course, but not added to the HMP hardline or used for project mitigation. The 1.7-acre area is adjacent to existing hardline on The Crossings Preserve and will be enhanced and then turned over to long-term management. The Final MND for the project is dated February, 2022, and the Coastal Commission approved the project on July 13, 2023.



Legend

- Existing Hardline
- Proposed Hardline
- Standards Area

Feet
0
6,400

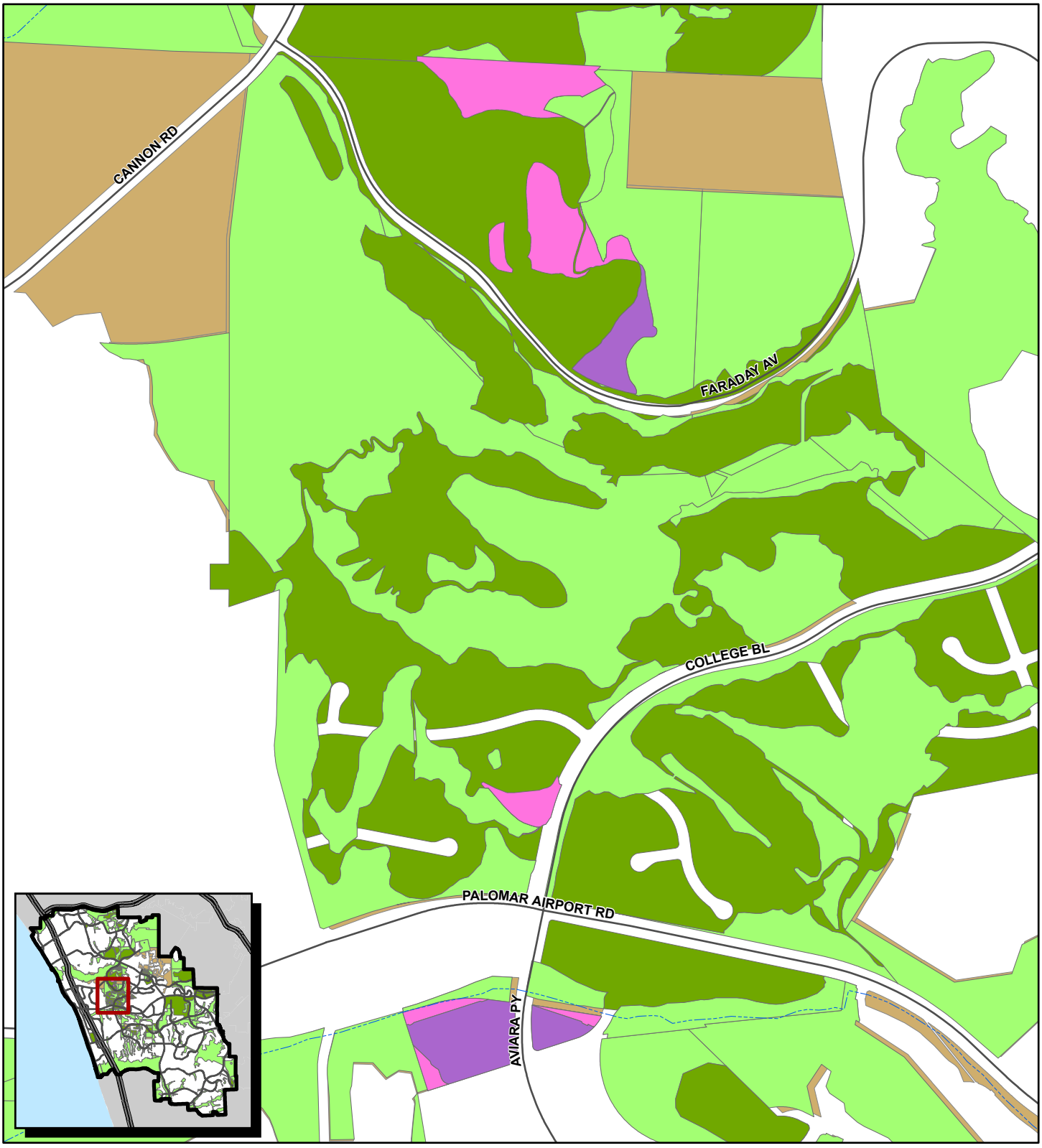
City of Carlsbad

City of Carlsbad
2024 Current Conditions

Figure 2

Document Path: \\shares\GIS_app\RequestsMarch2015\PublicWorks\PEM\MuniProp\RITM0037218_24

Date: 1/17/2024



Habitat Gains Prior to Year 19

Habitat Losses Prior to Year 19

HMP Area with No Gains or Losses

Habitat Gains for Year 19

Habitat Losses for Year 19

N

0 Feet 1,000

City of Carlsbad

City of Carlsbad
HMP Gains/Losses - Year 19

Figure 3

Document Path: \\shares\GIS_app\RequestsMarch2015\PublicWorks\PEM\MuniProp\RITM0037218_24\Figure3_GainsLosses_Jan2024.pagx

Date: 1/19/2024

1.5 Regulatory Compliance

To ensure regulatory compliance, the city is implementing the HMP: (1) through the project review process for new development projects; (2) by issuing HMP permits when impacts to habitat or covered species are involved; (3) by issuing incidental take permits when take of a listed species is involved; and (4) by ensuring consistency with the terms and conditions of the Implementing Agreement, and State NCCP and Federal Fish and Wildlife permits.

1.5.1 HMP Amendments

Amendments processed during the reporting period are described below. See HMP Section E-3 and Implementing Agreement Section 20.1 for a description of Minor Amendment types and the HMP amendment process.

1. **Consistency Finding:** During the reporting period, no minor amendments were processed through a Consistency Finding.
2. **Equivalency Finding:** During the reporting period, two minor amendments were processed through an Equivalency Finding.
    a. The Aviara Apartments Project is located outside of the HMP Focused Planning Area (i.e., not an Existing Hardline, Proposed Hardline, or Standards Area). However, the project was conditioned to provide permanent funding for HMP-level management and record a conservation easement to protect the mitigation onsite. Therefore, an HMP Minor Amendment for this project was submitted to the Wildlife Agencies and approved on April 6, 2023, so that this 1.6-acre preserve can be formally added to the HMP preserve system (see Section 1.4.3).
    b. The Park Drive Slope and Drainage Improvement Project resulted in mitigation outside of the current HMP hardline boundary (see Section 1.4.3). Because this 1.7-acre area will be added to The Crossings Preserve and placed under long-term management, a Minor Amendment was processed to formally add this to the HMP hardline. Final approval was received from the Wildlife Agencies on January 26, 2024.

1.5.2 City Compliance with Terms and Conditions of Take Authorization

To satisfy the terms and conditions of the state and federal take authorization, the city is required to fulfill the obligations outlined in Sections 10-14 of the Implementing Agreement, the Conditions of the State NCCP Permit, and Terms and Conditions of the Federal Endangered Species Act (FESA) Section 10(a)(1)(B) Incidental Take Authorization/Permit. Implementation tasks associated with these regulations are completed or ongoing and are described in Appendix A.

1.5.3 City Compliance with HMP Local Facilities Management Zone (LFMZ) Standards

The city is also required to ensure that all projects within Standards Areas comply with the Local Facility Management Zone (LFMZ) standards outlined in HMP Section D. All projects that occur within a Standards Area are processed with a Consistency Finding. During this process, projects must demonstrate compliance with the standards before they receive concurrence from the Wildlife Agencies and are approved by the city; therefore, all approved development within Standards Areas is consistent with the HMP. Appendix A summarizes property-specific and linkage-related standards and current status.

2.0 Biological Management and Monitoring

The Wildlife Agencies have issued permits to jurisdictions and participating landowners for implementation of regional conservation plans like the HMP throughout California to address the development, conservation, and land management activities of conserved lands. One of the primary commitments made by permittees is to maintain the long-term habitat value in the preserve system and its ability to support viable populations of covered species over time. This section highlights some of the citywide monitoring and management activities coordinated by the HMP Division that took place during the reporting period.

2.1 Ongoing Preserve Management

Ongoing preserve management includes invasive non-native species removal, fence and sign repair, erosion control, trash removal, access control, site patrols, habitat restoration, and public outreach and education. The purpose of these activities is to protect the city's diverse species and habitats, facilitate wildlife movement, and enhance the ecological integrity of the preserve system in the long term. The city is responsible for management on city-owned preserves, and for overseeing the management of other preserves, which is conducted by various land managers. Preserve-level monitoring and management is reported in preserve-specific annual reports submitted by the land managers to the city every year and summarized in Appendix B.

2.2 Long-Term Biological Monitoring

As required by the HMP, land managers conduct long-term biological monitoring on each preserve to track the condition of sensitive native species and habitats over time. Additional monitoring is coordinated or conducted by the city as funding and other resources allow. Monitoring results can help us evaluate the effects of management actions, the level of wildlife connectivity across the city, the effects of various threats, and the overall health of the preserve system. The results of biological surveys are summarized every three years in the Triennial HMP Monitoring Report. The 2023 Triennial HMP Monitoring Report is included in Appendix C.

2.3 Evaluation of Restoration Opportunities

At the city's request, Environmental Science Associates (ESA), the city's Preserve Steward) conducted a GIS analysis to identify potential habitat restoration opportunities within the HMP preserve. Because the city is almost built out, there are few mitigation opportunities left in the city for developers. Mitigation may be in the form of land purchase or habitat restoration. Habitat restoration would occur by transforming a degraded, disturbed area into high-quality habitat and providing funding for long-term management. The analysis only included areas that may qualify for "creation"-level restoration (i.e., not currently a recognizable native habitat). "Enhancement"-

level restoration (improving existing, degraded habitat) was not analyzed because identifying habitat in a disturbed vs. non-disturbed condition would require field confirmation, in addition to the GIS exercise.

The analysis was conducted by reviewing several vegetation layers, aerial maps, and data collected in the city's Site Inspection Program. The target study area included the HMP Existing Hardline, Proposed Hardline, and Standards Areas. Areas identified for potential future restoration include the following vegetation types: Disturbed, Unvegetated, Non-native Vegetation, Ornamental, Agriculture, Tamarisk Scrub, Non-native Riparian, Eucalyptus Woodland, Non-native Grasslands, and Disturbed Wetland. The analysis resulted in the creation of a composite vegetation layer, consisting of ground-truthed, recently mapped areas and areas with older mapping that have not been ground-truthed. For simplicity, the more generalized Holland/Oberbauer vegetation classification system was used.

Overall, the analysis identified 910 acres of potential restoration, including 846 acres of uplands, 59 acres of wetlands, and 4 acres of unclassified land cover. Site surveys would be required to evaluate the restoration potential of these areas more accurately. For example, areas with the following characteristics would be removed as potential restoration sites: formal trails, fuel modification zones (brush management for fire suppression), areas adjacent to roadways, areas that are very small and isolated, areas within maintenance easements, and areas that have already been used as mitigation for a project. Details of this analysis can be found in **Appendix D** and results can be viewed in the public interactive HMP map (see Section 2.6).

2.4 Site Inspection Program

The Site Inspection Program was developed by the city and ESA in 2021. The purpose of the program is to periodically visit unmanaged preserves to evaluate the overall condition of the preserve and identify threats, high priority resources, and potential management opportunities. Due to shifting priorities, no inspections were conducted during the reporting period. To date, ESA biologists conducted site inspections for 11 unmanaged preserves totaling approximately 667 acres. Invasive non-native plant species are the most common threat, although unauthorized access and trash were also identified as a high threat in some areas. Several opportunities were identified, including targeted invasive non-native plant species removal, enhancement/restoration, and thatch removal, which would improve habitat for a variety of endangered plant species and reduce fire fuel load. These results were used to initiate a pilot adaptive management program as described in Section 2.5.2.

2.5 Adaptive Management Program

The adaptive management program includes monitoring or management activities not included in the standard preserve-specific requirements. These activities are performed or coordinated by the city as needed, depending on current priorities and resources. There is no regular funding source for these activities; therefore, priorities and funding are evaluated several times per year

to determine which actions can be taken. Activities may be conducted at a citywide scale, such as monitoring for gnatcatchers or wildlife movement; for specific events, such as post-fire monitoring; or for specific resources, such as targeted management for a specific habitat, species, or location. Current activities are described below.

2.5.1 Village H South Dog Waste Study

The Village H South property is located southwest of the intersection of Carlsbad Village Drive and Tamarack Avenue. The city took ownership of the property in 2019. The property includes two small HMP Hardline areas on the southern end, an undeveloped open space area on the northern portion of the property, and an RV storage area in the middle. The city closed the property to the public while staff rehabilitated the historic trail (formalized and added improvements) and cleaned up the property before opening the trail up for public use.

Prior to city ownership, the previous owner had allowed off-leash dog use of the area for an extended period of time. The city does not allow off-leash dogs on any trails in the city and only allows off-leash dogs in developed dog parks. City Habitat Management Division staff initiated a study in 2019 to better understand the use of the property by residents, dogs, and wildlife before and after the property was improved and opened to the public. Study methods included the use of wildlife cameras and dog waste surveys. The study evaluated the prevalence of off-leash dogs and off-trail use by residents and dogs; prevalence and type of wildlife movement through the area; and use patterns by residents, dogs, and wildlife.

Currently, the study is focused on dog waste (how much is left on- and off-trail over time) and consists of surveys for dog waste, coyote waste, and tennis balls or other dog toys. The study also provides management, as all waste is collected and properly disposed of after the data points are collected in a GIS database. The study is being led by ESA and implemented by ESA biologists and volunteers from Preserve Calavera and other individuals. Over the course of the study, the data have shown that, although there appears to be less off-trail dog activity than before the trail was formalized, off-trail dog activity appears to be ongoing. And, despite the presence of dog waste bags, waste receptacles and posted signage, some dog owners continue to not pick up after their pets. If the study results are extrapolated to other trails in the city, one can only imagine the impact to the watersheds, including harmful bacteria, viruses, and other diseases.

Additional details of this study are included in the Triennial HMP Monitoring Report (Appendix C) and can now be viewed on a new interactive map created in 2023 by ESA (see Section 2.62 below).

2.5.2 Pilot Management Project

Based on the results of the Site Inspection Program, the city chose three target resources on two unmanaged preserves to include in a pilot management project, as described below. The purpose

of the project is to implement management in a focused manner to enhance the health and long-term survival of two high priority plant populations and one rare habitat type. These management targets were selected based on the following priorities: rarest species and vegetation communities, highly vulnerable plant populations, populations that are high priority both locally (HMP) and regionally (San Diego Management and Monitoring Program), populations included in the regional rare plant monitoring program, support of the program by the homeowners association (HOA) landowner, preserve with current right-of-entry authorization, and feasible location (relatively easy to access). Year 1 of the program, initiated in the spring of 2023, is being coordinated by the Preserve Steward (ESA) and implemented by ESA and Black Sage. Year 1 activities are summarized below. The city hopes to continue this management for at least four more years, depending on the availability of funding. Additional details are given in the program annual report (**Appendix E**).

Rancho Carrillo Master Association Preserve is located in the eastern portion of the city, in the vicinity of Melrose Drive and Poinsettia Lane. Two target species occur on this preserve — San Diego thornmint (*Acanthomintha ilicifolia*) and thread-leaved brodiaea (*Brodiaea filifolia*), both of which are state endangered and federally threatened. Both species occurrences are being monitored through the regional Rare Plant Inspect and Manage (IMG) program. Invasive non-native plant species were identified as one of the greatest threats to the persistence of these occurrences. Therefore, focused invasive non-native plant species removal was performed within defined areas. It is expected that subsequent monitoring will show an improvement in the growth and vigor of these sensitive plants.

The thornmint site consisted of the entire (very small) population plus 5-foot buffer for a total of approximately 0.01 acre. Because this plant is so small, weed abatement consisted of hand clipping the weeds to ensure there were no impacts to the species. This work was conducted in April 2023. The brodiaea site encompassed the maximum perimeter of the brodiaea population mapped by the IMG program (7.81 acres). Management focused on mechanical removal of artichoke thistle (*Cynara cardunculus*) and fennel (*Foeniculum vulgare*). This work was conducted in April and July 2023.

The Ranch Preserve is located in the southeastern corner of the city. A patch of native grassland was selected as the target habitat for focused management because this is one of the most imperiled vegetation communities. It has been estimated that native grasslands in California have been reduced by 99% (California Native Grassland Association). Native grasslands are able to remove and store vast amounts of atmospheric carbon, provide soil stability, capture and filter water, prevent erosion and flooding, and support a high biodiversity, including soil microbes, plants, invertebrates and vertebrates.

The management area (0.66 acre) was identified by ESA and recommended for enhancement as part of the city's HMP Site Inspection Program. The greatest threat to the native grassland habitat in this location is non-native artichoke thistle and other invasive non-native species, such as fennel, shortpod mustard (*Hirschfeldia incana*), and black mustard (*Brassica nigra*). These weeds were treated through mechanical removal. These efforts are being coordinated with monitoring and management performed by RECON Environmental. Although not full HMP-level management (the preserve was established prior to the HMP), RECON is being contracted by the HOA to perform quarterly monitoring and implement minor habitat enhancement, such as weed control.

2.5.3 Citywide Gnatcatcher Monitoring

The city initiated a citywide monitoring program for the coastal California gnatcatcher (*Polioptila californica californica*) in 2010 within actively managed preserves. Land managers were already required to conduct long-term monitoring for this species; however, the survey schedules and methods were not synchronized across the city. The city, with the assistance of the Preserve Steward (ESA), now coordinates these surveys so that all land managers are on the same monitoring schedule and use a consistent methodology, allowing the city to evaluate the species status across the city. Another benefit to the program is that a number of unmanaged preserves have been added to the study area through available city funding. Currently, surveys are conducted every 9 years. No surveys were conducted this year; the next survey is due in 2031. Previous monitoring has shown that, in general, gnatcatchers can be found wherever there is moderate- to high-quality coastal sage scrub habitat (low weed cover and at least moderately diverse native plant species), especially in areas where California sagebrush (*Artemisia californica*) is present. Even small, somewhat isolated patches of habitat can support gnatcatcher nesting or foraging.

