U.S. Fish & Wildlife Service

San Diego Bay National Wildlife Refuge

Sweetwater Marsh and South San Diego Bay Units

Final Comprehensive Conservation Plan and Environmental Impact Statement

Volume I – August 2006

Vision Statement

The San Diego Bay National Wildlife Refuge protects a rich diversity of endangered, threatened, migratory, and native species and their habitats in the midst of a highly urbanized coastal environment. Nesting, foraging, and resting sites are managed for a diverse assembly of birds. Waterfowl and shorebirds over-winter or stop here to feed and rest as they migrate along the Pacific Flyway. Undisturbed expanses of cordgrass-dominated salt marsh support sustainable populations of light-footed clapper rail. Enhanced and restored wetlands provide new, high quality habitat for fish, birds, and coastal salt marsh plants, such as the endangered salt marsh bird's beak. Quiet nesting areas, buffered from adjacent urbanization, ensure the reproductive success of the threatened western snowy plover, endangered California least tern, and an array of ground nesting seabirds and shorebirds.

The San Diego Bay National Wildlife Refuge also provides the public with the opportunity to observe birds and wildlife in their native habitats and to enjoy and connect with the natural environment. Informative environmental education and interpretation programs expand the public's awareness of the richness of the wildlife resources of the Refuge. The Refuge serves as a haven for wildlife and the public to be treasured by this and future generations.

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San Diego Bay National Wildlife Refuge (NWR)
Sweetwater Marsh and South San Diego Bay Units
Final Comprehensive Conservation Plan
and Environmental Impact Statement
San Diego County, California

Type of Action:	Administrative
Lead Agency:	U.S. Department of the Interior, Fish and Wildlife Service
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Abstract: The Final CCP/EIS includes revisions to the draft CCP/EIS, which was circulated for public review and comment between July 22, 2005 and September 19, 2005. Substantive changes to the draft CCP/EIS text, which were made in response to or as a result of comments received during public review, are indicated in the Final CCP/EIS using an underlined text format. All comments received on the draft CCP/EIS, the Service's responses to these comments, and a list of the Final CCP/EIS recipients have also been incorporated into the Final CCP/EIS.

The San Diego Bay National Wildlife Refuge (NWR) consists of two units; the Sweetwater Marsh Unit and the South San Diego Bay Unit. Three alternatives, including a Preferred Alternative and a No Action Alternative, are described, compared, and assessed for the Sweetwater Marsh Unit of the San Diego Bay NWR and four alternatives, including a Preferred Alternative and a No Action Alternative, are described, compared, and assessed for the South San Diego Bay Unit of the San Diego Bay NWR. In each case, Alternative A is the No Action Alternative, as required by the National Environmental Policy Act regulations. The alternatives for each Refuge Unit are summarized below:

Sweetwater Marsh Unit

Alternative A – No Action: This alternative assumes no change from past management programs and serves as the baseline to which all other action alternatives are compared. There would be no major changes in habitat management or the current public use program under this alternative.

Alternative B – Implement Habitat Enhancement and Expand Environmental Interpretation: This alternative expands current management activities to emphasize enhancement of existing salt marsh habitat, including enhancement of high marsh areas to support the recovery of the endangered salt marsh bird's beak. Improvements in tidal and freshwater circulation within the marsh are also proposed to enhance habitat quality for the endangered light-footed clapper rail. The existing public uses on the Refuge would continue and new opportunities for environmental interpretation are identified for Paradise Marsh and the F&G Street Marsh.

Alternative C (Preferred Alternative) – Implement Habitat Enhancement and Restoration and Improve Existing Public Uses: The management activities described for Alternative B would be expanded under this alternative to include restoration of intertidal and upland habitat. The existing trail system on Gunpowder Point would be redesigned and new interpretive elements would be provided to better complement the existing environmental education programs supported by the Refuge.

South San Diego Bay Unit

Alternative A – No Action: This alternative assumes no change from past management programs and serves as the baseline to which all other action alternatives are compared. There would be no major changes in habitat management or the current public use program under this alternative.

Alternative B – Expand Habitat Management and Enhance Nesting Opportunities: This alternative expands current management activities to emphasize enhancement of nesting opportunities around the salt ponds for the endangered California least tern, threatened western snowy plover, and various other colonial seabirds. Enhancements would include the creation of approximately 18 acres of new nesting habitat within the salt works, capping of existing levees with sand, and recontouring levee side slopes to provide better access to foraging areas. A public awareness program would be implemented to reduce wildlife disturbance in the bay and avoid the accumulation of fishing line and other debris. The Refuge's current public use program would remain unchanged.

Alternative C – Expand Habitat Management, Enhance Nesting Opportunities, Implement Habitat Restoration, and Expand Existing Public Use Opportunities: In addition to the nesting enhancements and other management actions described in Alternative B, this alternative would involve the restoration of portions of the salt ponds and all of the Otay River floodplain. Two restoration options are presented for both the salt ponds and the Otay River floodplain that could result in the restoration of up to 410 acres of intertidal habitat in the salt works and 140 acres of intertidal salt marsh, freshwater wetlands, and native uplands within the Otay River floodplain. Restoration would emphasize the creation of cordgrass-dominated salt marsh to support the endangered light-footed clapper rail. The commercial solar salt operation would continue within a reduced footprint and opportunities for fishing and wildlife observation would increase.

Alternative D (Preferred Alternative) – Expand Habitat Management, Enhance Nesting Opportunities, Maximize Habitat Restoration, and Provide Additional Public Use Opportunities: Under this alternative, the restoration potential within the salt ponds would be maximized. Approximately 650 acres of salt ponds would be restored to tidal influence, 36 acres of new nesting habitat would be provided, 275 acres of pond area would be managed to benefit waterfowl and shorebird foraging and nesting, 45 acres of pond area would be managed to maintain a source of brine invertebrates within the system, and the majority of the levees would be preserved and maintained as nesting habitat for ground nesting birds. The Otay River floodplain would be restored as described in Alternative C. Opportunities for wildlife observation, photography, and environmental interpretation would be expanded and the other public uses that are currently provided on this Refuge Unit would be maintained.

Reader's Guide

The U.S. Fish and Wildlife Service (Service) will manage the Sweetwater Marsh and South San Diego Bay Units of the San Diego Bay National Wildlife Refuge (NWR) in accordance with an approved Comprehensive Conservation Plan (CCP). This CCP provides long range guidance on Refuge management through its vision, goals, objectives, and strategies. The CCP also provides a basis for a long-term adaptive management process including implementation, monitoring progress, evaluating and adjusting, and revising plans accordingly. Additional step-down planning will be required prior to implementation of the various restoration and major public use proposals included in the CCP.

In accordance with the Service's CCP Policy, the CCP and Environmental Impact Statement (EIS) have been combined into one document, referred to as the CCP/EIS. The Final CCP/EIS incorporates revisions to the draft CCP/EIS in response to comments received during the public comment period. Substantive changes are indicated using an underlined text format. The Service will publish a Record of Decision (ROD) that identifies the selected alternative for each Refuge Unit no sooner than 30 days following the publication of the Notice of Availability of the Final CCP/EIS in the Federal Register. Once the ROD is signed, the Final CCP made up of Chapter 1, the selected alternative for each Refuge Unit from Chapter 2, all of Chapters 3 and 5, and Appendices A, C, D, K, and M will be prepared. The following chapter and appendix descriptions are provided to assist readers in locating and understanding the various components of this combined document.