2.5.4 Wildlife Movement

No wildlife movement monitoring or studies have been conducted or coordinated by the city in the last year. Site-specific wildlife movement monitoring is performed by land managers on individual preserves as needed. Results of these studies are documented in preserve-specific annual reports.

2.6 Interactive Maps

Two publicly accessible interactive web maps have been created to provide information about the HMP preserve system, as described below.

2.6.1 HMP Interactive Map

The HMP web map can be accessed at https://carlsbadca.gov/HMPInteractiveMap. Users can select from a variety of base maps, such as aerials or street maps; boundaries, including municipal

boundaries and the coastal zone boundary; and a variety of HMP layers, as described below. Each layer can be toggled on and off so that they can be viewed overlapping one another as desired.

- **HMP Preserves** – preserve type, consisting of existing preserves (Existing Hardline) and planned future preserves (Proposed Hardline and Standards Areas).
- **HMP Baseline Vegetation** – vegetation mapping at the time the HMP was adopted. The baseline map is used to determine regulatory compliance with required HMP conservation targets for each vegetation type, based on the Holland/Oberbauer classification system. Mapping was done at a county level (i.e., very broad scale mapping), based on a variety of data sources, including hard copy vegetation maps from biology reports and other documents, infrared aerial photographs, satellite imagery, and limited field studies. This vegetation layer is used to calculate acres of habitat gained and lost over time through HabiTrak, a GIS habitat tracking tool provided by CDFW.
- **HMP Current Vegetation 2023** – updated vegetation based on the most recent available data. This is a composite layer, including recent mapping by land managers on managed preserves. Data for unmanaged preserves are from Regional Vegetation for Western San Diego County (AECOM 2012) and Regional Vegetation (SanGIS). These latter sources are less accurate than land manager mapping, as they are not ground-truthed or mapped at a fine scale. See Appendix D for more details.
- **Potential Restoration Areas** – the results of an evaluation to identify potential restoration opportunities within the HMP preserve, as described in Section 2.3.
- **HMP Species Points** – species occurrences from sensitive species surveys conducted by the land managers as required by the HMP for long-term biological monitoring. Only selected species require focused monitoring. Other sensitive species are presumed present in the preserve through vegetation monitoring and mapping.

2.6.2 Dog Waste Study at Village H

As described in Section 2.5.1, the city has been coordinating a dog waste study at the Village H property since 2019. ESA created an interactive web map that allows public access to the results of this study. The map variables may be toggled on and off, and also viewed with a slider tool that allows the user to see changes across time. The purpose of each variable is described below.

- **Dog Waste** – to evaluate how many waste piles are on the trail vs. off-trail (off-trail waste suggests that the dogs are off-leash), if dog owner behavior (cleaning up after their dog) changes over time, how much waste is discarded on the ground in a bag vs. without a bag, if there are heavier concentrations of dog waste in certain locations, etc.
- **Coyote Waste** – to compare the level of waste left by native wildlife vs. domestic dogs, to educate the public about how much more waste there is from domestic dogs than native coyotes (dog waste is known to be full of harmful bacteria and other diseases that are unhealthy for the watershed).

- **Tennis Balls** – to show where dog owners may be playing with their dogs off-leash; to see if there are concentrations of this activity in certain locations.
- **Year** – How the above variables change over time.

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3.0 Financial Summary

3.1 City Funding in Support of HMP

The city uses funding to support implementation of the HMP in two ways: (1) permanent funding allocated specifically for HMP coordination and management of city lands, and (2) existing resources, including administrative staff and staff from the Environmental Sustainability Department, Planning Division, Parks and Recreation Department, and Police Department.

3.1.1 HMP Implementation

The majority of the city's ongoing costs to support HMP implementation are activities required by the HMP or the Implementing Agreement. Two of the city's main responsibilities are: (1) oversight of the HMP Preserve System and (2) direct, active management of 681 acres of preserve land owned by the city.

To fulfill the first responsibility, the city dedicates a senior-level coordinator in the Habitat Management Division and provides other staff support for HMP implementation. The city also contracts with a biological consulting firm (ESA) to serve as the city's Preserve Steward to coordinate management throughout the HMP preserve and evaluate management effectiveness. This reporting period, the city provided $97,623 in the annual budget to fund the contract for Preserve Steward costs.

The second responsibility is being accomplished through the city's contract with CNLM, a non-profit preserve management company, for the management of city-owned HMP preserves. CNLM conducts regular biological monitoring and habitat management throughout the city's preserves, including maintenance of fences and signage, closure of unauthorized trails, regular patrols, invasive non-native species removal, and public outreach.

Although not funded through the HMP Program, the city also has two permanent full time rangers who patrol open space areas, including parks, trails, and habitat preserves. The ranger program is administered by the Police Department, allowing rangers to have citation authority and direct contact with the Homeless Outreach Team and police officers, which are often needed to coordinate on issues such as encampments and other unauthorized access.

3.1.2 Habitat Mitigation Fees

As described in Section 1.3.5, habitat mitigation fees are collected from developers for project-related impacts to certain types of native habitat and deposited into the Habitat Mitigation Fee Fund. Impacted habitats that require a fee include unoccupied coastal sage scrub, coastal sage/chaparral mix, and chaparral (except southern maritime chaparral) (Group C); occupied coastal sage scrub (Group D); non-native grassland (Group E); and disturbed lands, eucalyptus, or agricultural lands (Group F). The purpose of the habitat mitigation fee program is to fund the city's obligation to acquire, protect, and manage lands in the Gnatcatcher Core Area.

As shown in **Table 3**, mitigation fees totaling $35,914.00 were collected during the current reporting period. The current balance of the Habitat Mitigation Fee Fund is -$1,117,671.78. Since the adoption of the HMP, the city has taken advantage of opportunities to purchase Core Area credits when they become available. As of February 20, 2020, the city has fulfilled its Core Area Credit obligation in full. However, on several occasions, the cost of credits exceeded the available Habitat Mitigation Fee funds, requiring an advance from the General Fund and resulting in a negative fund balance. In-lieu fees will continue to be collected for habitat impacts, as appropriate, and will be used to reimburse the General Fund.

Table 3. Habitat Mitigation Fee Fund Activity in RY 19 (2022–2023)

Date	Description	Habitat Impacted	Total
11/01/22		**Beginning Fund Total**	**-$1,153,585.78**
Fees Collected			
11/02/2022	West Oaks	6.26 acres Group F (Ag, Disturbed, Eucalyptus)	$23,187.04
11/22/2022	Omni La Costa GC Renovation	1.32 acres Group F (Ag, Disturbed, Eucalyptus)	$4,889.28
6/15/2023	3805 Alder Ave Residence	0.07 acre Group D (unocc. coastal sage scrub)	$2,592.52
		0.79 acres Group F (Ag, Disturbed, Eucalyptus)	$2,926.16
08/11/2023	Martin Residence	0.6 acres Group F (Ag, Disturbed, Eucalyptus)	$2,319.00
		Total Fees Collected	***$35,914.00***
10/31/23	**Account Balance**		**-$1,117,671.78**[1]

[1] Does not include interest earned.

3.2 Status of Preserve Management Endowments

The endowment activity and status for preserves funded through endowments are given in **Table 4**, and preserve locations are shown in **Figure 4**. During the reporting period, a total of $985,872 was spent by land managers on management and monitoring activities across 28 preserves that comprise 2,831 acres. Endowments for endowment-funded properties totaled $21,559,877. Seventeen preserves (681 acres) are owned by the city and funded through annual budget appropriations. Four preserves are managed by CDFW (1,378 acres), and funded by other means: Buena Vista Lagoon, Carlsbad Highlands, and Agua Hedionda Lagoon Ecological Reserves are funded through State Wildlife Grant funding (these are not included in Table 4), and the Batiquitos Lagoon Ecological Reserve is funded through a mitigation account established by the Port of Los Angeles and held by CDFW.

Table 4. Endowment Status for HMP Preserves in Year 19 (2022–2023)

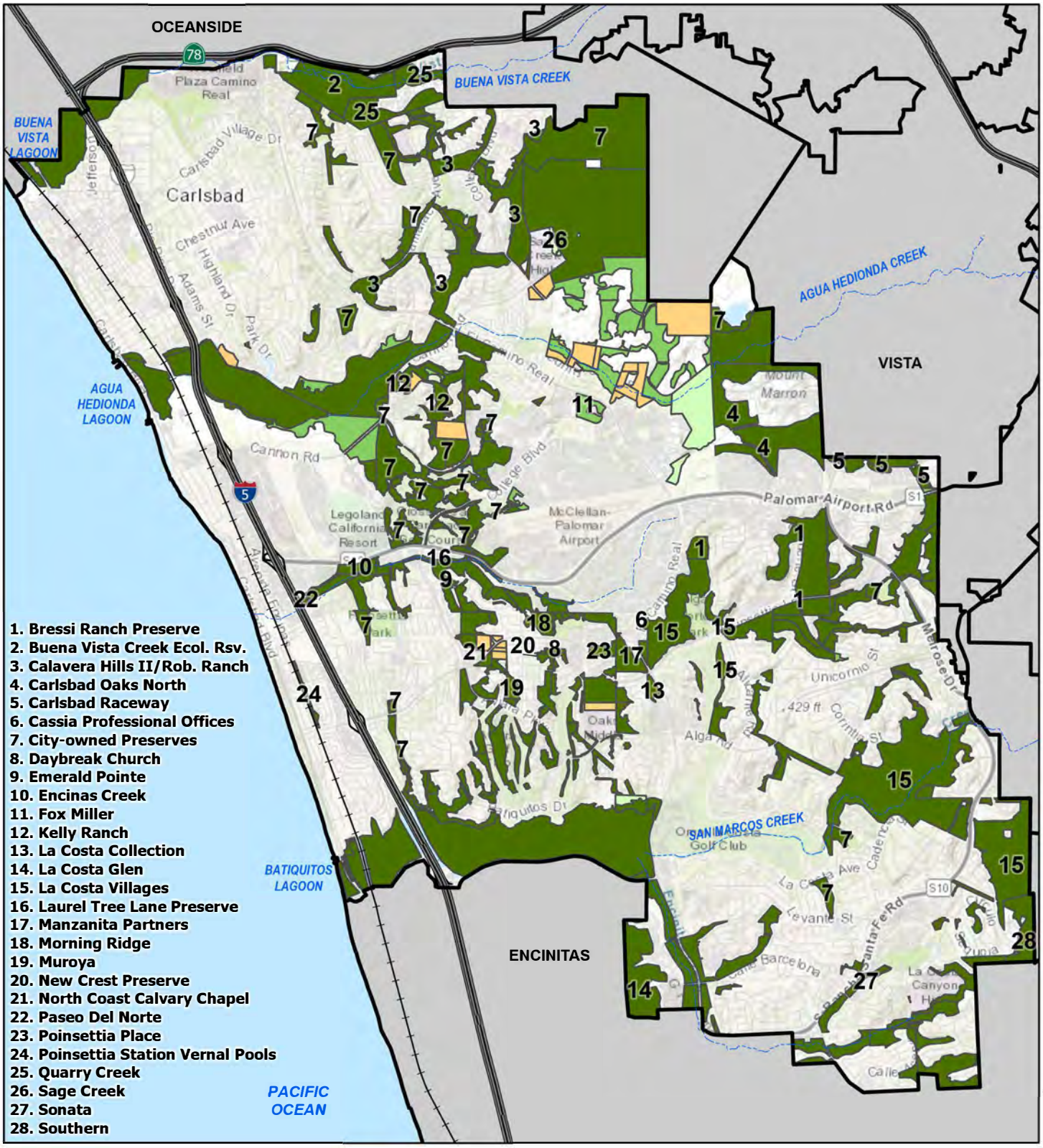
Preserve Name	Acres	Land Manager	Inception Date	Original Endowment	Inflation-Adjusted Endowment	2022-23 Budget	2022-23 Expend.	Total Funds as of 9/30/23[1]
Bressi Ranch Preserve	173	SDHC	July 2020	$994,610	$1,181,509	$38,226	$25,051	$911,297
Buena Vista Creek Ecol. Rsv.	143	CNLM	April 2007	$776,644	$1,158,830	$54,001	$55,272	$1,798,200
Calavera Hills II/Rob. Ranch	241	CNLM	June 2006	$1,834,813	$2,779,631	$130,104	$130,104	$4,556,113
Carlsbad Oaks North	220	CNLM	March 2006	$1,020,311	$1,550,040	$73,252	$73,252	$2,361,002
Carlsbad Raceway[2]	43	SDHC	April 2014	N/A[2]	Annual payments	$29,227	$13,851	$15,358
Cassia Professional Offices	0.6	CNLM	Jan. 2007	$104,600	$154,164	$7,189	$7,189	$241,334
City-owned Preserves[2]	681	City/CNLM	2005	N/A[2]	Annual contract	$259,499	$237,295	N/A
Daybreak Church	4	SDHC	Apr. 2017	$172,368	$193,699	$7,887	$7,676	$211,981
Emerald Pointe	10	SDHC	Aug. 2008	$194,948	$286,730	$12,082	$8,569	$269,469
Encinas Creek	18	CNLM	May 2007	$427,004	$612,256	$27,136	$28,728	$1,029,042
Fox Miller[3]	21	Helix	Nov. 2005	N/A[3]	Annual payments	$28,363	$10,473	$17,890
Kelly Ranch	70	CNLM	March 2002	$296,125	$531,396	$22,292	$22,292	$846,293
La Costa Collection	8	UC	July 2005	$378,756	$516,578	$20,224	$20,224	$477,176
La Costa Glen	108	CNLM	Jan. 2013	$624,800	$853,089	$37,811	$40,043	$1,450,660
La Costa Villages	831	CNLM	Feb. 2002	$1,364,400	$2,431,008	$119,255	$123,202	$3,267,827
Laurel Tree Lane Preserve	7	SDHC	Dec. 2017	$365,092	$439,561	$18,662	$12,407	$441,783
Manzanita Partners	33	HRS	Oct. 2012	$51,000	$61,281	$1,600	$1,600	$39,051
Morning Ridge	19	UC	Oct. 2021	$280,000	$322,710	$0	$0	$281,519
Muroya	10	SDHC	Oct. 2015	$314,867	$416,773	$17,240	$10,413	$390,184
New Crest Preserve	0.04	UC	May 2015	$91,393	$118,289	$4,597	$4,597	$108,513
North Coast Calvary Chapel[2]	13	Helix	Sept 2001	N/A[2]	Annual payments	$18,950	$9,585	$9,365
Paseo Del Norte	1	UC	Aug. 2016	$100,009	$127,805	$5,689	$5,689	$134,265
Poinsettia Place	12	UC	July 2011	$167,935	$228,789	$8,725	$8,725	$205,897
Poinset Station Vernal Pools[4]	8	City (Dudek/HRS)	Mar 2018	$181,904	$224,266	$47,652	$47,652	$233,379
Quarry Creek	92	SDHC	June 2015	$806,496	$965,976	$39,487	$30,243	$821,278
Sage Creek	6	SDHC	April 2016	$275,404	$354,284	$14,983	$8,078	$390,184
Sonata	3	SDHC	January 2016	$398,396	$517,575	$30,182.05	$18,990	$468,630
Southern	55	UC	Nov. 2013	$428,747	$554,398	$24,672	$24,672	$582,187
TOTAL	**2,831**			**$11,455,674**	**$16,580,637**	**$1,098,989**	**$985,872**	**$21,559,877**

[1] Total funds are reported as of 10/31/23 for HRS, Urban Corps, and Helix

[2] Long-term management is funded through an annual contract rather than an endowment. City preserves are funded through the General Fund.

[3] Fox Miller is considered to be under interim management, as project mitigation requirements have not been met.

[4] Additional as-needed funds are provided by the city for more intensive start up management until 2024 to allow the endowment account to grow.



Legend

- Existing Hardline
- Outside-Conserved
- Proposed Hardline
- Standards Area

0 6,400 Feet

City of Carlsbad

City of Carlsbad
Preserves with Endowments or Annual Funding

Figure 4

Document Path: \\shares\GIS_App\RequestsMarch2015\PublicWorks\PEM\MuniProp\RITM0032987_23\Figure1_CategoriesHMPPreserves.pagx

Date: 3/17/2023

4.0 References

City of Carlsbad. 2004. Habitat Management Plan for Natural Communities in the City of Carlsbad.

Multiple Habitat Conservation Program (MHCP). 2003. Final MHCP Plan. Volumes I–III. Prepared for the Cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista, March 2003.

Appendix A

City Compliance with Terms and Conditions of Take Authorization and Zone-Wide Standards

November 1, 2022 - October 31, 2023

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City Compliance with Terms and Conditions of Take Authorization

To satisfy the terms and conditions of the state and federal take authorization, the city is required to fulfill the obligations outlined in Sections 10-14 of the IA, the Conditions of the State NCCP Permit, and Terms and Conditions of the Federal ESA Section 10(a)(1)(B) Incidental Take Authorization/Permit. Implementation tasks associated with these regulations are completed or ongoing, and are described in Tables 1 through 3.

City Compliance with HMP Zone-Wide Standards

The city is also required to ensure that all projects within Standards Areas comply with the zone-specific standards outlined in HMP Section D (Table 7). All projects that occur within a Standards Area are processed as a Consistency Finding. During this process, projects must demonstrate compliance with the standards before they receive concurrence from the Wildlife Agencies and are approved by the city; therefore, all approved development within Standards Areas is consistent with the HMP.

Upon commencement of the HMP, there was a total of 189.3 acres of coastal sage scrub within Standards Areas throughout the HMP. Zone-wide standards require at least 67 percent (126.8 acres) of the coastal sage scrub to be conserved. To date, 83.7 acres (using the baseline vegetation map) have been conserved (44.2 percent) . However, current mapping by land managers shows that 144.1 acres of coastal sage scrub (76/1%) have actually been conserved within Standards Areas, which likely reflects more accurate mapping, and/or project-related habitat restoration. The city will continue applying HMP requirements for the remaining undeveloped Standards Areas. Table 4 below summarizes property-specific and linkage-related standards and current status. Refer to HMP Section D pp. D-73 through D-82 for additional zone-specific standards.

Table 1. Summary of City Compliance with HMP Implementing Agreement Requirements through RY 19 (2022–2023)

IA Section[1]	Obligation	City Compliance
10.10	**Duty to Enforce:** To enforce the terms of the Take Authorization, HMP, and IA and ensure HMP lands are conserved in perpetuity.	▪ The city requires compliance with the HMP as a condition of approval for new development projects, which includes conservation in perpetuity, a non-wasting endowment, and a management agreement with a preserve manager. ▪ On March 14, 2006, the city passed the Habitat Preservation and Management Requirements Ordinance (Carlsbad Municipal Code Section 21.210), which includes a section on enforcement (Section 21.210.19) for violations of the HMP. ▪ The city council approved the permanent continuation of the ranger program in December 5, 2017, which includes two full-time rangers patrol preserves, lagoons, beaches, and parks and they have the authority to issue citations for any violations to posted regulations. Complaints made by citizens regarding possible violations of the HMP within preserves are investigated on a case-by-case basis.
11.1	**Preserve System:** To ensure the establishment and management in perpetuity of a 6,757-acre preserve system.	▪ The city has currently gained 6,208 acres of habitat within the HMP planning area (96% of the required target of 6,478 acres), and 308 acres of habitat within the MHCP Gnatcatcher Core Area (100% of the overall target acreage). Overall, the city has met 96% of the overall target of 6,757 acres.
11.2	**Project Mitigation Measures:** To require additional mitigation measures to mitigate impacts to covered species in all future development projects.	▪ As a condition of approval for new development projects, the city requires that all potential impacts to HMP-covered species be avoided, minimized, and/or mitigated.
11.3	**Regulatory Implementation:** A. Urgency Ordinance – interim HMP enforcement B. Amend Open Space and Conservation Element of General Plan to incorporate HMP C. Amend Open Space Ordinance to incorporate Conserved Habitat Areas D. Amend Municipal Code to incorporate Standards Area compliance E. Amend General Plan to identify HMP as priority use for open space lands F. Wetlands Protection Program	A. The Emergency Ordinance was approved by the City Council in November 9, 2004. B. Revisions to the policy statements regarding the HMP were approved by the City Council in July 2005. C. Revisions were made to Carlsbad Municipal Code Chapter 21.33 and approved by the City Council in March 2006. Conserved Habitat Areas were included as undevelopable open space lands preserved exclusively and in perpetuity for conservation purposes consistent with the HMP. D. A new chapter (Section 21.210) was added to the Zoning Ordinance to address habitat preservation and management requirements. Section 21.210.040 B. specifically addresses Standards Area compliance. The section was approved by the City Council in March 2006. The new chapter will be included in the implementation plan portion of the Local Coastal Program update, currently under way. E. The General Plan was revised to make conservation of habitat a priority use for the 15% of otherwise developable land which the Growth Management Plan already requires to be set aside for open space purposes (the city defines five categories of open space). This revision was approved by the City Council in July 2005, and carried through into the updated General Plan (2015). F. New subsections (Section 21.210.040 D.5 and Section 21.210.070 A.5) were added to the Municipal Code to address the protection of wetland habitat. The ordinance states that wetlands impacts will be avoided, minimized, or mitigated (in that order). These new subsections were approved by the City Council in March 2006. The sections will be included in the implementation plan portion of the Local Coastal Program update, currently under way. Compliance is enforced on a project-by-project basis during environmental review and in conjunction with other wetland permitting agencies such as the Coastal Commission, CDFW, and USACE.

IA Section	Obligation	City Compliance
11.4	**Additional Implementation Measures:** To implement measures included in MHCP.	▪ The MHCP, HMP, and Open Space Management Plan (OSMP) conservation measures are currently being implemented during the approval process for all development projects and preserve management activities.

11.5	**Regional Conservation:** To effectuate the conservation of 307.6 acres of land within the MHCP Gnatcatcher Core Area, and convey the property to a qualified preserve manager.	▪ The city has fully met the 307.6-acre obligation within the MHCP Core Area acres of its coastal sage scrub conservation obligation through acquisition (93.15 acres), project mitigation (150.26 acres), and habitat enhancement credit (64.19 acres).
		▪ Acquisitions consist of the following:
		  ▪ The city reimbursed Lennar (developer) for the 50.13 acres that were purchased up-front (see above) on April 26, 2011 (Alemir Property).
		  ▪ The city entered into an agreement on July 26, 2011, with the Wildlife Agencies and Conservation Fund to acquire 30.09 acres of conservation credit over 4 years. The city made the final payment on October 22, 2014 (Perkins Property).
		  ▪ The city entered into an agreement with the Wildlife Agencies and Center for Natural Lands Management on March 6, 2020 City Council authorized payment (Luchia Property).
		  ▪ The Core Area properties are protected under a conservation easement, and are being monitored and managed by the CNLM.
		  ▪ A letter from the Wildlife Agencies dated December 19, 2019 documents that the city has fulfilled the Gnatcatcher Core Area obligation in full.

11.6	**Cooperative Regional Implementation:** To participate in MHCP Elected Officials Committee.	▪ To date, the city is the only MHCP jurisdiction with an approved subarea plan, so this is not applicable at this time; however, the city participates in meetings to discuss MHCP-wide issues with other MHCP jurisdictions and SANDAG as needed.
12.1 **12.2** **12.4** **12.5**	**Monitoring and Reporting:** To track habitat gains and losses within the HMP area (which should occur in rough step with one another); to maintain its database of biological resources; to submit an annual report by December 1 of each year; to hold a public meeting to discuss HMP implementation; to provide the Wildlife Agencies with additional reports if necessary for compliance monitoring; and to certify all reports.	▪ Habitat gains and losses are being tracked through Habitrak. Rough step preserve assembly is built into the city's permitting process. ▪ The city continues to work with the Preserve Steward, preserve managers, city GIS staff, and SDMMP to determine the best approach to collect and manage monitoring data. ▪ Protocols and standards have been developed with regard to baseline surveys and monitoring (survey methods and data format), entry and attributing of GIS data, and data management. ▪ Annual public HMP workshops are held every year to give participants an opportunity to learn about current HMP preserve assembly, management, and monitoring, and to ask questions and provide comments. ▪ Annual HMP status reports are submitted to Wildlife Agencies each year. The public also has an opportunity to view these reports prior to the annual meeting and provide comments.

IA Section	Obligation	City Compliance
12.3	**Preserve Management and Monitoring Plan:** To prepare a preserve management and monitoring plan that will detail recommendations in HMP Section F.	▪ The OSMP is the Preserve Management and Monitoring Plan described in IA Section 12.3, and the subarea framework management plan described in MHCP Vol. III, Section 1.2. The first complete draft was finalized in May 2004. The document was completed in September 2004 and accepted by the Carlsbad City Council in December 2005.
13.0	**Adaptive Management:** To ensure that adaptive management actions do not result in less mitigation than provided for the HMP Covered Species under the original terms of the HMP, unless approved by the Wildlife Agencies.	▪ The city complies with this policy by having ongoing discussions with preserve managers on management activities and by requiring adaptive management within all actively managed preserves and annual reporting. ▪ The city is coordinating with the regional adaptive management and monitoring efforts through the San Diego Management and Monitoring Program. ▪ The city has developed Guidelines for Preserve Management (TAIC 2009), which include monitoring and management priorities and a monitoring report checklist (Appendix C).
14.0	**Funding:** 14.1 MCHP Core Area Participation 14.2 Preserve Management and Monitoring Plan 14.3 Management of city-owned public lands 14.4 Management of private lands in HMP area 14.5 Management of Existing Hardline areas 14.6 Program Administration 14.7 Habitat In-Lieu Mitigation Fees	14.1 The city has met 100% of its 307.6-acre coastal sage scrub conservation obligation as of 2019 (see 11.5 above). 14.2 The Preserve Management and Monitoring Plan (known as the Open Space Management Plan, or OSMP) was completed in September 2004 using city funds and a Local Assistance Grant from CDFW. 14.3 City-owned preserves are currently being actively managed and monitored by CNLM. 14.4 The city requires all private development projects within the HMP to fully fund perpetual management of associated preserve land prior to issuing a grading permit. 14.5 Hardline preserves in existence before final HMP approval are owned and managed by several other entities, including the CDFW, private HOAs, University of California, SDG&E, Cabrillo Power, and San Dieguito Union High School District. 14.6 The HMP program is overseen the City's Habitat Management Division (Environmental Sustainability Department). In addition, the city has contracted with a qualified biological consultant to serve as the city's Preserve Steward, who coordinates management throughout the HMP Preserve and monitors HMP compliance and management effectiveness. 14.7 The city is implementing a habitat mitigation fee program for new development that will pay back the General Fund, which was used to pay for the city's remaining Gnatcatcher Core Area obligations.

[1] IA – Implementing Agreement

Table 2. Summary of City Compliance with Terms and Conditions of CDFW Permit through RY 19 (2022–2023)

CDFW NCCP Permit Terms and Conditions (T&C)	Description of City Compliance
Section 6.1 Conditions A through F are the same as those stated in A through F of the Implementing Agreement (IA), Section 11.3 (See Table 12). They are summarized below. A. Urgency Ordinance – interim HMP enforcement. B. Amend Open Space and Conservation Element of General Plan to incorporate HMP. C. Amend Open Space Ordinance to incorporate Conserved Habitat Areas. D. Amend Municipal Code to incorporate Standards Area compliance. E. Amend General Plan to identify HMP as priority use for open space lands. F. Wetlands Protection Program.	See Table 5, IA Section 11.3.
G. This permit is subject to compliance with the MHCP Volumes I–III, HMP, including Addenda 1 and 2, and the IA.	All project approvals within the city are subject to these requirements as a condition of approval.
H. Coverage for thread-leaved brodiaea (*Brodiaea filifolia*) and approval of the Fox-Miller Project. The conditions are as described in the USFWS 10(a) Permit Condition 7 (Table 12).	See Table 7, USFWS 10(a) Permit Condition 7 for a description of compliance.
I. All monitoring and reporting must comply with MHCP Vol. I and III, and IA Section 12. Annual reports are due no later than December 1 of each year. MHCP Volume II includes the following policies and conditions: • Standard Best Management Practices (Appendix B) • General Outline for Revegetation Plans (Appendix C) • Narrow Endemic Species and Critical Population Policies (Appendix D) • Conditions for Estuarine Species (Appendix E) • CEQA requirements for quantifying and mitigating impacts	See description for Condition G. MHCP Vol. II policies and conditions are reviewed during regular HMP compliance review for all new projects within Carlsbad. In addition, these policies have been integrated and/or referenced in the city's Guidelines for Biological Studies.

Table 3. Summary of City Compliance with the Terms and Conditions of USFWS Permit through RY 19 (2022–2023)

Federal ESA 10(a) Permit Terms and Conditions (T&C)	Description of City Compliance
1. All sections of Title 50 Code of Federal Regulations (CFR) 13, 17.22, and 17.32 are conditions of this permit.	Appropriate language has been integrated into the HMP and IA; therefore, compliance with these documents ensures compliance with Title 50 CFR sections.
2. The permittee is subject to compliance with the MHCP, HMP, and IA.	The city complies with all regulations as described in Tables 5 and 6.
3. The amount and form of take are authorized as described below. Referenced tables are from Attachment 2 of the T&C, and are the same as List 1-3 Species in HMP Section C. Coverage for species in HMP Tables 2 and 3 below require the city to submit in writing a request for coverage, including documentation showing compliance. Table 1. (a) No take authorized for the following species: *Chorizanthe orcuttiana* – Orcutt's spineflower *Dudleya blochmaniae* ssp. *blochmaniae* – Blochman's dudleya *Euphorbia misera* – Cliff spurge *Hazardia orcuttii* – Orcutt's hazardia *Quercus dumosa* – Nuttall's scrub oak *Pelecanus occidentalis californicus* – California brown pelican *Falco peregrinus* – American peregrine falcon *Rallus longirostris levipes* – Light-footed Ridgway's rail *Sterna antillarum browni* – California least tern *Charadrius alexandrinus nivosus* – Western snowy plover *Sterna elegans* – Elegant tern Table 1. (b) Take authorization is or will be (upon listing) granted for: **Listed species:** *Empidonax traillii extimus* – Southwestern willow flycatcher *Vireo bellii pusillus* – Least Bell's vireo *Polioptila californica californica* – Coastal California gnatcatcher	Table 1 (a). No take of these species has been authorized by the city. Table 1 (b). No Incidental Take Permits have been issued by the city for these species.

Federal ESA 10(a) Permit Terms and Conditions (T&C)	Description of City Compliance
Not yet listed: *Panoquina errans* – Salt marsh skipper *Euphyes vestris harbisoni* – Harbison's dun skipper *Plegadis chihi* – White-faced ibis *Accipiter cooperii* – Cooper's hawk *Pandion haliaetus* – Osprey *Icteria virens* – Yellow-breasted chat *Aimophila ruficeps canescens* – So. California rufous-crowned sparrow *Passerculus sandwichensis beldingi* – Belding's savannah sparrow *P.s. rostratus* – Large-billed savannah sparrow *Aspodoscelis hyperythrus beldingi* – Orange-throated whiptail	Table 1 (b). No Incidental Take Permits have been issued by the city for these species.
Table 2. Take authorization contingent upon other MHCP subarea plans being permitted for the following species: *Acanthomintha ilicifolia* – San Diego thornmint *Ambrosia pumila* – San Diego ambrosia *Ceanothus verrucosus* – Wart-stemmed ceanothus *Dudleya viscida* – Sticky dudleya *Ferocactus viridescens* – San Diego barrel cactus *Quercus engelmannii* – Engelmann oak	Table 2. No other MHCP subarea plans have been permitted, and thus take authorization for these species has not been granted by the city.
Table 3. (a) Take authorization contingent upon adequate funding and legal access to manage and monitor the following species: *Arctostaphylos glandulosa* ssp. *crassifolia* – Del Mar manzanita *Baccharis vanessae* – Encinitas baccharis *Brodiaea filifolia* – Thread-leaved brodiaea *Comarostaphylis diversifolia* ssp. *diversifolia* – Summer-holly *Corethrogyne filaginifolia* var. *linifolia* – Del Mar sand aster *Pinus torreyana* ssp. *torreyana* – Torrey pine	Table 3 (a). Take authorization for thread-leaved brodiaea was granted by the Wildlife Agencies to the city on December 2, 2005, based upon the management required for Fox-Miller property. Take of this species was not granted during the reporting period. No take of any other species from this list has been granted by the city.

Federal ESA 10(a) Permit Terms and Conditions (T&C)	Description of City Compliance
Table 3. (b) Take is contingent upon (a), described above, *and* the city receiving legal control over the vernal pools adjacent to the Poinsettia Train Station. *Eryngium aristulatum* var*. parishii* – San Diego button-celery *Myosurus minimus* ssp. *apus* – Little mousetail *Navarretia fossalis* – Spreading navarretia *Orcuttia californica* – California Orcutt grass *Streptocephalus woottoni* – Riverside fairy shrimp *Branchinecta sandiegonensis* – San Diego fairy shrimp Table 3. (b) Take is contingent upon (a) and (b), described above, and upon other MHCP subarea plans being permitted. *Iva hayesiana* – San Diego marsh-elder	Table 3 (b). The city received legal control over the vernal pools by accepting the Coastal Commission's Irrevocable Offer to Dedicate a Conservation Easement in 2015. Take for vernal pool species was granted by the Wildlife Agencies on February 20, 2019. No other take authorizations have been requested.
4. The FESA Section 10(a) constitutes a Special Purpose Permit for the take of HMP covered species which are listed as threatened or endangered under the FESA, and which are also protected by the Migratory Bird Treaty Act of 1918, as amended. The Special Purpose Permit will be valid for three years after effective date and may be renewed as long as 10(a) permit conditions are being met. *Sterna antillarum browni* – California least tern *Empidonax traillii extimus* – Southwestern willow flycatcher *Vireo bellii pusillus* – Least Bell's vireo *Passerculus sandwichensis beldingi* – Belding's savannah sparrow	The Special Purpose Permit has been in effect during the current reporting period. No take of these species has been granted.
5. The Permittee shall not allow clearing and grubbing in known or potentially occupied California gnatcatcher habitat between February 15 and August 31.	This requirement is included in Municipal Code 21.210.040 and HMP Table 9. Compliance is a condition of approval for every new development project.
6. Specific standards (described in the T&C) must be met if the city proceeds with any of the following plans: (a) Cannon Road Reach 4 (b) Extension of Melrose Drive through the Shelley Property (c) Marron Road through Buena Vista Creek Ecological Reserve	None of these projects have been proposed at this time.

Federal ESA 10(a) Permit Terms and Conditions (T&C)	Description of City Compliance
7. To receive coverage for thread-leaved brodiaea, the city must demonstrate that: (a) The Fox-Miller project meets the narrow endemic standards for this critical location and major population of this species. (b) The proposed hardline shown in Addendum 2 (2003) of the HMP is not permitted (it does not meet the MHCP standards). (c) The Wildlife Agencies must concur with the Fox-Miller project proposal, and the conserved area must be managed and monitored to MHCP standards in perpetuity. (d) If all conditions are met, the Fox-Miller project can be permitted under the HMP through the HMP amendment process.	(a) The NE standards have been met. (b) The boundary was expanded to meet MHCP standards. (c) The Wildlife Agencies approved the Fox-Miller project. Mitigation requirements have not been completed. Interim management is conducted by Helix via annual contract with the landowner. Long-term management will be provided by SDHC upon mitigation signoff. (d) Brodiaea coverage was granted by the Wildlife Agencies through a minor amendment December 2, 2005.
8. To minimize impacts to the California gnatcatcher, rufous-crowned sparrow, and orange-throated whiptail, the city must: (a) Maintain and/or widen the habitat corridor between the city and Oceanside as much as feasible. (b) If the driving range adjacent to the Kelly/Bartman property is proposed for a different use, the city will ensure that an onsite corridor is established on the driving range property.	(a) The corridor on the NE boundary of Carlsbad is conserved. Along the northern boundary, the Buena Vista Creek ER was acquired in 2007, resulting in 100% conservation, and the Summit (Kelly-Bartman) property was acquired by CDFW in 2010. (b) No other uses for this property have been proposed at this time.
9. As part of the project review process, a qualified biologist shall survey for all species with immediate and conditional coverage.	The city has included this as a condition of approval for all new projects.
10. The city will contact the USFWS Carlsbad Office immediately regarding any violations or potential violations of the FESA or the Migratory Bird Treaty Act.	The city regularly communicates with the USFWS on regulatory issues, and contacts the appropriate personnel immediately upon learning of any potential problems.
11. The city will notify the USFWS within one working day of finding any dead, injured, or sick threatened/endangered species.	No such individuals have been reported to or observed by the city.
12. All monitoring and reporting for this permit shall be in compliance with the MHCP (Vol. I and III) and the IA (Section 12).	See IA Section 12 discussion in Table 10 above for compliance information.
13. A copy of this permit must be on file with the city, its authorized agents, and third parties under the jurisdiction and direct control of the city.	A copy of this permit is on file with the city and is available to any interested parties.