Chapter 1, *Introduction, Purpose and Need, and Issues*, includes the regional context, establishment, and purposes of the Sweetwater Marsh and the South San Diego Bay Units; vision and goals for future management of the Refuge; and the purpose of and need for a CCP. Future step-down planning, subsequent analysis under NEPA, and permit approvals needed to implement various aspects of the CCP are outlined and legal and policy guidance for managing the Refuge as part of the National Wildlife Refuge System (NWRS) are summarized. This chapter also provides background on major planning issues identified by Refuge staff, Federal, Tribal, State, and local agencies, and the general public.

Chapter 2, *Alternatives*, describes the various management alternatives proposed for the two Refuge Units. Three alternatives are presented for the Sweetwater Marsh Unit and four alternatives are described for the South San Diego Bay Unit. Each alternative represents a different approach to achieving the vision, goals, and objectives for the Refuge Unit. Alternative A (No Action) describes current management practices. Alternative C is the Preferred Alternative for the Sweetwater Marsh Unit and Alternative D is the Preferred Alternative for the South San Diego Bay Unit.

Chapter 3, *Affected Environment*, describes the existing physical and biological environment, public uses, cultural resources, and socioeconomic conditions. They represent baseline conditions for the comparisons made in Chapter 4.

Chapter 4, *Environmental Consequences*, describes the potential impacts of each of the alternatives on the resources, programs, and conditions outlined in Chapter 3.

Chapter 5, *Compliance, Consultation, and Coordination with Others,* outlines the various Federal laws, Executive Orders, regulations, and other guidance pertinent to implementation of the CCP, summarizes public involvement, interagency coordination, and Tribal consultation, and

acknowledges those agencies, organizations, and individuals who provided significant contributions to the CCP process.

Chapter 6, *List of Preparers and Contributors*, contains the names, positions, education, and years of experience of those individuals directly involved in the analysis and writing the draft CCP/EIS. The names and positions of those who contributed in other ways to the preparation of the document or the accompanying step-down plans are also included.

Chapter 7, *Reference Cited,* provides bibliographic references for the citations in this document.

Chapter 8, *Index,* indicates where the concepts or subject areas that may be of interest to the reader are discussed in the document.

Appendix A, *Glossary of Terms*, contains acronyms, abbreviations, and definitions of terms used in this document.

Appendix B, *Distribution List*, contains the list of Federal, Tribal, State, and local agencies; nongovernmental organizations; libraries, and individuals who received planning updates, summaries, and other mailings associated with this planning effort including the release of the draft CCP/EIS. Also included is a list of those Federal, Tribal, State and local agencies, individuals, nongovernmental organizations, libraries, and individuals who received a copy of the Final CCP/EIS.

Appendix C, *Bird Species Lists*, contains the various bird species that have been observed on the Sweetwater Marsh and the South San Diego Bay Units.

Appendix D, *CCP Implementation*, which has been revised to address comments raised during the public review and comment period, addresses step-down planning, funding, phasing, monitoring, and adaptive management practices as they relate to the various habitat and wildlife management actions included in the preferred alternatives. It also provides cost estimates for proposed public use programs and addresses current and future staffing for the Refuge.

Appendix E, *Summary of Public Scoping Comments,* presents a summary of the comments provided during public scoping.

Appendix F, *Description of the Salt Works Operation,* includes a detailed description of how salt is produced within the salt ponds on the South San Diego Bay Unit.

Appendix G, *Federal and State Ambient Air Quality Standards,* presents the currently adopted Federal and State Ambient Air Quality Standards.

Appendix H, *Air Quality Calculations,* includes the anticipated air emissions that would be generated from each of the habitat restoration options described for the South San Diego Bay Unit.

Appendix I, *Hydrodynamic Modeling Report,* describes the methods and results of the hydrodynamic modeling analysis conducted for restoration within the Otay River floodplain.

Appendix J, *Brine Management Report*, describes the methods and results of the salinity transport modeling conducted to assess the changes in Bay salinities from breaching the salt pond

levees. The report also addresses the feasibility of diluting to acceptable levels the discharge from a hypersaline brine environment proposed in Alternative D for the South San Diego Bay Unit.

Appendix K, *Compatibility Determinations*, describe uses, anticipated impacts, stipulations, and a determination of compatibility or non-compatibility for all existing and proposed public uses on the Sweetwater Marsh and South San Diego Bay Units.

Appendix L, *Fire Management Plan for the San Diego NWR Complex,* is a step-down management plan that provides specific guidelines for appropriate fire management within the entire Refuge Complex.

Appendix M, *Predator Management Plan,* is a step-down management plan that provides guidance and identifies actions to be taken to manage specific predators of listed species on the Refuge.

Appendix N, *Wilderness Review*, lists the criteria used in conducting a wilderness review and describes why the San Diego Bay NWR does not meet the criteria.

Appendix O, *Letter from the California Department of Fish and Game*, includes a copy of the letter provided by the State regarding the decision not to open the South San Diego Bay Unit to hunting.

Appendix P, *Public Comments to the Draft CCP/EIS and the Service's Responses*, presents the public and agency comments on the draft CCP/EIS and presents detailed responses prepared by the Service; these comments were considered in preparing the Final CCP/EIS.

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Chapter 1 – Introduction, Purpose and Need, and Issues

1.1 Introduction

The San Diego Bay National Wildlife Refuge (NWR) is managed by the U.S. Fish and Wildlife Service (Service or USFWS) as part of the National Wildlife Refuge System (NWRS). Consisting of the Sweetwater Marsh and South San Diego Bay Units, the San Diego Bay NWR (Refuge) is located about ten miles north of the United States and Mexico border in San Diego County, California (Figure 1-1). The Refuge, which is situated at the south end of San Diego Bay (Figure 1-2), is surrounded by the urban communities of National City, Chula Vista, San Diego, Imperial Beach, and Coronado. The two Units within the Refuge were established to protect endangered and threatened species, and collectively encompass approximately 2,620 acres of land and water in and around San Diego Bay. Most of what remains of San Diego Bay's historical coastal salt marsh and intertidal mudflat habitat is preserved within these two Refuge Units.

The 316-acre Sweetwater Marsh Unit is located along the eastern edge of San Diego Bay in an area that extends from just north of the 24th Street Flood Control Channel in National City to about G Street in Chula Vista (Figure 1-3). This Unit includes areas of tidally influenced salt marsh in Sweetwater Marsh, Paradise Marsh, and a small remnant marsh referred to as F&G Street Marsh. Also included are the upland habitats located on Gunpowder Point and the D Street Fill (a tideland area that was filled with dredge spoils in the late 1960s).

The South San Diego Bay Unit lies at the south end of San Diego Bay. The approved acquisition boundary includes approximately 3,940 acres (Figure 1-4); however, the Service currently only has management authority for approximately 2,300 acres within the approved Refuge boundary (Figure 1-5). Most of the remaining areas within the acquisition boundary are State Tidelands managed by the Unified Port of San Diego (Port). A small area near the northwest corner of Pond 11 is owned by the U.S. Navy (Navy). The lands and waters included within the current management boundary consist of portions of the open bay, active solar salt evaporation ponds (salt ponds), and the western end of the Otay River drainage basin (the Otay River floodplain).