Table 4. Compliance with Zone-Wide Standards through RY 19 (2022–2023)

Zone	Zone-Specific Standard	Current Status
All Zones	A minimum of 67% of coastal sage scrub and 75% of the gnatcatchers shall be conserved overall within the Standards Areas.	Baseline acres of coastal sage scrub within all Standards Areas at inception of HMP: 189.3. Currently, a total of 83.7 acres of coastal sage scrub (44.2%) from the original baseline vegetation map have been conserved. Updated mapping by land managers shows that there is actually a total of 144.1 acres of coastal sage scrub conserved within Standards Areas (76.1%). Occupied gnatcatcher habitat is mitigated at 2:1; therefore, there will be no net loss of gnatcatcher habitat within Standards Areas. The 75% standard is applied to every project individually.
Zone 1	Preserve at least 50% of coastal sage scrub and avoid areas occupied by gnatcatchers. Applies to several vacant lots on north shore of Agua Hedionda Lagoon and a larger, vacant in-fill lot SW of El Camino Real and Kelly Drive.	Vacant lots on the north shore of Agua Hedionda Lagoon: no projects have been finalized for these parcels. In-fill parcel (Aura Circle): property changed to a Proposed Hardline preserve during Coastal Commission processing of the HMP. The City purchased this property in 2020 and added the developable area to the HMP hardline. The entire 15.1-acre preserve is now under long-term management.
Zone 2	1. Kelly/Bartman property: 50% of this property shall be conserved and must form a continuous corridor from the SE corner of the property to the northern edge. 2. Spyglass property: grasslands impacted on this property shall have offsite mitigation at 2:1 ratio.	Kelly-Bartman property (Summit): Existing Hardline preserve approved with 50% conservation, including an open space corridor from the southeast to the northern site boundary. Spyglass property: has been developed and grassland impacts were mitigated at a 2:1 ratio through restoration at Carlsbad Highlands Mitigation Bank.
Zone 8	1. Kirgis property: a maximum of 25% can be developed. 2. Callaghan property: a maximum of 50% can be developed. No impacts to narrow endemic species on either property.	Kirgis property: Restrictive Covenant recorded 8/28/2023 with 75% percent conservation (Ocean View Point Project); no grading permit has been issued yet. Callaghan property: no tentative map has been approved for this property.
Zone 14	Areas of upland habitat outside Linkage B may be taken in exchange for restoration and enhancement inside of the linkage as long as the result is conservation of at least 67% coastal sage scrub and associated gnatcatcher populations within southern portions of the zone.	Due to agricultural activities, very little coastal sage scrub existed in the this zone. The Existing Hardline Preserve, as approved by the Wildlife Agencies in 2005, 2007, and 2012, preserves 70% of the coastal sage scrub throughout the zone. The Robertson Ranch projects restored approximately 49 acres of coastal sage scrub.
Zone 15	Maintain and enhance habitat linkages across Linkage C and adjoining Cores 3 and 5. Areas of upland habitat outside Linkage C may be taken in exchange for restoration and enhancement inside of the linkage as long as there is a no net loss of coastal sage scrub and associated gnatcatcher populations within southern portions of the zone.	Terraces at Sunny Creek and Rancho Milagro occur within Core Area 5 in the southern portion of Zone 15. No net loss of coastal sage scrub has occurred.
Zone 20	Create continuous habitat through Linkage F between Core Areas 4 and 6. No net loss of coastal sage scrub or maritime succulent scrub within standards areas of the zone.	Projects: Emerald Pointe, North Coast Calvary Chapel, and Muroya. All three projects were processed through a Consistency Finding and approved by the city and Wildlife Agencies. No net loss of coastal sage scrub or maritime succulent scrub occurred.
Zone 21	Ensure habitat connectivity and wildlife movement east-west across the zone.	Projects: Poinsettia Place, Manzanita Partners, and Poinsettia 61 Preserves provide east-west connectivity from El Camino Real to the Local Facilities Management Zone boundary.
Zone 25	At least 75% of the Sherman property must be conserved.	As of March 2007, 100% of the Sherman property (Buena Vista Creek Ecological Reserve) has been conserved.

Appendix B

Summary of Management and Monitoring Activities within HMP Management Units

November 1, 2022–October 31, 2023

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Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023

Preserve Area	Management Entity	Management and Monitoring Activities
Agua Hedionda Lagoon area	**Agua Hedionda Lagoon Foundation**	▪ Conducted weekly inspections to monitor trails and easements. ▪ Worked with the City of Carlsbad's Trail Rangers program for better enforcement and hiker awareness. ▪ Worked with the City and the California Coastal Commission to ensure public safety on 3.6 miles of public access easements. ▪ Hosted approximately 1,500 volunteers through trail maintenance events and Agua Hedionda Lagoon Foundation/Discovery Center Events. ▪ Monitored 132 acres of open space in the Coastal Zone. ▪ Removed and monitored invasive plant species along trails and preserve areas. ▪ Installed preventative measures for coastal bluff erosion. ▪ Hosted monthly community bird walks and guided hikes around the lagoon. ▪ Worked with the U.S. Fish and Wildlife Service (USFWS) Coastal Program to address infestations of Algerian sea lavender (*Limonium ramosissimum*) in the California Department of Fish and Wildlife (CDFW) preserve and lay tarping to eradicate the species through solarization. ▪ Removed 1,322 pounds of trash and invasive species from the lagoon during our annual Lagoona Kahuna Team Challenge Event, for corporate companies locally.
	Preserve Calavera	▪ Conducted bi-monthly water quality evaluations on surface waters at three locations in sub-watershed including eDNA and microfibers.
Agua Hedionda Lagoon Ecological Reserve	**California Department of Fish and Wildlife**	▪ Treated invasive Algerian sea lavender and continue solarization project with Agua Hedionda Lagoon Foundation. ▪ Continued restoration efforts at Park Drive Restoration site (1.25 acres). ▪ Continued Stinkwort (*Dittrichia graveolens*) removal program at Park Drive Restoration site. ▪ Maintained boundary trail along Park Drive to connect to Kelly Trail. ▪ Removed invasive plants within reserve. ▪ Conducted weekly inspections to monitor trails and easements. ▪ Maintained boundary fencing and signage.
Batiquitos Watershed	**Preserve Calavera**	▪ Continued bi-monthly water quality evaluations on surface waters at 3 locations in the sub-watershed including eDNA and microfibers. ▪ Continued volunteer work sessions restoring coastal sage scrub and native grasslands at La Costa Canyon. ▪ Supported planning for Cal Nat native planting project in HOA area.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
Batiquitos Lagoon Ecological Reserve	**California Department of Fish and Wildlife**	▪ Performed habitat management and breeding season surveys for California least tern (*Sterna antillarum browni*) and breeding season and wintering window surveys for western snowy plover (*Charadrius alexandrinus nivosus*). ▪ Maintained nesting sites. ▪ Conducted Nuttall's acmispon (*Acmispon prostratus*) monitoring following San Diego Management and Monitoring Program's (SDMMP) inspect and manage protocol. ▪ Controlled invasive plant species within the preserve. ▪ Conducted weekly inspections to monitor trails and easements. ▪ Maintained boundary fencing and signage.
Bressi Ranch Preserve	**San Diego Habitat Conservancy**	▪ Conducted bi-monthly general site patrols to observe and document the biodiversity of the site and substantial changes in habitat composition, remove trash, remove and/or map invasive non-native plant species for removal, look for signs of trespass, and assess the need for remedial measures. In addition, conducted supplementary site visits for invasive plant removal and sign retrieval. Results of bi-monthly patrols and supplemental site visits documented in log of site conditions. ▪ Invasive removal conducted at least monthly from December 2022 through October 2023. Focus on removing black mustard, Ward's weed, pampas grass, tamarisk, tree tobacco, and fennel. ▪ Updated vegetation mapping using the Vegetation Classification Manual for Western San Diego County. ▪ Documented sensitive species observed during each patrol. These observations included coastal California gnatcatcher (*Polioptila californica californica*) and Cooper's Hawk (*Accipiter cooperii*). ▪ Surveyed Nuttall's scrub oak (*Quercus dumosa*) and summer holly (*Comarostaphylis diversifolia*). ▪ Established several photo points throughout the preserve to allow for monitoring of visual changes in the habitat quality and quantity over time. ▪ Documented trespasser activity. ▪ Documented missing signs. ▪ Provided HOA newsletter and reviewed presentation from HOA meeting. ▪ Led interns from University of California San Diego, San Diego State University, and Mira Costa College, as well as several volunteers, on SDHC patrol visits to remove invasive plants and trash, clean graffiti, and inspect the general health of the habitat. ▪ Coordinated installation of a gate with the permission of the HOA at Lot 19. ▪ Inspected the preserve for conservation easement compliance and coordinated with the HOA regarding a violation of the Conservation Easement related to vegetation clearance to reduce fire fuel load.
Buena Vista Creek Ecological Reserve	**Landowner: California Department of Fish and Wildlife**	▪ Conducted surveys for bats and possible roosting and foraging locations. ▪ Conducted shot-hole borer (*Euwallacea spp.*) monitoring ▪ Conducted sensitive species monitoring and management and mapped observations.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
	Preserve Manager: Center for Natural Lands Management	▪ Treated/removed non-native species that threaten the HCA. Primarily castor bean (*Ricinus communis*), pampas grass (*Cortaderia jubata*), smilax (*Asparagus asparagoides*), and fennel (*Foeniculum vulgare*). ▪ Continued to enhance 2-acre upland areas near the south side of the reserve. ▪ Cleared fire breaks. ▪ Maintained roads. ▪ Conducted weekly patrols. ▪ Updated kiosk materials quarterly. ▪ Picked up trash as necessary. ▪ Routinely maintained gates and fences. ▪ Completed annual stewardship plan, budget, and report. ▪ Continued database management.
Buena Vista Lagoon Ecological Reserve	**California Department of Fish and Wildlife**	▪ Performed western snowy plover wintering window surveys. ▪ Cut and removed 28, 345 sq ft of cattails (*Typha latifolia*) to improve Light-footed Ridgway's Rail (*Rallus obsoletus levipes*) habitat. ▪ Controlled invasive plant species within the preserve. ▪ Cleaned up 12 homeless encampments. ▪ Removed 24 feral cat feeding stations. ▪ Conducted trail maintenance activities. ▪ Performed fire fuel reduction along north shore. ▪ Conducted weekly inspections to monitor trails and easements.
Buena Vista Lagoon/Watershed	**Preserve Calavera**	▪ Continued bi-monthly water quality evaluations on surface waters at four locations in sub-watershed including eDNA and microfibers. ▪ Continued monitoring and action to reduce edge effects at El Salto falls and in Buena Vista Creek Ecological Reserve. Helped fund installation of fencing along the falls. ▪ Sponsored trash cleanup events with San Diego Habitat Conservancy (SDHC) and I Love a Clean San Diego (ILACSD). ▪ Organized public hike with Native American docent at BVCER. ▪ Mentoring AP Research student on BVC project
Calavera Area	**Preserve Calavera**	▪ Continued wildlife movement and biological surveys (dog waste study) at south Village H. ▪ Continued participation in the city's Trails Volunteer Program.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
Calavera Hills Phase II/Robertson Ranch	**Center for Natural Lands Management**	▪ Conducted long-term coastal sage scrub monitoring – cover of native and exotic forbs/grasses was highest in recorded history, consistent with heavy rainfall. ▪ Conducted grassland community assessments - grassland transects yielded the highest native grass cover recorded to date; nonnative grass cover continues to be dominant. ▪ Monitored thread-leaved brodiaea (TLB*; Brodiaea filifolia*) index plots -- TLB vegetation to flowering ratio was the highest on record. ▪ Conducted surveys for San Diego coast horned lizard (*Phrynosoma coronatum blainvillii*) – none detected. ▪ Mounted a wildlife camera in the College Avenue wildlife tunnel primarily to document reptiles – none detected. ▪ Documented and mapped sensitive or notable wildlife species. Observations included nesting great horned owls (*Bubo virginianus*), red-tailed hawks (*Buteo jamaicensis*), bobcat (*Felis rufus*), CAGN, and northern red diamond rattlesnake (*Crotalus ruber*). ▪ Repaired minor fence breaks or issues – no major maintenance was required. ▪ Treated/removed non-native invasive plant species, including Stinkwort *(Dittrichia graveolens*), pampas (*Cortaderia selloana*), and black mustard (*Brassica nigra*). ▪ Installed approximately 430 native grasses at Village H North restoration area. ▪ Raked eucalyptus leaves and treated various weeds within Village H. ▪ Treated and mowed black mustard within Village X. ▪ Conducted weekly patrols – no major issues to report. ▪ Updated information kiosks regularly. ▪ Maintained/replaced 5 signs. ▪ Picked up trash as observed. ▪ Conducted Conservation Easement compliance visit – no unresolved issues remain and no violations were noted or reported to the landowner. ▪ Completed the annual stewardship plan and budget and annual report. ▪ Maintained databases.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
Carlsbad Highlands Ecological Reserve	**California Department of Fish and Wildlife**	▪ Removed graffiti from Department signage. ▪ Removed 5 unsafe trail features and conducted trail maintenance. ▪ Continued habitat restoration on 2 acres. ▪ Conducted weekly inspections to monitor trails and easements. ▪ Conducted fire fuel reduction along property boundary. ▪ Continued efforts on a Narrowleaf milkweed (*Asclepias fascicularis*) seed collection project to improve Monarch butterfly (*Danaus plexippus*) Habitat with USGS. ▪ Controlled invasive plant species within the preserve. ▪ Maintained boundary fencing & signage. ▪ Engaged in Public Education efforts concerning allowed and prohibited activities within ER.
Carlsbad Oaks North Preserve	**Center for Natural Lands Management**	▪ Conducted sensitive plant species monitoring for San Diego thornmint (*Acanthomintha ilicifolia*), Blochman's dudleya (*Dudleya blochmaniae*), and thread-leaved brodiaea (TLB; Brodiaea filifolia) – San Diego thornmint counts above average in extant occurrence; Blochman's dudleya was documented with flowering individuals within quadrats, and thread-leaved brodiaea flowering ratio was the highest on record. ▪ Conducted habitat assessments for San Diego thornmint. Maintained San Diego thornmint out-seeding areas mostly free of invasive non-native species, assessed habitat and counted plants. Collected seeds. ▪ Completed coastal sage scrub monitoring – Cover of native forb, exotic grass and shrub cover were the highest in recorded history, consistent with heavy rainfall. ▪ Conducted Least Bell's vireo surveys – LBV present. ▪ Conducted animal movement analysis – generally consistent movement through the eastern tunnel was observed; observations in the western tunnel were infrequent with some evidence of human trespass. ▪ Documented and mapped sensitive or notable wildlife species. Observed red-tailed hawks (*Buteo jamaicaensis*), mule deer scat and tracks in various locations and on the cameras, and greater roadrunner (*Geococcyx californianus*). ▪ Removed hundreds of invasive non-native species (pampas grass, stinkwort, and black mustard) using manual, chemical, and mechanical methods. ▪ Maintained plants and removed invasive species with Nature Collective. Added 50 native coastal sage scrub plants. ▪ Maintained lemonadeberry (*Rhus integrifolia*) planted in 2020. ▪ Monitored restoration planning at area impacted by illegal grading around Oakmont development. Removed invasive species and performed plant counts/assessments. High numbers from heavy rainfall. ▪ Conducted regular patrols. ▪ Installed new fencing and signage behind new development to deter illegal trails. ▪ Updated information kiosks regularly.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Removed trash when encountered. ▪ Conducted a focused Conservation Easement compliance visit and submitted monitoring report – no unresolved issues remained and no easement violations were noted or reported to landowner. ▪ Completed the annual stewardship plan and budget, annual report. ▪ Managed database.
Carlsbad Raceway Preserve	**San Diego Habitat Conservancy**	▪ Conducted quarterly site patrols to observe and document the biodiversity of the site and substantial changes in habitat composition, remove trash, remove and/or map invasive non-native plant species for removal, look for signs of trespass, and assess the need for remedial measures. In addition, supplemental visits were performed to monitor maintenance activities under the SANDAG EMP grant project. ▪ Conducted presence/absence surveys for Cooper's hawk and yellow-breasted chat (*Icteria virens*) during each patrol. ▪ Prepared a list of plant and animal species directly observed or inferred during each patrol. ▪ Visually assessed vernal pool for presence of fairy shrimp (*Branchinecta* spp.) and vernal plant species – no fairy shrimp or vernal pool plant species observed. ▪ Reported encampments to the Homeless Outreach Team (HOT). ▪ Removed trash during manual invasive removal and during quarterly patrols. ▪ Mapped locations of exotic, invasive plants during each quarterly patrol. ▪ Documented results of quarterly patrols by keeping a monitoring log of site conditions. ▪ Contracted with HELIX to conduct invasive removal efforts for pampas grass (*Cortaderia spp.*) and fountain grass (*Pennisetum setaceum*). Also addressed tamarisk (*Tamarix sp.*), black mustard, and poison hemlock (*Conium maculatum*). ▪ Inspected site for Ward's weed (*Carrichtera annua*). ▪ Moved photo point #10 due to vegetation obstruction. Conducted permanent vegetation photo monitoring. ▪ Conducted IMG monitoring for San Diego thornmint (*Acanthomintha ilicifolia*)– 25 individuals observed. The area was also watered. ▪ Provided HOA newsletter. ▪ Led interns from University of California San Diego, San Diego State University, Point Loma Nazarene University, Mira Costa College, and High Tech High School on SDHC patrol visits to assist with quarterly monitoring, hand weeding, and trash removal. ▪ The PMP was reviewed and updated to reflect suggestions in management for sensitive species. ▪ Attend quarterly Preserve Manager's meetings with the City for coordination with other neighboring managers, as well as the annual workshop for the City's HMP.
City of Carlsbad Preserves	**Center for Natural Lands Management**	▪ Documented and mapped sensitive species as they were observed during site visits – previously unrecorded population of thread-leaved brodiaea observed at Lake Calavera.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Conducted oak woodland crown health and gold-spotted oak borer assessments at Lake Calavera and Carillo Ranch – no exit holes indicating GSOB were observed. ▪ Conducted shot-hole borer and fusarium dieback assessments at Carillo Ranch, Lagoon Lake, Lake Calavera, Poinsettia Park, and The Crossings – no new SHB issues. ▪ Performed thread-leaf brodiaea abundance counts within index plots. New population of TLB at Lake Calavera. ▪ Conducted sensitive plant species counts at Aviara Park. ▪ Performed brown-headed cowbird trapping at The Crossings – 29 cowbirds trapped. ▪ Monitored wildlife camera – no observations. ▪ Continued to map additional observations of invasive plants. New occurrence of Ward's weed at Carillo Ranch. New populations of stinkwort. ▪ Continued to treat zero-tolerance non-native species and expanded treatment to species not treated due to need for experimental treatments. Non-native species included fountain grass, melinis grass, castor bean, vinca, poison hemlock, stinkwort, artichoke thistle, and sea lavender. ▪ Inspected and cleaned brow ditches multiple times within Aura Circle, Carlsbad Village Drive, The Crossings, La Costa Romeria, and Village H South. ▪ Inspected erosion areas within Batiquitos Drive, Carlsbad Village, The Crossings, La Costa Romeria, Lake Calavera, and Village H South. Replaced straw wattles and gravel bags within The Crossings along Palomar Airport Road in December 2022. Palomar Airport Rd required significant additional erosion control measures due to heavy rains. ▪ Monitored fuel zones and communicated with City staff about timing of fuel zone clearing. ▪ Maintained M1-2 tunnel with regular patrols and vegetation trimming. ▪ Patrolled 4-7 times a week at Lake Calavera; biweekly at Aura Circle; weekly at Village H North; monthly at Aviara Park, Carlsbad Village Drive, The Crossings, La Costa Canyon Park, La Costa Romeria, Poinsettia Park, and Veteran's Park/Macario Canyon; and quarterly at Batiquitos Drive, Carrillo Ranch, Lagoon Lane, Los Monos, and Research Center. ▪ Maintained and replaced existing signs as necessary. ▪ Maintained 9 mini kiosks across preserves. ▪ Removed trash as needed. ▪ Patrolled for preserve encroachments and removed bike jumps and tree forts from several properties. ▪ Patrolled for trespass and sign of trespass (graffiti, trash) were cleaned up in the M1-2 tunnel, Lake Calavera, Poinsettia Park, and La Costa Canyon Park. ▪ Attended quarterly City of Carlsbad trails meetings, annual HMP meeting, SDMMP meetings, and regular education and outreach to trail users and concerned citizens. ▪ Coordinated with city staff regarding oak planting/ watering, trail maintenance, and illegal trail fencing at Lake Calavera.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
Daybreak Community Church Preserve	**San Diego Habitat Conservancy**	▪ Conducted 4 site visits in 2023 to observe and document the biodiversity of the site and substantial changes in the habitat composition, remove trash, remove and/or map invasive plant species for removal, look for signs of trespass and erosion, check the Preserve signs for damage, and assess the need for remedial measures. Supplemental site visits were performed to check the status of invasive plant species, monitor maintenance activities, and to meet with the City of Carlsbad (City) to assess sign-off of the restoration area. ▪ Documented coastal California gnatcatcher within the Preserve during three site visits. ▪ Mapped a single Wart-stem ceanothus (Ceanothus verrucosus) shrub. ▪ Inspected Preserve signs and added sticker to signs with SDHC's information. ▪ Documented results of annual patrol by keeping a monitoring log of site conditions. ▪ Assessed and updated 2022 vegetation mapping using the VCM and California Native Plant Society Manual of California Vegetation. ▪ Performed 30-meter transect survey in restoration area. ▪ Mapped locations of exotic, invasive plants during each quarterly patrol. ▪ Contracted with HELIX to conduct weed control in March and June to focus on shortpod mustard (*Hirschfeldia incana*), black mustard, castor bean (*Ricinus communis*), pampas grass, and ice plant (*Mesembryanthemum crystallinum*). ▪ Coordinated with the church to control slender myoporum (*Myoporum parvifolium*) and Pride of Madeira (*Echium candicans*) individuals within the Preserve that had come from the church's landscaping area. To date, the church has not been cooperative in assisting in any maintenance. ▪ Led interns from various academic institutions on SDHC patrol visits to remove invasive plants and trash, assist with transect surveys, and inspect the general health of the habitat. ▪ Coordinated with the church to request notifications of trespassing or disturbances. ▪ Attended quarterly Preserve Managers' meetings with the City for coordination with other neighboring managers, as well as the annual workshop for the City's HMP.
Emerald Pointe Preserve	**San Diego Habitat Conservancy**	▪ Conducted quarterly site patrols, surveys, and accompanied field crews for invasive plant removal. Focused on mapping non-native and invasive plant species, surveying for sensitive species such as San Diego thornmint, monitoring erosion control measures, surveying for illegal activities such as trespassing or dumping, and to remove trash. ▪ Documented results of patrols by keeping a monitoring log of site conditions. ▪ Documented CAGN detections during general site patrols. ▪ Lost Sage Restoration Ecology LLC (LSRE) continued to conduct invasive removal efforts at the preserve. Invasives consist primarily of black mustard and fennel. Tocalote (*Centaurea melitensis*) was again hand-weeded in the vicinity of historical thornmint habitat.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Conducted rare plant surveys - no ACIL, *Cryptantha wigginsii*, or *Harpagonella palmeri* individuals were observed. ▪ San Diego thornmint seeds were bulked and yielded 800 seeds for replanting next year. ▪ Attended quarterly preserve managers' meetings with the City for coordination with other neighboring preserve managers, as well as the annual workshop for the City's Habitat Management Plan.
Encinas Creek/North County Habitat Bank Preserve	**Center for Natural Lands Management**	▪ Conducted wildlife movement monitoring – bobcat (*Lynx rufus*) and coyote (*Canis latrans*) were observed. ▪ Conducted coastal California gnatcatcher and least Bell's vireo surveys – none were detected. ▪ Mapped and documented observations of sensitive species during monitoring and management activities. ▪ Removed non-native species (pampas grass, and garden nasturtium (*Tropalium majus*) from within the willow understory. Treated hundreds of mustard plants, hundreds of bristly ox tongue and poison hemlock plants. In addition, secondary treatments of tropaeolum and ice plant were performed where regrowth from previous treatments were observed. ▪ Conducted habitat restoration including weed control and herbicide treatments. ▪ Conducted bi-weekly to monthly patrols – trespass and illegal camping were detected. ▪ Maintained signage at the northern HCA boundary as well as at illegal trail points. ▪ Cleaned up trash where necessary. ▪ Removed and cleaned up two transient camps. ▪ Completed the annual stewardship, budget, and work plan report. ▪ Managed database.
Fox-Miller Preserve	**Helix Environmental Inc. (*interim management*)**	▪ Treated non-native broad-leaved weed species in grasslands and SWS area including black mustard, bristly ox tongue (*Helminthotheca echioides*), and wild lettuce (*Lactuca serriola*). Other non-natives observed included fennel, scarlet pimpernel (*Anagallis arvensis*), and sow thistle (*Sonchus asper*). ▪ Targeted removal of broad-leaved weed species and non-native grasses in DCSS area. ▪ Removed trash as needed. ▪ Conducted general monitoring. ▪ Recorded plant and wildlife species observed during monitoring visits. ▪ Conducted thread-leaved brodiaea flower check. abundance of flowering TLB was high, which is comparable to previous years with above-average rainfall.
Kelly Ranch Preserve	**Center for Natural Lands Management**	▪ Conducted Orcutt's hazardia (*Hazardia orcuttii*) monitoring – a total of 116 Orcutt's hazardia detected. ▪ Conducted Orcutt's hazardia habitat monitoring. ▪ Documented sensitive species observed onsite during biological surveys or other management activities. Observations included Red-tailed hawk, American kestrel (*Falco sparverius*), and CAGN. ▪ Treated invasive non-native plants including Pampas grass, natal grass (*Melinis repens*), tumbleweed (*Salsola tragus*), tree tobacco, and stink wort.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Conducted erosion revegetation. A total of 80 coastal sage scrub species were planted in the main erosion area. ▪ Conducted Conservation Easement compliance monitoring – no issues. ▪ Conducted patrols at least once a month. Littering is common near viewpoint, but no other issues observed. ▪ Removed trash when necessary. ▪ Contacted neighbors and the HOA regarding issues of concern. ▪ Completed the annual stewardship plan and budget, annual report, and CE compliance report. ▪ Managed database.
La Costa Collections Preserve/City Ventures	**Urban Corps of San Diego County**	▪ Conducted biological monitoring for sensitive species and habitat condition, identify invasive non-native species, and conduct photo monitoring. ▪ Conducted Nuttall's scrub oak (*Quercus dumosa*) monitoring: mapped general distribution and assessed condition and degree of disturbance to habitat. 13 Nuttall's scrub oak have been identified. ▪ Conducted Del Mar sand aster (*Corethrogyne filaginifolia* var. *linifolia*) monitoring: delineated population boundaries, counted/estimated population, and assessed condition and degree of disturbance to habitat. ▪ Documented incidental observations of sensitive species during monitoring activities. Orange-throated whiptail observed. ▪ Performed bi-annual general site monitoring: monitored and removed trash/debris, reported any human encroachment, and inspected signs/fencing. ▪ Removed invasive species during bi-annual habitat maintenance. ▪ Removed trash bi-annually. ▪ Completed annual report.
La Costa Glen Preserve	**Center for Natural Lands Management**	▪ Conducted sensitive plant species monitoring for Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*), summer holly (*Comarostaphylos diversifolia* ssp. *diversifolia*), and seaside calandrinia (*Cistanthe maritima*). ▪ Updated vegetation mapping where necessary. ▪ Documented sensitive species observed onsite during biological surveys or management activities – no new sensitive species observed. ▪ Followed up on non-native plant removal treatment of tree tobacco. ▪ Treated black mustard and veldt grass with herbicide as well as hand pulled veldt grass. ▪ Performed regular patrols. ▪ Removed and cleaned up two encampments. ▪ Removed trash from transient encampments as encountered. ▪ Installed barricades and "No Trespass" signs around BMX track. ▪ Talked to CLC and nearby residents or trespassers when intercepted. ▪ Completed the annual stewardship plan and budget and annual report. ▪ Managed database.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
Laurel Tree Lane Preserve	**San Diego Habitat Conservancy**	▪ Conducted quarterly patrols and additional site visits to assess and address shot-hole borer/Fusarium treatments and any substantial changes in the habitat composition of the preserve, remove trash, remove and/or map invasive non-native plant species, map sensitive species, update vegetation community mapping, look for signs of trespass, and assess any need for remedial measures. ▪ Removed 7 trees infected with polyphagous shot-hole borer. ▪ Prepared monitoring logs after each pf the 6 site visits. ▪ Mapped locations of exotic, invasive plants and hand-pulled small patches of invasives, where possible. ▪ Conducted invasive non-native removal efforts for shortpod mustard, pampas grass, Bermuda buttercup (*Oxalis pes-caprae*) crown daisy (*Glebionis coronaria*), tocalote, castor bean, poison hemlock, and common iceplant. ▪ Documented one occurrence of Palmer sagewort (Artemisia palmeri). ▪ Conducted vegetation mapping. ▪ Provided newsletter to neighboring 24-Hour Fitness corporate office. ▪ Attended quarterly Preserve Managers' meetings with the City for coordination with other neighboring managers, as well as the annual workshop for the City's HMP.
Manzanita Partners Preserve	**Dudek/ Habitat Restoration Sciences**	▪ Inspected and replaced signs as needed. ▪ Inspected and repaired or replaced fencing as needed. ▪ Patrolled and conducted site enforcement on a regular basis. ▪ Removed non-native plant species. Mapped key weed control areas to prioritize future maintenance. ▪ Provided support for tasks provided by the Nature Collective and Preserve Steward staff as appropriate and included data provided by other organizations. ▪ Removed trash. ▪ Noted all animal species observed and mapped locations of any sensitive species. ▪ Monitored vernal pools for inundation depending on rain events – San Diego fairy shrimp and San Diego button-celery observed. ▪ Monitored early detection indicators for shot-hole borer invasion. ▪ Reported and described data collected and management actions taken on the preserve to the City.
Morning Ridge Preserve	**Urban Corps of San Diego County**	▪ Conducted brief biological survey in which incidental species observations were recorded. ▪ Conducted habitat maintenance and removed crown daisy and short-pod mustard.
Muroya Preserve	**San Diego Habitat Conservancy**	▪ Conducted quarterly patrols to observe and document the biodiversity of the site and substantial changes in the habitat composition, remove trash, remove and/or map invasive non-native plant species, look for signs of trespass, and assess the need for remedial measures. ▪ Documented plant and animal species directly observed or inferred. Coastal California gnatcatcher and Cooper's hawk individuals were documented within the Preserve. ▪ Documented signs of trespass.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Coordinated with a neighbor who reported vandalism to the northern fence. ▪ Documented results of patrols by keeping a monitoring log of site conditions. ▪ Contracted with Black Sage Environmental (BSE) and East County Transitional Living Center (ECTLC) to conduct maintenance with a focus on poison hemlock, which was the most abundant weed this year, as well as milk thistle (*Silybum marianum*), black mustard, shortpod mustard, Russian thistle, and tree tobacco. ▪ Focused on removal of castor bean during September visit. ▪ Updated vegetation mapping using VCM for Western San Diego County. ▪ Removed Photo Point 1 and corrected "Photo Point, View South" to "Photo Point, View Southwest." ▪ Performed Nuttall's scrub oak survey. ▪ Provided newsletter to the HOA. ▪ Led interns from various academic institutions on SDHC patrol visits to remove invasive plants and trash and inspect the general health of the habitat. ▪ Coordinated regional brown-headed cowbird eradication efforts (none observed), revegetation, erosion control, and examination of trees for shot hole borer (None observed). ▪ Attended quarterly preserve managers' meetings with the City for coordination with other neighboring preserve managers, as well as the annual workshop for the City's HMP.
New Crest Preserve	**Urban Corps of San Diego County**	▪ Performed annual monitoring: sensitive species and habitat condition, identify invasive non-native species, conduct photo monitoring, monitor for trash, erosion, human encroachment, and inspect signs and fencing. ▪ Documented occurrences of Wart-stemmed ceanothus – 1 previously documented shrub and 29 new seedlings. ▪ Removed invasive species including Artichoke Thistle (*Cynara cardunculus*), Creeping Myoporum (*Myoporum parvifolium*), Tree Tobacco, Crown Daisy, Black Mustard, and Acacia (*Acacia sp*.). ▪ Removed trash as necessary. ▪ Completed annual report.
North Coast Calvary Chapel Preserve	**Helix Environmental (*interim management*)**	▪ Conducted assessment of wart-stemmed ceanothus (*Ceanothus verrucosus*) – all 14 individuals were observed in the previously documented locations. ▪ Conducted regular monitoring visits to inspect sensitive habitats, hydrology, erosion, exotic plant species, exotic animal species, as well as fencing, gates, signs, and lighting. ▪ Documented incidental CAGN observations. ▪ Monitored for unauthorized access and entry, public use, or habitat damage. ▪ Monitored erosion. ▪ Monitored bare area located along the eastern boundary of the northern parcel and the area was seeded in December 2022; however, seeded species did not establish. ▪ Conducted targeted removal of broad-leaved weed species such as mustard and Russian thistle. ▪ Removed trash where necessary.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
Paseo del Norte Preserve	**Urban Corps of San Diego County**	▪ Quarterly site visits to monitor sensitive species and habitat condition, identify invasive non-native species, conduct photo monitoring; monitor and remove trash and encroachment, and repair signs/fencing. ▪ Removed trash as necessary. ▪ Repaired signs as needed. One of the three signs along Paseo Del Norte was missing, ordered a replacement and two additional signs for fencing along 6125 Paseo Del Norte parking lot. ▪ Removed invasive plant species bi-annually and as needed. Removed crown daisy from along the western border shared with the Caltrans easement. Trimmed weeds overhanging the sidewalk along Paseo Del Norte. ▪ Completed annual report.
Poinsettia Place Preserve	**Urban Corps of San Diego County**	▪ Performed annual biological monitoring to monitor rare plant populations and habitat condition, identify invasive non-native species, and conduct photo-documentation. ▪ Conducted annual Nuttall's scrub oak monitoring: mapped general distribution and assessed condition and degree of disturbance to habitat. ▪ Conducted annual wart-stemmed ceanothus monitoring: mapped general distribution and assessed condition and degree of disturbance to habitat. ▪ Conducted annual summer holly (*Comarostaphylis diversifolia* ssp. d*iversifolia*) monitoring: mapped general distribution and assessed condition and degree of disturbance to habitat. ▪ Conducted quarterly general site monitoring to monitor and remove trash/debris, report human encroachment, check on and repair signs/fencing, and monitoring compliance with the Restrictive Covenant. ▪ Removed invasive plant species including acacia, Crown Daisy, and Mustard spp. ▪ Removed trash as needed. ▪ Completed annual report.
Poinsettia Station Vernal Pools	**City of Carlsbad (Dudek/ Habitat Restoration Sciences)**	▪ Conducted vernal pool indicator plant surveys. 16 vernal pool indicator species observed in 2023 survey, 4 of which are special status. ▪ Assessed vernal pool sensitive species populations. ▪ Assessed non-native plant populations for management. ▪ Conducted weed control and removal throughout the preserve. Little to no weed cover left following restoration activities. ▪ Trimmed vegetation along the southern end of the trail. ▪ Developed interpretive signage for the preserve.
Quarry Creek Preserve	**San Diego Habitat Conservancy**	▪ Conducted monthly patrols to document biodiversity of the site and changes in habitat composition, remove trash, check and repair fencing and signs with damage, and assess the need for remedial measures. Conducted supplemental site visits to prepare for additional fence installation and restoration, perform and monitor maintenance activities, check for trespasser activity, and host volunteer cleanups.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Coordinated with Black Sage Environmental (BSE) to focus on security issues and threats to the habitat such as illegal or unauthorized activities, dumping, vandalism and graffiti, human intrusion, formation of trails, and increases in invasive plant species. ▪ Documented results of monthly patrols by keeping a monitoring log of site conditions. ▪ Focused maintenance efforts on security patrols and trash removal. ▪ Conducted hand removal of stinkwort, stinknet (*Oncosiphon piluliferum*), castor bean, mustard, and Cape ivy (*Delairea odorata*) during quarterly patrols. ▪ Contracted with HELIX and East County Transitional Living Center (ECTLC) to perform invasive plant and trash removal. focused on castor bean, poison hemlock (Conium maculatum), black mustard, stinkwort, Mexican fan palm, and fennel. ▪ Reported instances of trespassing with the City of Carlsbad Police Department, City of Oceanside Police Department, the City of Oceanside Code Enforcement. ▪ Coordinated with the Cities and shopping center management and tenants and concerned neighbors regarding trespassing. ▪ Installed 962 linear feet of wrought iron fencing in along the southern boundary of the Oceanside portion, including two gates. Preserve signs added to the two gates. ▪ Reached out to Carlsbad PD and BSE to request additional patrols following resident's reports of suspicious activity. ▪ Added a sign, which was immediately removed by trespassers. ▪ Repaired a portion of the wrought iron fencing installed earlier in the year. ▪ Replaced lock and chain on north gate. ▪ Reported damage to fences to shopping center property manager and CDFW for repairs. ▪ Performed general presence/absence surveys for CAGN, LBVI, white-tailed kite (*Elanus leucurus*; WTKI), yellow warbler (*Setophaga petechia*; YEWA), and yellow-breasted chat (*Icteria virens*; YBCH). CAGN, LBVI, YEWA, YBCH, and Monarch butterfly (*Danaus plexippus*) observed. ▪ Led interns from various academic institutions and numerous volunteers on SDHC patrol visits to remove invasive plants and trash, clean graffiti, and inspect the general health of the habitat. ▪ Conducted erosion control. ▪ Coordinated with the San Luis Rey Band of Luiseño Mission Indians (Tribe) regarding implementation of the El Salto Falls Management Plan. ▪ Conducted surveys for animal pest species, such as PSHB, Argentine ants (*Linepithema humile*), brown-headed cowbirds (BHCO). ▪ Partnered with Preserve Calavera and the City of Oceanside to host two volunteer cleanups along Buena Vista Creek.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Met with DUDEK to assess potential for native habitat restoration. ▪ Reached out to CDFW for further actions regarding poison bait stations placed along the Preserve boundary by the HOA. ▪ Attended quarterly preserve managers' meetings with the City of Carlsbad to coordinate with other neighboring preserve managers, as well as the annual City of Carlsbad workshop for the Carlsbad HMP. ▪ Inspected for Conservation Easement Compliance and increased security in the area of the two CEs. ▪ Provided HOA brochure.
Rancho La Costa Preserve	**Center for Natural Lands Management**	▪ Conducted coastal sage scrub community assessments. ▪ Documented incidental observations of CAGN. ▪ Conducted least Bell's vireo surveys – no LBV observed during surveys; however, LBV have been incidentally observed and documented. ▪ Conducted Argentine ant presence/absence surveys. ▪ Conducted wildlife movement monitoring – detected southern mule deer (*Odocoilus hemionus fuliginatus*) and coyote at key movement pinch points. ▪ Conducted San Diego thornmint monitoring – 1,454 individuals were detected. ▪ Monitored thread-leaved brodiaea index plots – 23.6% of TLB flowered. ▪ Censused flowering individuals of Orcutts brodiaea – 3,000 flowering individuals. ▪ Assessed/counted Orcutts harzardia – 135 OH individuals. ▪ Revisited transects established following the 2014 Poinsettia fire. ▪ Documented incidental observations of sensitive wildlife during biological surveys and/or management activities. Observations included: western toads (*Anaxyrus boreas*), western spadefoot toad (*Spea hammondii*), and Baja California tree frogs (*Pseudacris hypochondriaca*). ▪ Harmony Grove Partners Association observed and noted flora and fauna, completed sensitive species surveys. ▪ Removed thousands of invasive non-native species, Ward's Weed, stinkwort, fennel, and Veldt grass (*Erhardta calycina*) using chemical and mechanical methods. ▪ Monitored and maintained all brow ditches and areas of concern for erosion. ▪ Cleared fuel zones. ▪ Monitored and completed reporting for conservation easements—no unresolved issues and no easement violations were noted or reported to the landowner. ▪ Conducted native grassland restoration -- maintained coastal sage scrub demonstration garden, removed hundreds of fennel, installed ~140 grassland plants adjacent to Gibraltar Street in collaboration with Preserve Calavera and Coastal Academy.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Maintained trails -- maintained water bars along trails, worked with volunteers to install gravel along sections of Copper Creek trail that flooded during January-March, worked with the San Diego Mountain Bike Association (SDMBA) on trail maintenance at Denk Mountain. ▪ Maintained 10+ kiosks. ▪ Conducted patrols multiple times a week. ▪ Established volunteer newsletter and first Friday volunteer events. ▪ Installed/replaced signage as necessary – "No swimming" signs installed to deter trespass into San Marcos Creek. ▪ Completed annual stewardship plan, budget, and report. ▪ Maintained database. ▪ Completed reporting for Harmony Grove Partners Association portion of Copper Creek.
Sage Creek High School Preserve	**San Diego Habitat Conservancy**	▪ Conducted quarterly patrols to document biodiversity of the site, changes in habitat composition, remove trash, remove/map invasive plant species, look for signs of trespass, and assess the need for remedial measures. ▪ Documented plant and animal species directly observed or inferred. ▪ Documented results of quarterly patrols by keeping a monitoring log of site conditions. ▪ Contracted with Lost Sage Restoration Ecology LLC (LSRE), East County Transitional Living Center (ECTLC), and Black Sage Environmental (BSE) to treat invasives. Focus on black mustard, castor bean, fennel, and Russian thistle. ▪ Maintained documentation of all CAGN observed during patrols. ▪ Documented minor erosion. ▪ Coordinated with a student and staff from Sage Creek High School and Rosanne Humphrey from the City of Carlsbad to discuss the potential for restoration with native plant species. ▪ Attended quarterly preserve managers' meetings with the City for coordination with other neighboring managers, as well as the annual workshop for the City's Habitat Management Plan.
Sonata Preserve	**San Diego Habitat Conservancy**	▪ Conducted monitoring visits to document native and non-native plant species, BRFI and BROR, wildlife species detected, overall site performance, erosion and sedimentation issues, hydrology and water quality issues, trash, illegal dumping, unauthorized human use, signage and fencing damage, and to identify remedial measures or adaptive management when necessary to maintain the quality of the site's habitat. ▪ Documented results of site visits by keeping a monitoring log of site conditions. ▪ Installed three signs along the fence boundary on Camino De Los Coches. ▪ Documented and mapped invasives detected onsite including black mustard, shortpod mustard, bristly oxtongue, milk thistle, Bermuda buttercup, tocalote, cheeseweed (*Malva parviflora*) and prickly lettuce. ▪ Contracted with Black Sage Environmental (BSE) and/or East County Transitional Living Center (ECTLC) to control invasives.