A Comprehensive Conservation Plan (CCP) is prepared pursuant to the National Wildlife Refuge System Administration Act of 1966 (NWRS Administration Act), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) (Public Law 105-57) and an Environmental Impact Statement (EIS) is prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA). The Improvement Act and Part 602 (National Wildlife Refuge System Planning) of the Fish and Wildlife Service Manual provides the directives and guidance for preparing CCPs and recommends that the draft CCP and draft EIS be incorporated into one document. This approach, which provides for the direct integration of the provisions of NEPA into the CCP process, complies with the requirement that Federal agencies integrate the NEPA process with other planning at the earliest possible time. When completed, the draft CCP/EIS is made available for public review and comment.

All comments received during public review and comment for the draft CCP/EIS are considered and addressed as appropriate in a Final CCP/EIS. Thirty days after the availability of the Final CCP/EIS is noticed in the Federal Register, a Record of Decision (ROD) can be signed. The Final

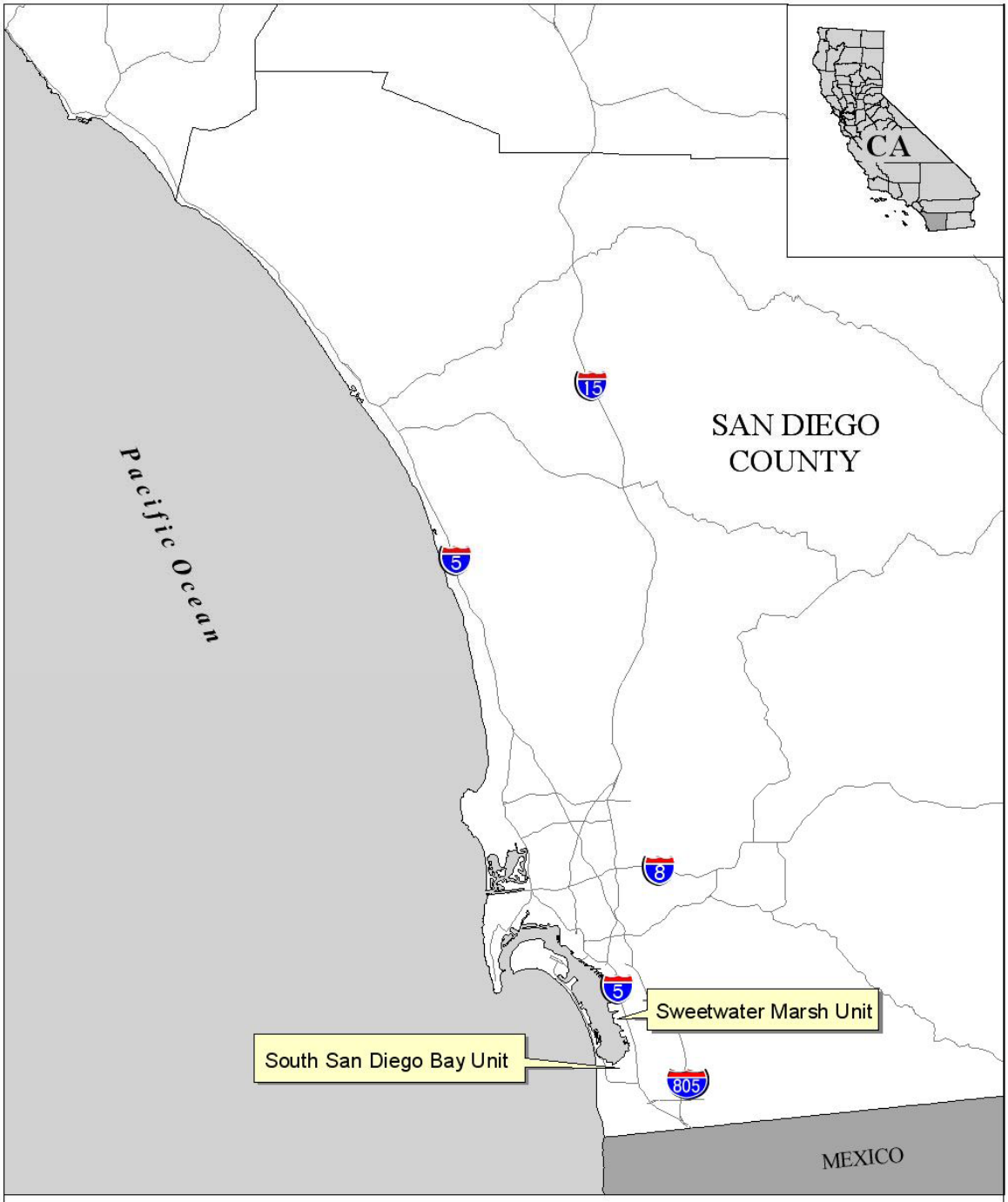

Figure 1-1
Vicinity Map - San Diego Bay National Wildlife Refuge

N

0 2.5 5 Miles

Source: California Spatial Information Library

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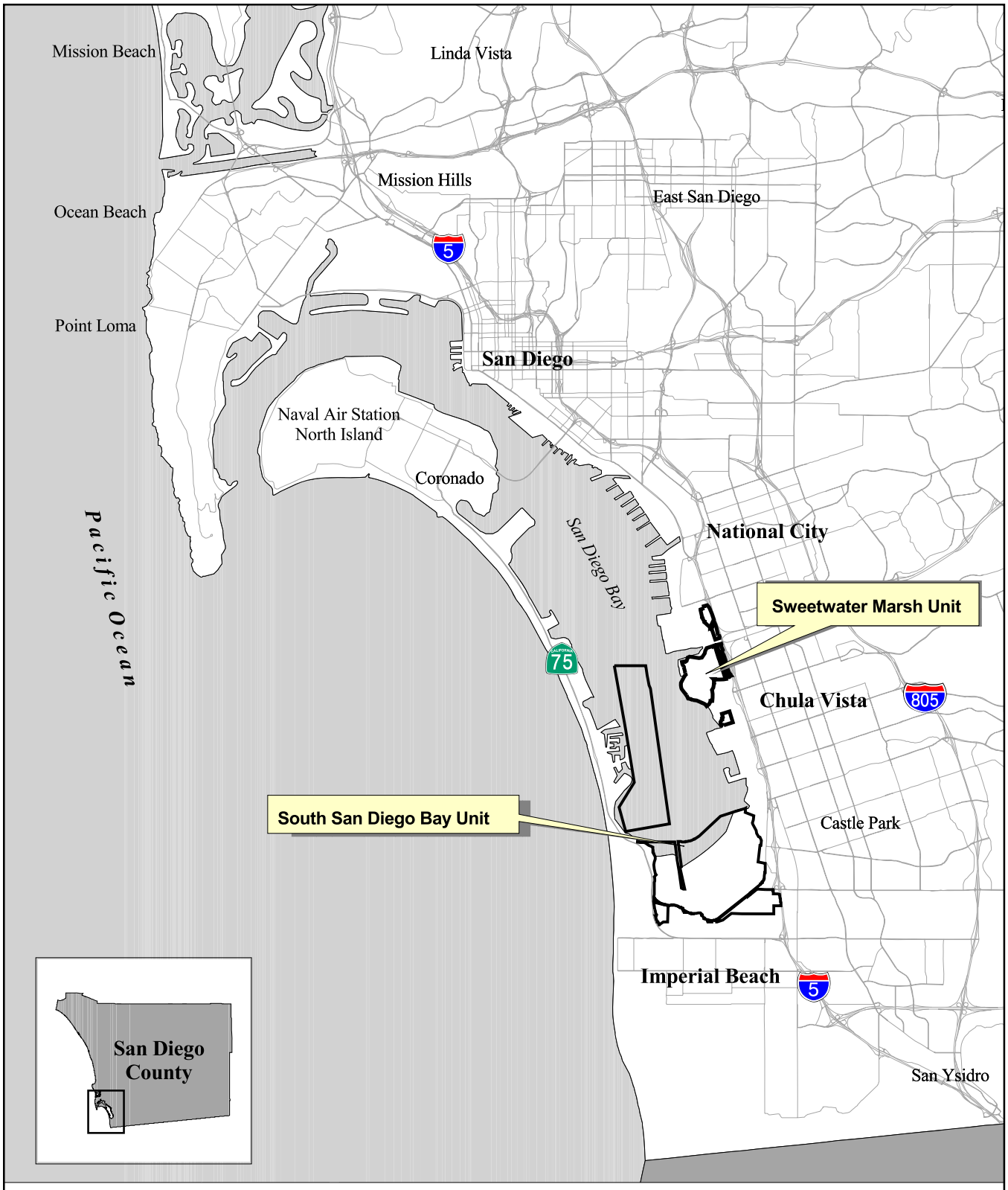

Figure 1-2
Location of the San Diego Bay National Wildlife Refuge

N

0 1 2 Miles

Source: California Spatial Information Library, Tele Atlas, USFWS

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Figure 1-3
Aerial View of the Sweetwater Marsh Unit

Refuge boundary

N

0 500 1000 Feet

Source: USFWS, Local Agency Partnership 2000 (2 ft imagery)

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Figure 1-4
South San Diego Bay Unit Approved Acquisition Boundary

Approved Acquisition Boundary

N

0 0.25 0.5 Miles

Source: USFWS, Local Agency Partnership 2000 (2 ft imagery)

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Figure 1-5
South San Diego Bay Unit Current Refuge Boundary

South San Diego Bay Unit Existing Management Authority

N

0 0.25 0.5 Miles

Source: USFWS, Local Agency Partnership (2 ft imagery)

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CCP is intended to guide the management of Refuge operations, habitat management, and visitor services for the next 15 years. Guidance within the Final CCP will be in the form of goals, objectives and strategies (Sections 2.2.5 and 2.3.5) and Compatibility Determinations (Appendix K). Some of the issues addressed in the Draft CCP/EIS were previously evaluated in the environmental assessment (EA) *(USFWS 1999a)* prepared for the South San Diego Bay Unit prior to establishing this Unit as part of the NWRS. The area analyzed in the EA (Figure 1-6) was larger than the area ultimately included within the approved acquisition boundary for the South San Diego Bay Unit. The NEPA analysis included in the EA was been incorporated, by reference, into the draft CCP/EIS.

The CCP/EIS identifies and evaluates alternative approaches for managing the two Refuge Units. It also describes the environmental consequences (direct, indirect, and cumulative) of implementing each alternative, or approach, as required by NEPA. The document is divided into eight chapters: Chapter 1 - Introduction, Purpose and Need, and Issues; Chapter 2 - Alternatives; Chapter 3 - Affected Environment; Chapter 4 - Environmental Consequences; Chapter 5 - Compliance, Consultation, and Coordination with Others; Chapter 6 – List of Preparers and Contributors; Chapter 7 - References Cited; and Chapter 8 - Index. Appendices provide supporting documentation for the CCP/EIS, including a glossary of terms, acronyms and abbreviations, a distribution list, CCP implementation, draft Compatibility Determinations, a description of the salt works operation, air quality calculations, hydrodynamic and brine modeling reports, wilderness review, and available step-down management plans.

The Service began the process of developing a CCP for this Refuge in June 2000. A Notice of Intent (NOI) was published in the Federal Register on June 23, 2000 (65 FR 39172) to initiate the planning process and solicit comments. A revised NOI was published on April 22, 2002 (67 FR 19583) to publicize the Service's intent to prepare an EIS in association with the CCP. On July 22, 2005, a Notice of Availability (NOA) was published in the Federal Register (70 FR 42359) announcing the availability of the draft CCP/EIS and soliciting comments. The comments and the Service's responses to the comments received are provided in Appendix P.

The development of issues and management alternatives took into consideration the public comments provided during the initial scoping period, as well as additional comments given during a yearlong public outreach program. Three alternative management approaches are evaluated for the Sweetwater Marsh Unit and four management alternatives are evaluated for the South San Diego Bay Unit. The alternatives include various proposals for habitat management, habitat restoration and/or enhancement, and public use.

The CCP/EIS is a programmatic document intended to analyze proposed actions on a conceptual level, except in those cases where sufficient information is available to provide project-specific analysis. Therefore, the extent of analysis provided for each restoration and/or public use proposal reflects the level of detail currently available for the specific proposal. The habitat restoration proposals analyzed in the CCP/EIS should be viewed as conceptual. It is during subsequent project level planning, referred to as "step-down" planning, that additional studies would be conducted, additional baseline data would be gathered, the appropriate project level NEPA documentation would be prepared, all necessary permits would be acquired, and final engineering and restoration planning would be conducted. Step-down planning would also include a public involvement component similar to that provided during the CCP process.

Figure 1-6
Area Analyzed by the Environmental Assessment (EA) and Land Protection Plan for the Proposed South San Diego Bay Unit

Note: The area analyzed in the EA was larger than the area included within the approved acquisition boundary

N

0 0.25 0.5 Miles

Source: USFWS, Local Agency Partnership 2000 (2 ft imagery)

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1.2 Proposed Action

The Service proposes to develop and implement a CCP for the San Diego Bay NWR that best achieves the purposes for which the Refuge was established, helps fulfill the mission of the NWRS, is consistent with sound fish and wildlife management, and ensures that the biological integrity, diversity, and environmental health of the NWRS are maintained. The Final CCP will include proposals for wildlife and habitat management, habitat enhancement and, where appropriate, habitat restoration, and public use. The Service examined a wide range of management alternatives for each Refuge Unit. Of these, Alternative C represents the Service preferred alternative for the Sweetwater Marsh Unit and Alternative D (incorporating Otay River Floodplain Restoration Option C2 and Salt Works Construction Phasing Scenario 2) represents the Service's preferred alternative for the South San Diego Bay Unit. Of the alternatives evaluated, these alternatives appear to best achieve the purpose, vision, and goals for the Refuge, while also appropriately addressing the major issues and relevant mandates identified for each Refuge Unit during the CCP process. Specific details regarding the preferred alternatives and the other alternatives that were evaluated during the CCP planning process are provided in Chapter 2.