Summary of HMP Management and Monitoring Activities, Nov 2022–Oct 2023
continued

Preserve Area	Management Entity	Management and Monitoring Activities
		▪ Assessed the site for PRFI and BROR. Density of the BRFI was approximately three plants per 0.5 m2 and 28 individuals. BROR was detected at 0.5 plant per 0.5 m2 with a total of 11 plants detected. ▪ Contacted the neighboring Los Coches Village shopping center and Mission Estancia Elementary School and provided informational brochures about the Preserve. ▪ Attended the City's quarterly managers meetings. ▪ Inspected for CE compliance during monitoring visits. No compliance issues documented. ▪ Installed 3 signs along fence boundary on Camino De Los Caches.
Southern Preserve	**Urban Corps of San Diego County**	▪ Performed biannual biological monitoring to assess condition of non-native grassland and Diegan coastal sage scrub habitats, identify invasive non-native species, document sensitive species observations, and conduct photo monitoring. ▪ Monitored sensitive plant populations (San Diego goldenstar and California adolphia) annually. ▪ Conducted quarterly monitoring of wildlife movement. ▪ Performed monthly site patrols to monitor and remove trash, report any OHV activity, check on and repair signs/fencing, and enforce rules such as staying on designated trails and keeping dogs on a leash. ▪ Removed invasive species on a quarterly/as needed basis, primarily artichoke thistle and black mustard. ▪ Removed trash on a quarterly/as needed basis. ▪ Replaced/repaired signs and fencing as needed. The lock on the gate to the water easement road which is maintained by the Leucadia Water District continues to be cut off. ▪ Coordinated with HOA at least annually. ▪ Completed annual report.
Multiple areas	**Preserve Calavera**	▪ Supported community education on native plants, wildlife, and preserve management issues at various fairs and outreach events focusing on pollinators. ▪ Continued several Citizen Scientist projects, including water quality testing, grunion reporting, and King tide events. ▪ Recruited high school students to participate in citizen science projects. ▪ Increased public awareness of natural areas through California Naturalist certification class.

Appendix C

Triennial HMP Biological Monitoring Report

(click on the title for a link to the report)

January 2024

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Appendix D

City of Carlsbad HMP Restoration Opportunities GIS Analysis

10/11/2023

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ESA

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memorandum

date	October 11, 2023
to	Rosanne Humphrey, City of Carlsbad
cc	Adrienne Lee, Environmental Science Associates
from	Jaclyn Anderson, Environmental Science Associates
subject	City of Carlsbad Restoration Opportunities GIS Analysis Memorandum

Introduction

At the request of the City of Carlsbad (city), Environmental Science Associates (ESA) conducted a geographic information systems (GIS) analysis to (1) identify vegetation communities within the city's Habitat Management Plan (HMP) hardline preserve areas that provide restoration opportunities and (2) determine whether there has been any change in vegetation between the baseline HMP vegetation mapping and current vegetation throughout the city's HMP preserve system. This memorandum summarizes the methodology and results of these analyses.

Methodology

Data Assembly

Data was obtained from the city and downloaded from publicly available sources (**Table 1**).

Composite Vegetation Layer

A composite vegetation layer was created to establish current conditions for the HMP preserve system based on the best available information. A data hierarchy was established as follows using these three datasets: (1) *HMP Current Vegetation*, (2) *Regional Vegetation for the Western San Diego County* (AECOM 2012), and (3) *Regional Vegetation* (SanGIS) (Table 1).

The Holland/Oberbauer vegetation classification system (Holland) was used as the default mapping unit, as this is the system used in the HMP. A new dataset was merged using these three datasets and clipped to the HMP preserve system boundaries. Holland classification codes were pulled into a new field from the appropriate data source, then checked and corrected to ensure consistency. Using data from the site inspection program of unmanaged preserves collected by ESA in 2022 and 2023, some vegetation classifications were adjusted based on field notes.

TABLE 1
DATA SOURCES

Data	Description	Source
Composite Vegetation Layer		
HMP Current Conditions	HMP preserve boundaries and preserve information including preserve name, management plan, and management type	City of Carlsbad, 2023
HMP Current Vegetation	Vegetation mapped by land managers within managed preserves (not city-wide)	City of Carlsbad, 2023
Regional Vegetation for the Western San Diego County (AECOM 2012)	Vegetation mapped by AECOM in 2012 (not city-wide)	SanGIS, 2023
Regional Vegetation (SanGIS)	County-wide vegetation mapped by San Diego County	SanGIS, 2023
HMP Site Inspection Program Data	Vegetation documented during ESA site inspections on unmanaged preserves	ESA, 2022–2023
Potential Restoration Opportunities (additional inputs)		
Local Facilities Management Zones (LFMZ)	Zone numbers assigned throughout the city	City of Carlsbad
California Coastal Zone Boundary	Coastal zone defined by California Coastal Commission, coastal portion of the city	California Coastal Commission, 2023
Vegetation Change Analysis (additional inputs)		
HMP Original Vegetation	Vegetation mapped by San Diego County in 1999, used for HMP baseline vegetation	City of Carlsbad
Other Data		
HMP Current Species	Species occurrence data from HMP land managers (1999–2021)	City of Carlsbad
MHCP Species	Species occurrence data from the MHCP (data from 1982–2000)	City of Carlsbad

NOTES: HMP = Habitat Management Plan; LFMZ = Local Facilities Management Zones; MHCP = Multiple Habitat Conservation Program.

Potential Restoration Opportunities Analysis

At the request of the city, potential restoration opportunities were evaluated within Existing Hardline, Proposed Hardline, and Standards Areas, which consist of areas that are currently conserved or identified for future conservation. Restoration opportunities could be used as mitigation for project impacts, if allowed by the underlying landowner, or to improve the overall condition of the preserve system.

Existing Hardline areas consist of established preserves, including California Department of Fish and Wildlife Ecological Reserves, within the HMP preserve system. Existing Hardline areas established prior to adoption of the HMP generally do not have active land managers. All post-HMP preserves are actively managed and vegetation is remapped by the land manager every five years. Proposed Hardline and Standards Areas are undeveloped areas within the HMP that are anticipated to become established preserves within the HMP preserve system in the future. Proposed Hardline areas have pre-determined conservation boundaries. Standards Areas do not have pre-determined conservation boundaries; therefore, future preserves must be established following

specific standards based on the appropriate City of Carlsbad Local Facility Management Zone. Potential restoration opportunities within the HMP were determined using the following process.

- **Mitigation Vegetation Type (Restoration Opportunities)**. With respect to mitigation, the term "restoration" may be in the form of *enhancement*, *restoration*, *substantial restoration*, or *creation*. In this context, enhancement and restoration generally consist of improving the quality of existing habitat types, whereas substantial restoration or creation consist of converting landcover types with little or no habitat value to high quality habitat. It is difficult or impossible to tell the quality of existing habitat from aerial maps; therefore, most of the areas identified as restoration opportunities are likely to be degraded enough to be used as *creation* or *substantial restoration* mitigation credit. Areas marked as "Yes" for potential mitigation (i.e., restoration opportunities) include Disturbed Habitat, Unvegetated Habitat, Non-native Vegetation, Ornamental, Agriculture, Tamarisk Scrub, Non-native Riparian, Eucalyptus Woodland, Non-native Grasslands, Disturbed Coastal Sage Scrub, and Disturbed Wetland. Additional potential restoration opportunities identified by the city were also marked as "Yes." All other areas were considered to not have potential restoration opportunities and were marked as "No."

  It should be noted that most of the mapped areas in unmanaged preserves have not been ground-truthed. In addition, when evaluating areas for potential mitigation sites, the following areas should be removed from consideration: formal trails, fuel management zones, areas adjacent to roadways, areas that are very small and isolated, areas within maintenance easements, and areas that have already been used as mitigation for a project.

- **Local Facilities Management Zones**. The Local Facilities Management Zones and the Coastal Zone were added as fields, allowing the city to search for restoration opportunities to fulfill mitigation requirements within these zones.

- **Preserve management**. Fields were added indicating whether an HMP hardline preserve is managed or unmanaged for further filtering. Preserves that do not have HMP-required management (e.g., preserves established prior to the final adoption of the HMP in 2004 and not required to have a funded land manager or preserves established during the transition period of 2004–2005 that allowed for reduced funding requirements) are considered "Unmanaged" and all other management types are considered "Managed."

- **Upland or Wetland**. Areas were marked as either "Upland" or "Wetland" mitigation types based on vegetation classification as seen in **Table 2**. The following vegetation categories defined by the city's HMP were used to indicate "Upland" mitigation: Coastal Sage Scrub, Chaparral, Grassland, Woodland, Disturbed, and Agriculture. The following vegetation categories were used to indicate "Wetland" mitigation: Vernal Pool, Marsh, Riparian, and Non-Native Wetland .

- **Filterable results**. The above referenced classifications were standardized as fields to allow for results filtering and data searches.