1.3 Purpose and Need for the Comprehensive Conservation Plan

No formal management plan currently exists for either Refuge Unit; therefore, the development of a CCP is needed to provide guidance in conducting general refuge operations, wildlife and habitat management, habitat enhancement and restoration, and visitor services. The CCP is intended to ensure that management actions are consistent with the purposes for which the Refuge was established, the mandates of the NWRS, and the Refuge goals and objectives.

The purpose of the CCP is to describe the desired future conditions of the Sweetwater Marsh and South San Diego Bay Units over the next 15 years and provides guidance for achieving those conditions, whether it is through conservation or restoration of Refuge resources. This CCP:

- Sets a long term vision for the Refuge;
- Establishes management goals, objectives, and strategies for each Refuge Unit;
- Provides the Refuge with a 15-year management plan for the conservation of fish, wildlife, and plant resources and their related habitats;
- Defines compatible public uses;
- Develops a plan that, when fully implemented, will achieve Refuge purposes, help fulfill the mission of the System, and maintain and, where appropriate, restore ecological integrity;
- Communicates the Service's management priorities for the Refuge to the public; and
- Provides a basis for budget needs to support staffing, operations, maintenance, and capital improvements.

The development of this CCP is also required to fulfill legislative and contractual obligations of the Service. Its preparation is mandated by the NWRS Administration Act, as amended by the Improvement Act. The Improvement Act requires that a CCP be prepared for each refuge or related complex of refuges within 15 years of the law's enactment. This CCP will also satisfy a condition of the Public Agency Lease between the California State Lands Commission and the Service requiring the Service to provide the State Lands Commission with a plan for managing the leased tidelands included within the boundary of the South San Diego Bay Unit. The lease condition requires that the plan "detail the Lessee's management and development plans for the Refuge," as well as "include a public access component."

Finally, the CCP is required to fulfill the Service's obligation to prepare "a holistic habitat restoration plan" for a 1,035-acre portion of the existing salt works property, as described in a Cooperative Agreement between the Service and the Port, dated October 1998 and amended in March 1999.

Proposals for habitat enhancement and restoration are incorporated into several of the management alternatives presented in the CCP to implement the Service's policy for ensuring that the biological integrity, diversity and environmental health of the Refuge is maintained and, where appropriate, restored. Such proposals for enhancement and restoration are consistent with the objective included in the Land Protection Plan (*USFWS 1999*) for creating the South San Diego Bay Unit that states: "To provide the Service with the opportunity to manage, enhance, restore, and protect Refuge . . . areas for the benefit of federally listed and other trust species." The historical and ecological conditions on each Refuge Unit, as summarized below and described in detail in Section 3.4, establish the frame of reference to be used in maintaining and, where appropriate, restoring the biological integrity, diversity, and environmental health of the San Diego Bay NWR.

Prior to the 1900s, San Diego Bay was a fertile, shallow flat-bottomed bay surrounded by extensive mudflats and salt marshes *(USFWS 1999a)*. Over the past hundred years, significant portions of the bay, particularly the northern two-thirds of the bay, have been dredged to support ship movement or filled to accommodate port development. At the southernmost end of the bay, much of the original salt marsh and intertidal mudflat habitat was diked to create solar evaporation ponds for the purpose of producing salt. Today, only 22 percent of San Diego Bay's historic salt marsh habitat and 8 percent of its original intertidal habitat remain intact (*U.S. Navy 2000*), and most of this remaining native habitat is located within the Refuge boundary. The coastal wetlands that remain not only provide habitat for several federally listed endangered and threatened species, but also represent a vital link in the Pacific Flyway (refer to Section 3.4.1.3). Portions of the salt pond complex located at the south end of the bay also represent important habitat for a variety of birds. Collectively, the open waters of the bay, tidal mudflats, salt marsh habitat, and salt ponds provide resting, feeding, and nesting areas for tens of thousands of migratory shorebirds, colonial seabirds, and wintering waterfowl.

The CCP is intended to provide the guidance necessary to ensure that these habitats receive the highest priority for protection and maintenance on the Refuge. It is also the goal of the CCP to provide opportunities to reverse the trend of historical wetland loss in San Diego Bay by incorporating proposals for restoring, where possible, the Refuge's historical native habitats, while also preserving those aspects of the existing salt pond complex that support a diversity and abundant array of avian species.

1.4 Required Permits and Approvals

It will be necessary to obtain permits or approvals from other agencies to implement various actions in this CCP. The permits and approvals that could be required include:

- **U.S. Fish and Wildlife Service** – Project level internal Section 7 consultations, as appropriate under the authorities of the Endangered Species Act (ESA), prior to the implementation of any actions proposed in the CCP that may affect federally listed endangered or threatened species. (A programmatic Biological Opinion has been prepared under the authorities of the ESA for the Final CCP.)

- **U.S. Army Corps of Engineers** – Clean Water Act 404 Permit and Rivers and Harbors Act Section 10 Permit for wetland restoration projects.
- **NOAA National Marine Fisheries Service (NMFS)** – Consultation with NMFS under the Magnuson-Stevens Fishery Conservation and Management Act for federal permitting and funding activities that could adversely affect Essential Fish Habitat.
- **U.S. Department of the Navy –** Approval to alter the current conditions in the northwestern corner of Pond 11, which is included within the Navy's ownership.
- **California Coastal Commission** – Concurrence with the Service's Consistency Determination for the CCP. (This involves a determination that the CCP is consistent to the maximum extent practicable with the California Coastal Management Program [Section 307 of the Coastal Zone Management Act]).
- **Regional Water Quality Control Board** – 401 Certification for wetland restoration projects and possibly a discharge permit for breaching the salt pond levees.
- **San Diego County Air Pollution Control Board** – Compliance with Rule 1501 of the Air Pollution Control District's Rules and Regulations.
- **Caltrans, District 11 –** Encroachment Permit, which would be required if any activities associated with the Refuge were to affect existing Interstate 5 right-of-way.
- **City of San Diego** – Encroachment Permit and/or other approvals, which would be required if restoration is proposed on properties owned by the City of San Diego.

1.5 Legal and Policy Guidance

1.5.1 U.S. Fish and Wildlife Service

The San Diego Bay NWR, consisting of the Sweetwater Marsh and South San Diego Bay Units, are managed by the Service as part of the larger San Diego National Wildlife Refuge Complex. The Service is the primary Federal agency responsible for conserving and enhancing the nation's fish and wildlife populations and their habitats. Although the Service shares this responsibility with other Federal, State, tribal, local, and private entities, it is the Service that has specific responsibility for migratory birds, threatened and endangered species, and certain anadromous fish and marine mammals. The Service also has similar trust responsibilities for the lands and waters it administers to support the conservation and enhancement of fish and wildlife.

1.5.2 National Wildlife Refuge System

The mission of the National Wildlife Refuge System (NWRS) is:

> "*To administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans*" (16 USC 668dd et seq.).

Florida's Pelican Island, which was the first refuge in the NWRS, was established in 1903 by President Theodore Roosevelt. Since that time, the NWRS has grown to more than 96 million acres. It includes more than 545 refuges, at least one in every state and many U.S. territories, and over 3,000 Waterfowl Production Areas. The NWRS is the largest collection of lands and waters specifically managed for fish and wildlife conservation in the nation. The needs of wildlife and their habitats come first on refuges, in contrast to other public lands managed for multiple uses.