TABLE 2
MITIGATION OPPORTUNITY BY HOLLAND/OBERBAUER CLASSIFICATION

General Vegetation Type	Specific Vegetation Types (Including Holland Code)	Mitigation Opportunity*	
		Restoration/ Enhancement	Creation/Subst. Restoration
Uplands			
Coastal Sage Scrub	32000 Coastal Scrub, 32400 Maritime Succulent Scrub, 32500 Diegan Coastal Sage Scrub, 32510 Diegan Coastal Sage Scrub: Coastal form, 32530 Diegan Coastal Sage Scrub: Baccharis-dominated	x	
Chaparral	37000 Chaparral, 37120 Southern Mixed Chaparral, 37200 Chamise Chaparral, 37900 Scrub Oak Chaparral, 37C30 Southern Maritime Chaparral, 37G00 Coastal Sage-Chaparral Transition	x	
Native Grassland	42000 Valley and Foothill Grassland, 42100 Native Grassland, 42110 Valley Needlegrass Grassland, 42120 Valley Sacaton Grassland, 42130 Saltgrass Grassland, 42300 Wildflower Field	x	
Oak Woodland	71100 Oak Woodland, 71160 Coast Live Oak Woodland, 71180 Engelmann Oak Woodland	x	
Non-Native Grassland	42200 Non-Native Grassland, 42210 Non-Native Grassland: Broadleaf-Dominated		x
Eucalyptus Woodland	79100 Eucalyptus Woodland		x
Disturbed Habitat	11000 Non-Native Vegetation, 11300 Disturbed Habitat, 11300 Ornamental		x
Agriculture	18000 General Agriculture, 18100 Orchards and Vineyards, 18200 Intensive Agriculture - Dairies, Nurseries, Chicken Ranches, 18300 Extensive Agriculture - Field/Pasture, Row Crops, 18310 Field/Pasture, 18320 Row Crops		x
Wetlands			
Vernal Pool	44000 Vernal Pool	x	
Marsh	45320 Alkali Seep, 52120 Southern Coastal Salt Marsh, 52300 Alkali Marsh, 52310 Cismontane Alkali Marsh, 52400 Freshwater Marsh, 52410 Coastal and Valley Freshwater Marsh	x	
Riparian Forest and Woodland	61300 Southern Riparian Forest, 61310 Southern Coast Live Oak Riparian Forest, 61320 Southern Arroyo Willow Riparian Forest, 61330 Southern Cottonwood-Willow Riparian Forest, 62000 Riparian Woodlands, 62500 Southern Riparian Woodland	x	
Riparian Scrub	63000 Riparian Scrub, 63300 Southern Riparian Scrub, 63310 Mule Fat Scrub, 63320 Southern Willow Scrub	x	
Non-Native Wetland	11200 Disturbed Wetland, 13000 Unvegetated Habitat, 63810 Tamarisk Scrub, 65000 Non-Native Riparian		x

* It is not possible to distinguish between disturbed and high quality habitat; therefore, polygons marked with "Yes" for restoration or mitigation opportunity are generally candidates for creation and substantial restoration, rather than enhancement or restoration.

Vegetation Change Analysis

Using the composite vegetation layer, the HMP baseline vegetation layer was clipped and an intersect was created, adding two fields that represent the comparison between the two vegetation layers. A field was then added indicating whether vegetation was different between the two datasets. The classifications were standardized as fields to allow for results filtering.

Results

The following is a results summary.

- **Composite vegetation layer**. The composite vegetation layer resulted in 60 vegetation types throughout the HMP hardline preserve and standard areas. A single vegetation field describing the Holland classification was created for consistency between the three vegetation layers used when creating this layer. Standardized fields are provided in **Table 3**.
- **Potential restoration opportunities filter**. The potential restoration opportunities filter is a data field within the composite vegetation layer. There are approximately 910 acres of vegetation with potential for restoration opportunities within HMP hardline preserve areas (**Figure 1**). Of these 910 acres, approximately 846 acres are upland restoration opportunities, 59 acres are wetland restoration opportunities, and 4 acres are neither upland nor wetland. The standardized fields allow the user to filter results to display and categorize potential restoration opportunities (Table 3).
- **Vegetation change layer**. Approximately 3,966 acres of vegetation have changed since the city's original mapping was completed in 1999 (**Figure 2**). Of these acres that changed, 999 acres changed from a non-native vegetation type to a native vegetation type and 63 acres changed from native vegetation type to developed. The standardized fields allow the user to identify vegetation change by preserve (**Table 4**).

ESA will provide the two resulting GIS layers from the Restoration Opportunities and Historic Vegetation Overlay within a geodatabase for the city to access and use for further analysis.

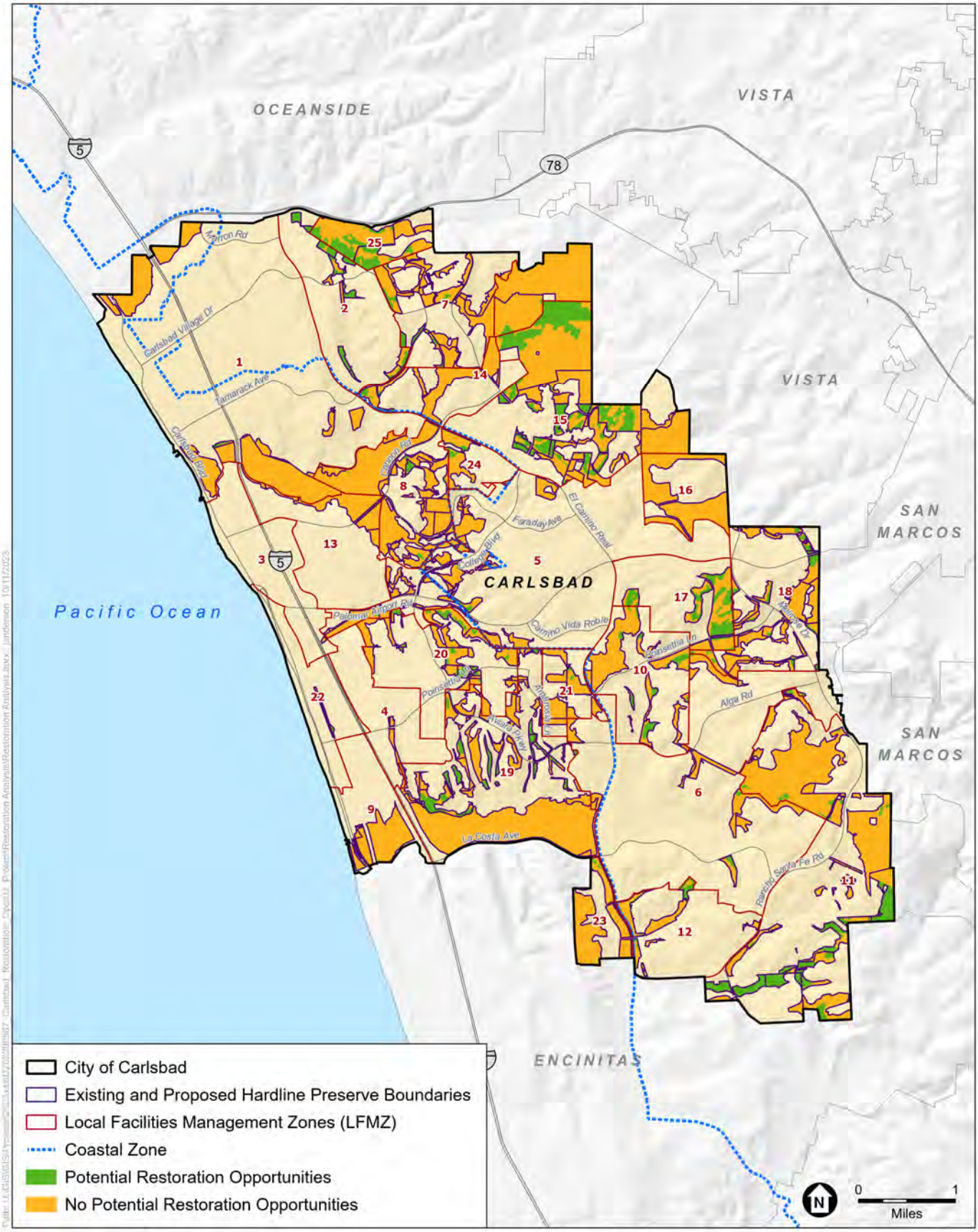
TABLE 3
COMPOSITE VEGETATION AND RESTORATION OPPORTUNITIES ANALYSIS FIELDS

Field Name	Description
Composite Vegetation Layer	
Preserve Name	HMP Preserve Name
Current Habitat Management Plan	Current boundaries of the HMP Existing Hardline, Proposed Hardline and Standards Areas
Holland 2023	Resulting Holland/Oberbauer vegetation classification of composite vegetation layer
Holland Source	Vegetation source based on established hierarchy
Vegetation Comments	Indicates if alternative to hierarchy was used to determine vegetation type
Potential Restoration Opportunities (additional fields)	
Mitigation Vegetation Type	Marked Yes or No for whether vegetation type is considered for restoration or not*
Local Facilities Management Zone	LFMZ number the vegetation falls within
Within Coastal Zone	Marked Yes or No if vegetation type falls within the coastal zone
Managed or Unmanaged	Marks whether the preserve is managed or unmanaged
Upland or Wetland	Marked Upland or Wetland based on vegetation type

* It is not possible to distinguish between disturbed and high quality habitat; therefore, polygons marked with "Yes" for restoration or mitigation opportunity are generally candidates for creation and substantial restoration, rather than enhancement or restoration.

TABLE 4
HISTORIC VEGETATION OVERLAY ANALYSIS FIELDS

Field Name	Description
Preserve Name	HMP Preserve Name
Holland 1999	Baseline vegetation mapping of the HMP using Holland/Oberbauer vegetation classification
Simplified Holland 1999	Simplified vegetation categories for ease when used for analysis
Holland 2023	Resulting Holland/Oberbauer vegetation classification of composite vegetation layer
Simplified Holland 2023	Simplified vegetation categories for ease when used for analysis
Change	Marked Yes or No if the composite vegetation layer and original mapping Holland/Oberbauer classifications are different
Change Quality	Indicator of change quality between 1999 and 2023 mapping as directed by the city
Notes About Changes	Notes for specific cases of change for internal use by the city

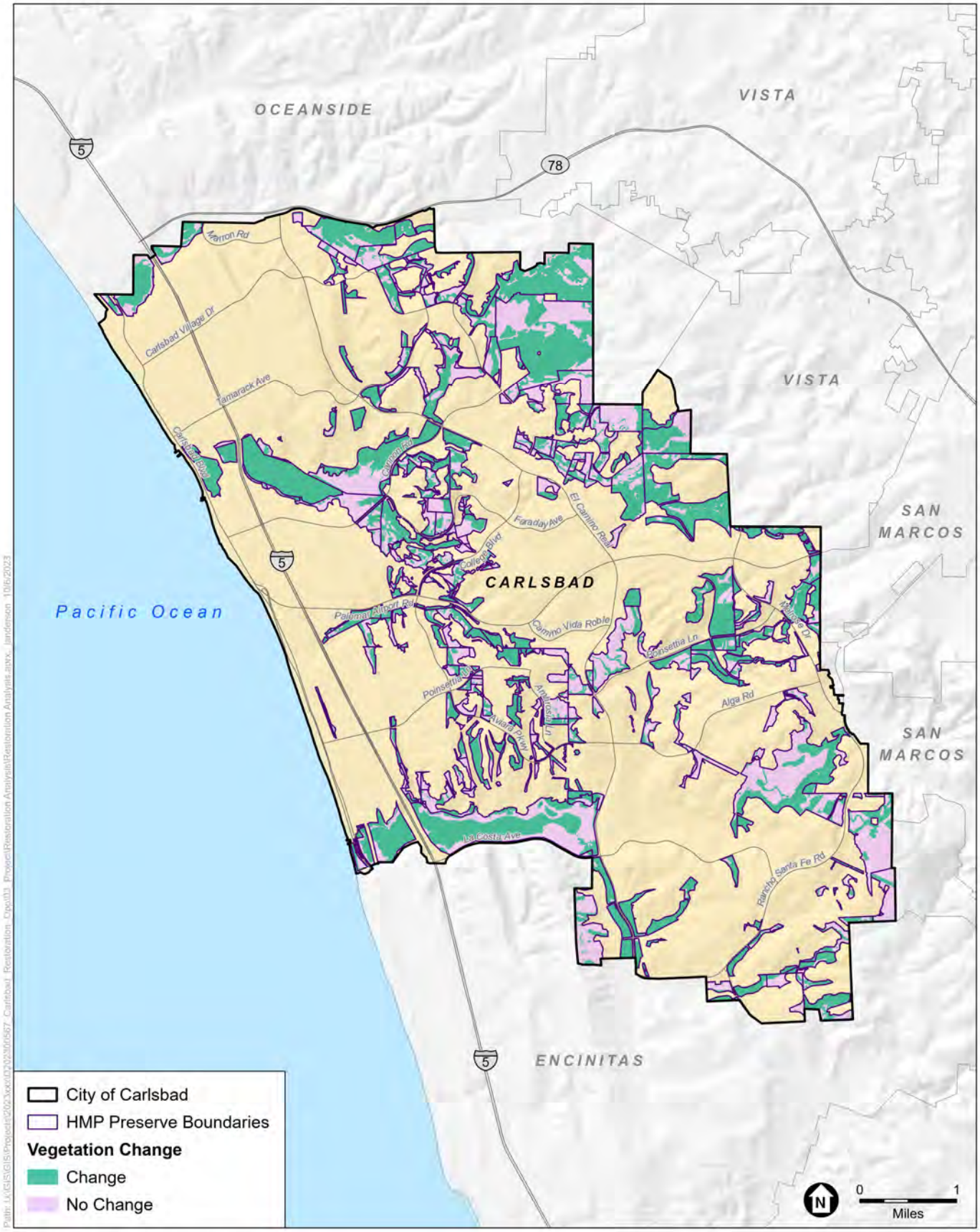


SOURCE: SanGIS, 2023; City of Carlsbad, 2023, California Coastal Commission, 2023.

City of Carlsbad Restoration Opportunities GIS Analysis

Figure 1
Potential Restoration Opportunities

ESA



SOURCE: SanGIS, 2023; City of Carlsbad, 2023.

City of Carlsbad Restoration Opportunities GIS Analysis

Figure 2
Vegetation Change Analysis

ESA

Appendix E

Carlsbad HMP
Pilot Adaptive Management Project Report

December 2023

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ESA

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memorandum

date	December 29, 2023
to	Rosanne Humphrey, City of Carlsbad
cc	Jason Allen, Black Sage Environmental, Inc.
from	Adrienne Lee, Environmental Science Associates
subject	HMP Unmanaged Preserves: 2023 Adaptive Management

Introduction

The City of Carlsbad (city) adopted the Habitat Management Plan (HMP) in November 2004 as a commitment to conserve the full range of native habitats and species throughout the city and maintain functional wildlife corridors through its implementation. Most of the city's current HMP preserve system (70 percent) is under long-term management through various land managers. The remaining preserves receive minimal or no management and are referred to as "unmanaged preserves" (**Figure 1**; see figures in **Attachment A**). Typically, the unmanaged preserves were (1) established prior to the final adoption of the HMP and were not required to have a funded land manager, or (2) established during the transition period of 2004–2005 that allowed for reduced funding requirements. The city has no obligation to dedicate resources to monitor or manage the unmanaged preserves per the HMP Implementing Agreement. However, with the HMP preserve system almost fully built out, the city began evaluating the status of unmanaged preserves to identify threats and management priorities, and to determine if it would be feasible to implement high-priority adaptive management using available resources. This effort resulted in the development of the site inspection program and pilot adaptive management project by the city and Environmental Science Associates (ESA) (ESA 2023). The status of unmanaged preserves and results of the site inspection program are described in the 2019 and 2023 memorandums prepared by ESA (ESA 2019; ESA 2023). The results of the first year of the pilot adaptive management project are described in this memorandum.

Resources were available in 2023 to implement Year 1 of the pilot project to conduct and track focused management activities. Two unmanaged preserves, Rancho Carrillo Master Association and The Ranch Preserves, were chosen for the management pilot program (Figure 1). Implementing management at both unmanaged preserves will support ongoing monitoring and coordination efforts within the city and the greater San Diego region. The specific management targets in the pilot project were selected based on the following priorities: rarest species and vegetation communities, highly vulnerable plant populations, populations that are high priority both locally (HMP) and regionally, populations that are being actively monitored by the regional long-term Rare Plant Inspect and Manage monitoring program, good relationship with the Homeowners

Association (HOA) landowner, preserve with current right-of-entry authorization, and feasible management location (relatively easy to access).

- **Rancho Carrillo Master Association Preserve** was selected because it supports vulnerable populations of two special-status plant species—San Diego thornmint (*Acanthomintha ilicifolia*) and thread-leaved brodiaea (*Brodiaea filifolia*), both of which are state endangered and federally threatened. Permanent monitoring plots were established for both species in 2017 and are monitored on an annual and biennial frequency, respectively, through the regional long-term Rare Plant Inspect and Manage monitoring program by the San Diego Management and Monitoring Program (SDMMP).Based on past monitoring results, invasive non-native plant species were identified as one of the greatest threats to the persistence of these populations; therefore, management through focused invasive non-native plant species removal is critical. It is expected that subsequent monitoring will document a reduction in non-native plant cover and show an improvement in the growth and vigor of these populations.
- **The Ranch Preserve** was selected because it supports a large patch of sensitive native grassland habitat. It has been estimated that native grasslands in California have been reduced by 99 percent (California Native Grasslands Association 2023). Native grasslands are able to remove and store vast amounts of atmospheric carbon, provide soil stability, capture and filter water, prevent erosion and flooding, and support a high biodiversity, including soil microbes, plants, invertebrates, and vertebrates. The target area was identified by ESA and recommended for enhancement as part of the city's site inspection program. The greatest threat to the native grassland habitat is encroachment of invasive non-native artichoke thistle (*Cynara cardunculus*) and other invasive non-native forb and grass species. An advantage of working in The Ranch Preserve is that the HOA recently hired RECON Environmental, Inc., (RECON) to conduct quarterly monitoring visits and implement minor habitat enhancement, such as weed control targeting artichoke thistle. The city (through ESA) is partnering with the HOA and RECON to complement each other's weed abatement efforts.

Methodology and Results

The management pilot program included identifying management areas, developing field form to track management activities, and implementing management.

Identifying Management Areas

Rancho Carrillo Master Association Preserve

The one San Diego thornmint permanent monitoring plot and the two thread-leaved brodiaea permanent monitoring plots being actively monitored by SDMMP were the management targets at Rancho Carrillo Master Association Preserve. Monitoring consists of:

- Mapping the perimeter of the current extent of the occurrence and estimating or counting and recording the number of plants within the current mapped extent.
- Conducting photo monitoring by taking a picture from the previously established permanent photo point facing toward the center point of the plot.
- Conducting a habitat assessment within the permanent monitoring plot using the most recent MSP Rare Plant Occurrence Monitoring Form to identify and record number of target plants per plot; phenological stages of plants; evidence of herbivory, disease, and stunted growth; and associated species.
- Conducting a threats assessment within the current maximum extent of the occurrence and adjacent 10-meter buffer.

- Providing management recommendations for the site using the most recent MSP Rare Plant Occurrence Monitoring Form.