The administration, management, and growth of the NWRS are guided by the following goals *(draft Mission, Goals, and Purposes Policy, January 16, 2001)*:

- Fulfill our statutory duty to achieve Refuge purpose(s) and further the System mission.

- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife, and plants.
- Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.
- Foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Operation and management of National Wildlife Refuges are guided by the mission and goals established for the NWRS in the NWRS Administration Act of 1966, as amended, and the designated purpose(s) for which each refuge was established. Refuge management is also influenced by other laws, treaties and executive orders pertaining to the conservation and protection of natural and cultural resources, such as Executive Order 12996 *(Management and General Public Use of the National Wildlife Refuge System)*, the Refuge Recreation Act of 1962, the Endangered Species Act of 1975, Executive Order 13186 *(Responsibilities of Federal Agencies to Protect Migratory Birds)*, and the Fish and Wildlife Act of 1956 (refer to Chapter 5 for additional information about these laws and orders).

1.5.2.1 National Wildlife Refuge System Improvement Act

The Improvement Act, which amends the NWRS Administration Act of 1966, serves as an "organic" act for the NWRS and provides comprehensive legislation describing how the NWRS should be managed and used by the public. The Improvement Act establishes a strong and singular wildlife conservation mission for the Refuge System; requires that the Secretary of the Interior maintain the biological integrity, diversity and environmental health of the Refuge System; requires that public use of a refuge may be allowed only where the use is compatible with the mission of the System and purpose of the individual refuge; and sets forth a standard for determining whether such uses are compatible. It also recognizes that wildlife-dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible, are legitimate and appropriate public uses of the Refuge System.

The Improvement Act also includes policies and procedures through which individual refuges are to be managed to fulfill the mission of the System for the long-term benefit of the American people. One of these procedures is to develop a CCP for each refuge within the System by 2012. The CCP should identify and describe the purposes of the refuge; the fish, wildlife and plant populations, their habitats, and the archaeological and cultural values found on the refuge; significant problems that may adversely affect wildlife populations and habitats and ways to correct or mitigate those problems; areas suitable for administrative sites or visitor facilities; and opportunities for fish- and wildlife-dependent recreation. An important aspect of the Improvement Act is to ensure the opportunity for active public involvement in the preparation and revision of CCPs. It is Service policy that CCPs be developed in an open public process and that public input be sought and encouraged throughout the process.

Compatibility Policy

Lands within the NWRS are different from other multiple use public lands in that they are closed to all public uses unless specifically and legally opened. The Improvement Act states ". . . the Secretary shall not initiate or permit a new use of a Refuge or expand,

renew, or extend an existing use of a Refuge, unless the Secretary has determined that the use is a compatible use and that the use is not inconsistent with public safety." The Improvement Act also states that ". . . compatible wildlife-dependent recreational uses [hunting, fishing, wildlife observation and photography, or environmental education and interpretation] are the priority general public uses of the System and shall receive priority consideration in Refuge planning and management."

In accordance with the Improvement Act, the Service has adopted a Compatibility Policy (603 FW 2) that includes guidelines for determining if a use proposed on a National Wildlife Refuge is compatible with the purposes for which the refuge was established. A compatible use is defined in the policy as a proposed or existing wildlife-dependent recreational use or any other use of a National Wildlife Refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the NWRS mission or the purposes of the Refuge. The Policy also includes procedures for documentation and periodic review of existing refuge uses.

When a determination is made as to whether a proposed use is compatible or not, this determination is provided in writing and is referred to as a compatibility determination. An opportunity for public review and comment is required for all compatibility determinations. For compatibility determinations prepared concurrently with a CCP or step-down management plan, the opportunity for public review and comment is provided during the public review period for the draft plan and associated NEPA document. The compatibility determinations prepared in association with this CCP/EIS are provided in Appendix K.

Biological Integrity, Diversity and Environmental Health Policy

The Improvement Act states that "In administering the System, the Secretary shall . . . ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans . . ." To implement this directive, the Service has issued the Biological Integrity, Diversity and Environmental Health Policy (601 FW 3), which provides policy for maintaining and restoring, where appropriate, the biological integrity, diversity, and environmental health of the NWRS. The policy is an additional directive for Refuge Managers to follow while achieving refuge purposes and the NWRS mission. The policy provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuges and associated ecosystems. Further, it provides a refuge evaluation process the can assist refuge managers in developing management direction that when implemented would prevent further degradation of environmental conditions and allow for the restoration of lost or severely degraded resources, where appropriate.

When evaluating the appropriate management direction for refuges, Refuge Managers will use sound professional judgment to determine their refuge's contribution to biological integrity, diversity, and environmental health at multiple landscape scales. Sound professional judgment incorporates field experience, an understanding of the refuge's role within an ecosystem, and the knowledge of refuge resources, applicable laws, and best available science, including consultation with others both inside and outside of the Service.

The priority public uses of the NWRS are not in conflict with this policy when they have been determined to be compatible. The directives of this policy do not envision or necessitate the exclusion of visitors or the elimination of visitor use structures from refuges; however, maintenance and/or restoration of biological integrity, diversity, and

environmental health may require spatial or temporal zoning of visitor use programs and associated infrastructures. General success in maintaining or restoring biological integrity, diversity, and environmental health will produce higher quality opportunities for providing wildlife-dependent recreational uses.

1.6 History of Refuge Establishment and Purpose

1.6.1 Introduction

The Service's interest in acquiring coastal wetlands along the southern coast of San Diego County began in the early 1970s. Areas considered for acquisition included the properties in and around Sweetwater Marsh, the salt ponds in south San Diego Bay, and the Tijuana Slough. In 1972, the Service's Division of Realty prepared a Reconnaissance Appraisal Report to estimate the cost of acquiring these parcels and establishing a "South San Diego Wildlife Preserve." These areas were targeted for acquisition because they supported habitat essential to the protection and recovery of several federally listed endangered species, including the light-footed clapper rail (*Rallus longirostris levipes*) and California least tern (*Sternula antillarum)*.

By the late 1970s, 90 percent of the light-footed clapper rail habitat in south San Diego Bay had been eliminated. To complicate matters, two significant projects were being contemplated for the south San Diego Bay that would likely further erode the amount of habitat available to support the rail and other federally listed endangered species. One proposal involved a combined flood control/highway project to be constructed along the Sweetwater River. The other project was the possible construction of a second entrance into San Diego Bay that would cut across the Silver Strand just north of Crown Cove.

A substantial portion of the bay's intertidal wetlands had been filled or dredged by the 1970s to accommodate various port developments. The new proposals for additional filling that were under review in the South Bay at this time would have resulted in even greater losses of already scare habitat. Consequently, in 1979 the Service prepared an environmental assessment (EA)/Acquisition Ascertainment Report (AAR) to review impacts related to the acquisition of approximately 2,700 acres of South Bay habitat in order to conserve endangered wildlife. The areas covered by the EA/AAR included those lands within and surrounding the present day boundary of the Sweetwater Marsh Unit, the southern end of the bay from J Street on the east and the southern end of Emory Cove on the west, and all of the salt evaporation ponds, including Pond 20A (Figure 1-7). The EA/AAR proposed incorporating these lands into a National Wildlife Refuge or State Ecological Reserve under the authority of the Endangered Species Act of 1973, as amended (87 Stat. 884), and previous land acquisition legislation authorized by the Secretary of the Interior to conserve endangered wildlife by implementing a land acquisition program (45 Stat. 1222) *(USFWS 1979)*.

Although the Service completed the EA/AAR in 1979 and determined that the proposed acquisition was not a major Federal action that would significantly affect the quality of the human environment, it would be almost ten years before the first of two areas within the South Bay would be incorporated into the NRWS. The establishment history for each of these Refuge Units is described below.

1.6.2 Sweetwater Marsh Unit – Acquisition History and Establishment

The Sweetwater Marsh NWR (now referred to as the Sweetwater Marsh Unit) was established in 1988 after several years of contentious litigation over a combined freeway/flood control project and a proposed bayfront development in the City of Chula Vista. The circumstances and events leading

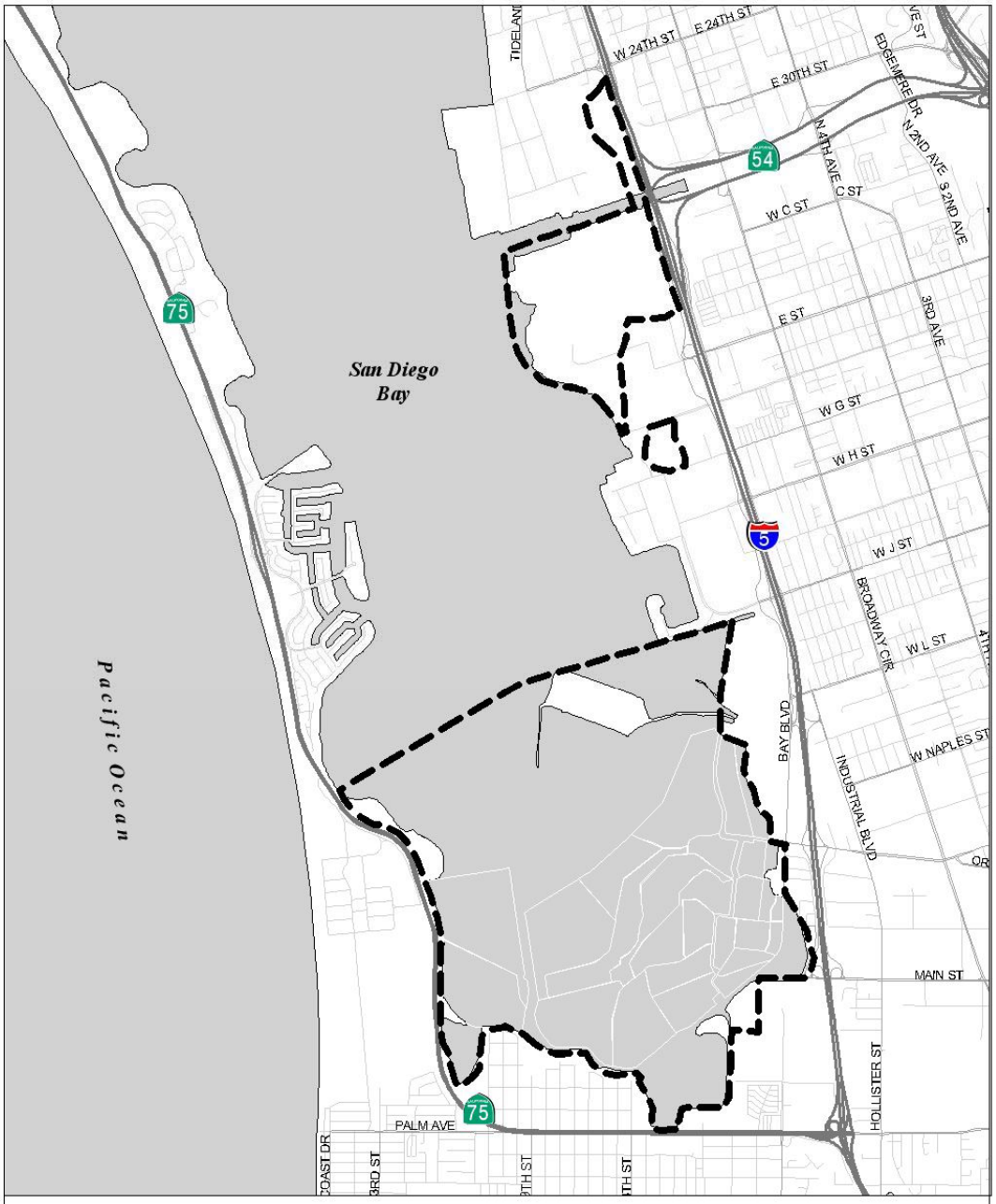

Figure 1-7
Boundaries Described in the EA/AAR for the South San Diego Bay

Proposed 1979 acquisition boundary

N

0 0.25 0.5 Miles

Source: USFWS 1979

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to the establishment of this Refuge illustrate the gradual change in attitude toward the environment that occurred in both the public and private sector between the 1960s and the 1980s. In the mid 1960s, the California Department of Transportation (Caltrans) used funding from the Federal Highway Administration and began developing major highway improvement plans for Interstate 5 (I-5) and State Route 54 (SR 54) in the vicinity of the Sweetwater River. At about the same time, the U.S. Army Corps of Engineers (ACOE) was developing plans to channelize the Sweetwater River. Channelization was to involve the construction of a 3.4-mile-long, trapezoidal channel that would divert river flows from the river's historic course through Sweetwater Marsh into what is now known as the 24th Street flood control channel. These two projects were combined in the late 1970s to be processed as a single Federal project called the Sweetwater River Flood Control Channel/State Highway Route 54 Interstate 5 project (the combined federal project).

Also in the 1970s, the Service began an evaluation of the various habitats in South San Diego Bay, including the habitats within the Sweetwater River Wetlands Complex. This Complex consisted of the Sweetwater River in its historic configuration, which flowed through Sweetwater Marsh, the tidal marsh, high marsh, and salt pan habitats in Sweetwater Marsh, Paradise Marsh, E Street Marsh, F&G Street Marsh, and Vener Pond, and the mudflats located to the west of the D Street Fill and Gunpowder Point. The importance of preserving the habitats within this marsh complex was described in a Service document prepared in 1979 entitled: "*Proposed Land Acquisition in South San Diego Bay for Endangered Species Light-footed Clapper Rail (Rallus longirostris levipes) and California Least Tern (Sterna albifrons browni*)." [Note: The scientific nomenclature for California least tern at that time was *Sterna albifrons browni*, it has since changed to *Sternula antillarum* (*Banks et al. 2006*).]

The Service initiated consultation with the ACOE and the Federal Highway Administration on their prospective projects because of its interest in the Sweetwater River Wetlands Complex and its authority under the Fish and Wildlife Coordination Act and later, the Endangered Species Act. It would take almost ten years from the time consultation began for the project proponents to agree to provide mitigation for impacts to endangered species from the combined federal project. The Service first requested that the ACOE consider endangered species issues in 1971. The Endangered Species Act of 1973 was subsequently enacted, further elevating the Service's involvement in the review of potential impacts from the combined project on endangered species.