ESA reviewed the management recommendations provided in past Rare Plant Inspect and Manage monitoring results and coordinated with lead surveyor Jessie Vinje for more specific management recommendations, including timing of management and species to target. Based on her feedback, the management area delineated for San Diego thornmint encompassed the San Diego thornmint population on-site. A management buffer was not included due to the presence of Baja California oatgrass (*Sphenopholis interrupta* ssp. *californica*), a recently rediscovered rare native grass species thought to be extinct for over 134 years (San Diego Natural History Museum 2020), adjacent to the San Diego thornmint population. The management area delineated for thread-leaved brodiaea was the population's maximum extent.

The Ranch Preserve

The native grassland habitat identified and mapped during the site inspection survey was the management target at the Ranch Preserve. This sensitive habitat has the possibility to support rare plant species such as San Diego thornmint and thread-leaved brodiaea due to presence of suitable soils and common associated plant species; however, it is surrounded by non-native grassland habitat and has encroaching invasive non-native forb and grass species. Management of the area focused on the native grassland habitat area and a large portion of the surrounding non-native grassland habitat. Routine communication with RECON occurred from January through August to coordinate management targets, timing, and efforts.

Field Form Development

Electronic field forms supported by mobile data collection applications ArcGIS Field Maps and Survey123 were developed for use during management implementation. The ArcGIS Field Map developed for the site inspection program was used for tracking management areas. Survey123 forms were developed for ESA biologists and Black Sage Environmental, Inc. (Black Sage) staff to document pre-, during, and post-management conditions within management areas. Specific management details are provided below. Management forms are provided in **Attachment B**.

Management Implementation

Per the city's Integrated Pest Management (IPM) Plan, health conscious and environmentally sensitive pest management strategies should be implemented (City of Carlsbad 2017). Organic herbicides are an allowable option compliant with the IPM Plan; however, discussions with Jessie Vinje and ESA restoration biologist Mark Dodero suggested that organic herbicide usage may also impact rare plant species due to their broad-scale, non-selective, and caustic nature. Additionally, organic herbicides generally need to be applied in large quantities with repeat applications to be effective as they lack residual effects and can be very expensive (UC Nursery and Floriculture Alliance 2023). Also, they are more effective on smaller, younger weeds, while those in the target management areas are larger, established plants (UC Nursery and Floriculture Alliance 2023). Additionally, there are concerns that organic herbicides can potentially change soil chemistry, which can negatively impact the sensitive soil conditions required for rare plants and sensitive vegetation communities. Therefore, manual and mechanical removal methods were prioritized over organic and synthetic herbicides as the management methods.

Black Sage conducted focused management with oversight from ESA restoration biologist Mark Dodero. Mark met Black Sage on-site to orient staff, identify and discuss avoidance strategies, and provide management recommendations (**Table 1**).

TABLE 1
2023 MANAGEMENT SUMMARY

Location	Dates	Species/Habitat Benefited	Management Action	Method	Management Area (acres)
Rancho Carrillo Master Association	April 4, 2023	San Diego thornmint	Invasive non-native plant species management	Hand clipping	0.01
Rancho Carrillo Master Association	April 24–27, 2023 July 17 and 27, 2023	Thread-leaved brodiaea	Invasive non-native plant species management	Mechanical removal	7.81
The Ranch	June 13–14, 20, and 22, 2023	Native grassland habitat	Invasive non-native plant species management	Weed whacking and mechanical removal	3.01
				Total	**10.83**

All biomass was manually collected (raking when necessary), bagged and bundled, hauled off-site, and properly disposed of at an approved off-site facility. Specific management by site is as follows.

Rancho Carrillo Master Association Preserve

Due to the overall small size and vegetative status of all plants in the management area, limited number of invasive non-native plant species, and presence of rare Baja California oatgrass, manual removal (e.g., hand-clipping) was prioritized as opposed to mechanical (e.g., weed-whipping) for the San Diego thornmint management area. San Diego thornmint management consisted of carefully hand-clipping target invasive non-native plant species, predominantly tocalote (*Centaurea melitensis*), bristly ox-tongue (*Helminthotheca echioides*), scarlet pimpernel (*Lysimachia arvensis*), and spiny sowthistle (*Sonchus asper*), within and around the San Diego thornmint population, for an approximately 0.01-acre management area (**Figure 2**). This management area encompassed the entire San Diego thornmint population on-site and did not include a buffer due to the proximity and sensitivity of Baja California oatgrass.

Thread-leaved brodiaea management consisted of mechanically cutting target invasive non-native plant species, predominantly artichoke thistle and fennel (*Foeniculum vulgare*), within the maximum extent of the thread-leaved brodiaea population, for an approximately 7.81-acre management area (Figure 2). Tri-blades were used to cut entire artichoke thistle and fennel individuals to reduce the amount of plant fragments needed to be raked and hauled out. If entire individuals were not feasible to cut and remove due to time and budget constraints, flower and seed heads were cut and removed to reduce reproductive success. Approximately 75 percent of the artichoke thistle within the management area was mechanically treated.

The Ranch Preserve

Based on coordination with RECON, city management (implemented by Black Sage and ESA) prioritized dethatching invasive non-native grasses while RECON prioritized treating artichoke thistle. Native grassland habitat management consisted of weed-whacking invasive non-native grasses using string trimmers, within and around the native grassland habitat, for an approximately 3.01-acre management area (**Figure 3**). As time and

budget permitted, large invasive non-native forb species such as artichoke thistle, fennel, short-pod mustard (*Hirschfeldia incana*), and black mustard (*Brassica nigra*) were targeted for mechanical removal using tri-blades. Invasive non-native grass biomass was raked, bagged and bundled, and hauled off-site. Invasive forb species individuals that were cut using tri-blades were hauled out in their entirety to reduce the amount of plant fragments needing to be raked and hauled out. Approximately 90 percent of the invasive non-native grasses and mustards and 5 percent of the artichoke thistle were mechanically treated by Black Sage.

RECON, on behalf of the Ranch HOA, performed weed maintenance targeting artichoke thistle in the same management area on August 29. Artichoke seed heads were cut and then dispersed seeds and seed heads were raked and bagged (approximately 35 50-gallon bags) and removed from the site.

Discussion and Next Steps

Management was consistent with the city's IPM Plan and prioritized manual and mechanical methods over organic and synthetic herbicides. However, many perennial invasive non-native plant species (e.g., artichoke thistle, fennel, mustard) require repeat maintenance due to their deep taproots and ability to resprout. Management consisted of only manual and mechanical removal of invasive non-native plant species, and many target invasive non-native plant species were observed resprouting post-maintenance. Synthetic chemical herbicides have been shown to be effective and cost-efficient at successful treatment and eradication of these perennial invasive non-native plant species. Because manual and mechanical management in 2023 was not effective in eradicating the target invasive non-native species and organic herbicides are not recommended to be used in these management areas, prudent use of synthetic chemical herbicides is recommended 2024 to continue management efforts around the sensitive species and habitats within Rancho Carrillo Master Association and The Ranch Preserves. Based on the results of 2023 management, the following next steps were identified:

- Coordinate with Jessie Vinje to determine if 2023 management activities were detected during 2023 Rare Plant Inspect and Manage monitoring that occurred post-management.
- Continue the pilot management program in 2024 to implement Year 2 if resources are available.
- Coordinate with RECON on upcoming weed maintenance activities at The Ranch Preserve. It is recommended that follow-up synthetic herbicide treatment targeting artichoke thistle should occur in April 2024 after artichoke thistle has produced new vegetative growth and before it goes to seed, as was noted in RECON's Quarter 1 Monitoring Report.
- Black Sage will prepare a Pesticide Application Request for the city's approval that documents the lack of effectiveness of 2023 manual/mechanical methods and recommends using more stringent synthetic chemical methods and/or a combination of mechanical and synthetic chemical methods to achieve the requisite purpose. The Pesticide Application Request shall list the recommended synthetic chemical(s) and the proposed usage methods. Any synthetic chemicals would be applied only by a qualified applicator licensed in the State of California in a manner that is least impactful, such as dabbing rather than spraying.
- If the Pesticide Application Request is approved by the city, ESA and Black Sage will implement targeted invasive non-native plant management using manual/mechanical methods and synthetic herbicides to treat and eradicate threats to sensitive San Diego thornmint, thread-leaved brodiaea, and native grassland habitat. Small invasive non-native plants are recommended to be treated with the appropriate synthetic herbicide. Larger invasive non-native plants may require cutting and then dabbing with the appropriate synthetic herbicide for maximum effectiveness. Any synthetic herbicide use would be under the supervision of a qualified botanist to avoid any negative effects to sensitive plant species.

- ESA will provide additional ArcGIS capabilities to Black Sage for more streamlined data collection.
- If mechanical removal is implemented in 2024, all biomass shall be hauled off-site. Based on Year 1 implementation, additional time should be budgeted towards raking, bundling, and hauling biomass off site due to amount of biomass and accessibility of management sites.
- ESA, Black Sage, and the city will continue to coordinate with regional monitoring entities (i.e., SDMMP and Jessie Vinje) and preserve manager RECON on monitoring and management activities within the Rancho Carrillo Master Association and The Ranch Preserves, respectively, to ensure all entities are informed of activities occurring on the preserves, particularly around rare plant species and sensitive habitats.

Attachments

Attachment A – Figures

Attachment B – Management Forms

References

California Native Grasslands Association. 2023. *What is a grassland?* Accessed at: https://www.cnga.org/page-1831102.

City of Carlsbad. 2017. *Integrated Pest Management Plan*. Parks and Recreation Department and Public Works Department. November 2017.

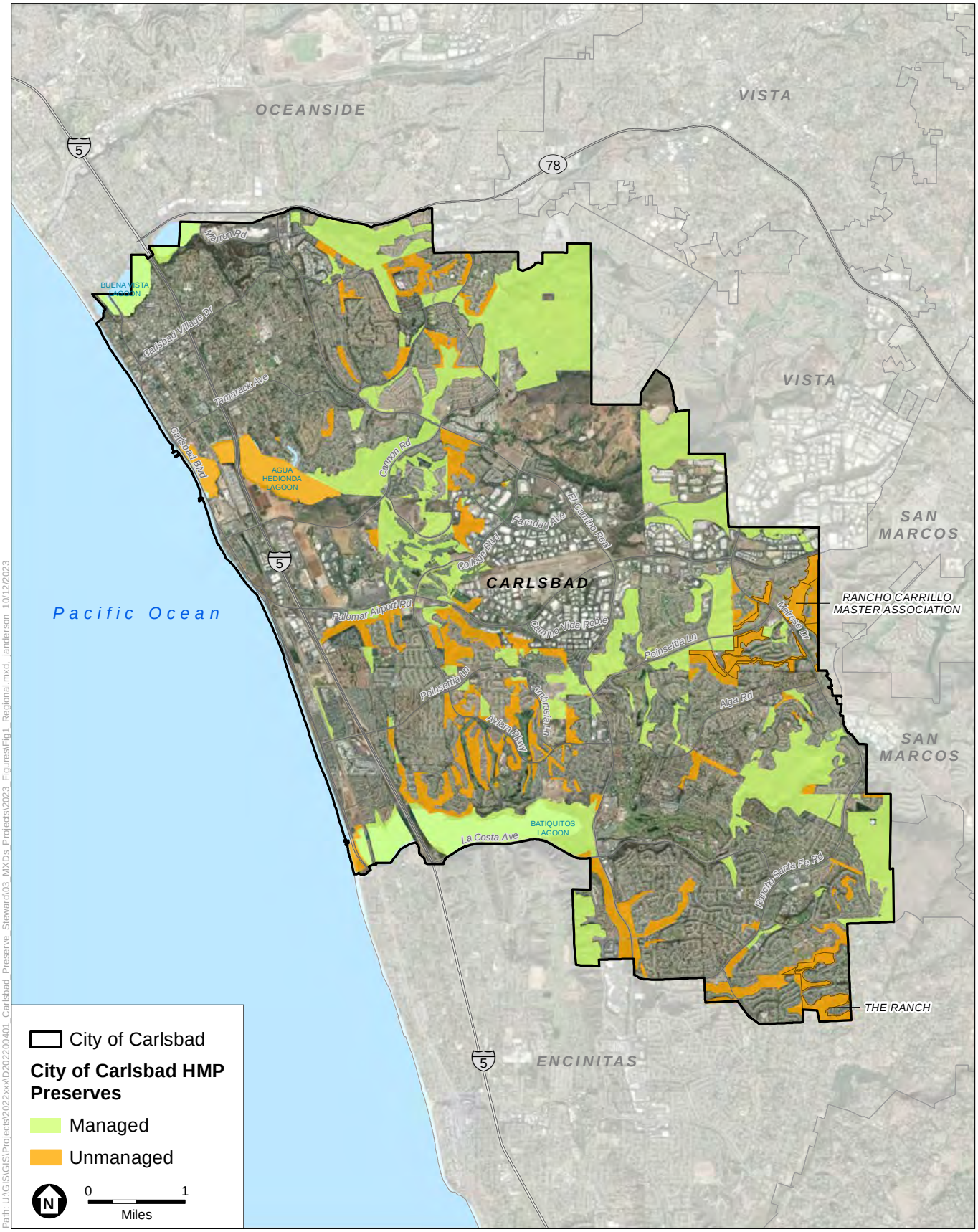
Environmental Science Associates (ESA). 2019. *Current Status of Selected Unmanaged Preserves within Carlsbad Habitat Management Program Preserve System*. November 2019.

ESA. 2023. *HMP Unmanaged Preserves Site Inspection Program 2021–2022 Summary*. January 2023.

San Diego Natural History Museum. 2020. *Rediscovering a "Lost" Plant in San Diego*. Accessed at: https://www.sdnhm.org/blog/blog_details/rediscovering-a-lost-plant-in-san-diego/149/.

UC Nursery and Floriculture Alliance. 2023. *Organic Herbicides – Do They Work?* Accessed at: Organic Herbicides - Do They Work? - UC Nursery and Floriculture Alliance (UCNFA) News (ucanr.edu).

Attachment A
Figures



SOURCE: SanGIS, 2022; City of Carlsbad, 2021.

HMP Unmanaged Preserves: 2023 Adaptive Management Memorandum

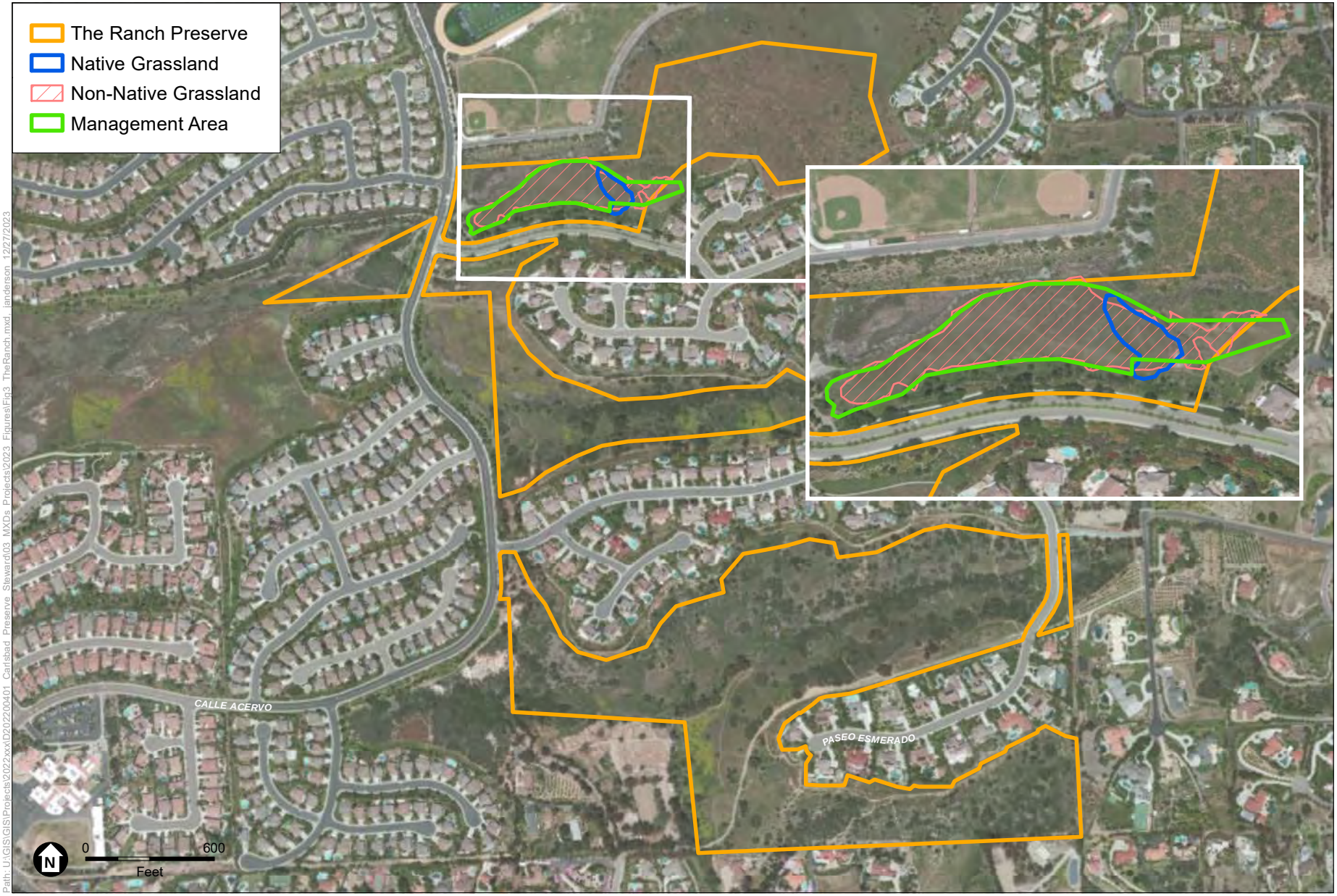
Figure 1
Managed and Unmanaged Preserves in City of Carlsbad

ESA

SOURCE: ESRI, 2023; ESA, 2023.

Figure 2
Rancho Carrillo Master Association Preserve – 2023 Management

ESA



SOURCE: ESRI, 2023; ESA, 2023.

Figure 3
The Ranch Preserve – 2023 Management

ESA

Attachment B
Management Forms