Informal discussions related to Section 7 of the Endangered Species Act began in about 1974 and continued until 1977, when formal consultation began with both ACOE and the Federal Highway Administration (working with Caltrans). The Service issued the first Biological Opinion for the combined federal project in 1978, which concluded that the project's impacts would likely jeopardize the continued existence of the federally listed endangered light-footed clapper rail and California least tern. The majority of these impacts were attributed to habitat destruction.

The Service issued a second Biological Opinion in 1979 that included modifications to the project design to avoid jeopardy to the listed species. The most critical of the mitigation measures advocated by the Service was the acquisition and preservation of the 188-acre Sweetwater River Wetlands Complex. Forty-four acres of the proposed acquisition were required to mitigate direct wetland losses and the additional 144 acres were to be provided to offset adverse effects to the clapper rail and least tern, as well as to salt marsh bird's beak (*Cordylanthus maritimus maritimus)*, a federally-listed endangered plant species. (It should be noted that a survey of the proposed acquisition revealed that the area actually included only 178 acres.)

In 1981 the Federal project proponents presented a modified project with eleven features, including acquisition and preservation of the privately-held Sweetwater River Wetlands Complex.

The Service reviewed the modified project and concluded that the proposed measures were "the minimally acceptable loss compensation requirements needed to protect and maintain habitat and endangered species" *(USFWS 1988).* With the Service's concurrence, the ACOE agreed to take the lead on acquisition procedures, but soon found that obtaining Congressional approval to purchase or condemn the land would take considerable time. To avoid these delays, the County of San Diego (County), which was the combined project's local sponsor, offered to obtain the property and transfer it to an ACOE-designated state or Federal agency. In December 1984 the County and the ACOE signed a contract, referred to as a "Section 221 Agreement," in which the County agreed to acquire and transfer the lands by December 1985. The County failed to acquire the land and instead, requested extensions from the ACOE, which were denied. In the meantime, the combined federal project was proceeding without any acquisition of mitigation land.

Also during this time, the City of Chula Vista was developing a Bayfront Plan for the area in and around the Sweetwater River Wetlands Complex. After initially denying Chula Vista's Local Coastal Program (LCP) in 1981, the California Coastal Commission ultimately approved the LCP in September 1984. The plan, as approved, included a proposal for a 440-room hotel and convention center on Gunpowder Point, high-rise residential buildings on D Street Fill, and the construction of several roads through the Sweetwater River Wetland Complex to provide access to these developments. The Service objected to the certification of the LCP due to the endangered species impacts that would occur as a result of project implementation. Later that year, the Sierra Club filed a lawsuit in State court challenging the Coastal Commission's approval of the LCP, claiming that approval of the plans for Gunpowder Point and D Street Fill violated the California Coastal Act.

In August 1986, the County attempted to fulfill its obligation under the Section 221 Agreement and entered into an escrow agreement with the City of Chula Vista and the Santa Fe Land Improvement Company (the owner of the property described as the Sweetwater River Wetland Complex). The escrow agreement made transfer of the land to the County contingent upon ACOE issuing several permits needed to develop Gunpowder Point and D Street Fill. The same agreement also reserved seven easements in the proposed mitigation lands for the Santa Fe Land Improvement Company. These conditions and easements were included because the Santa Fe Land Improvement Company contended that transfer of the land for preservation without the easements and guarantees for approval for certain permits would prohibit development of Gunpowder Point and the D Street Fill, as approved in the LCP for this area. Both the ACOE and the Service objected to the inclusion of these easements and other conditions of escrow contending that they would reduce or eliminate the mitigation land's value as habitat for the endangered species.

In August 1986 the Service formally requested that the ACOE reinitiate Section 7 consultation on the combined federal project as a result of the County's failure to transfer the mitigation lands; the Coastal Commission's approval of Chula Vista's LCP; and a pending proposal to construct an access road through the proposed mitigation lands. The ACOE was still proceeding with construction, despite the unfulfilled obligation to acquire mitigation lands and responded to the Service's request by refusing to reinitiate consultation.

On September 17, 1986, the Sierra Club and League for Coastal Protection filed a complaint in Federal Court under the citizen suit provision of the Endangered Species Act. The complaint asserted that the ACOE had violated the Act by refusing to reinitiate consultation with the Service. The Sierra Club also sought an injunction prohibiting any further construction on the combined project until the ACOE reinitiated consultation with the Service under Section 7 of the Endangered Species Act and the County transferred the mitigation lands in accordance with the

Section 221 Agreement. A hearing was held in United States District Court to consider the motions; however the court denied the Sierra Club's request. The lower court's decision was appealed to the United States Court of Appeals for the Ninth Circuit. In May 1987, the District Court reversed the lower court's decision, finding that the Sierra Club was entitled to an injunction against all work on the project and that the ACOE had violated the Endangered Species Act by refusing to reinitiate consultation with the Service. On July 13, 1987, the District Court issued a permanent injunction, stopping all work on the combined federal project until the ACOE reinitiated consultation with the Service. Following that decision, the ACOE requested that consultation with the Service regarding the combined federal project be reinitiated.

The Service issued a biological opinion in March 1988, which concluded that the combined federal project would likely jeopardize the continued existence of the California least tern, light-footed clapper rail, and salt marsh bird's beak. It further stated that this project, when combined with the reasonably foreseeable non-Federal developments anticipated in the adopted LCP, would appreciably reduce the likelihood for survival and recovery of these species. The Service proposed what was referred to as a reasonable and prudent alternative that outlined a number of features; these included a request to not only acquire and convey to the United States the 178 acres previously required for mitigation (with all objectionable easements excluded), but also the acquisition and conveyance of Gunpowder Point, D Street Fill, and the F&G Street Marsh. These additional lands, subsequently referred to as Mitigation Leasehold Overlays, would be conveyed subject to a reserved lease for 20 years that would allow the Santa Fe Improvement Company to perform wildlife habitat enhancement on these areas for future mitigation credits. The Service further stated that the conveyed lands were to be managed in accordance with the NWRS Administration Act, the Refuge Recreation Act, the Endangered Species Act, and other applicable Federal laws.

Following several months of negotiations, a settlement agreement was drafted by the Federal defendants, the Sierra Club and League of Coastal Protection, Caltrans, the County of San Diego, and the owner of the proposed mitigation lands, Santa Fe Land Improvement Company. On May 13, 1988, the court approved a Stipulated Settlement Agreement, which was to become effective upon close of escrow. Escrow closed on August 12, 1988 and the Federal government received 35.5 acres from the State of California (specifically Caltrans) and 280.3 acres from the Santa Fe Land Improvement Company. Upon the transfer of the 315.8 acres to the Service, the Sweetwater River Wetlands Complex, as it had been called, was officially incorporated into the NWRS.

From 1988 to 2004, the Refuge was referred to as the Sweetwater Marsh NWR. In 2004, this Refuge, along with the South San Diego Bay Unit, was incorporated into the San Diego Bay NWR. The refuge lands around Sweetwater Marsh are now referred to as the Sweetwater Marsh Unit of the San Diego Bay NWR.

1.6.3 South San Diego Bay Unit – Acquisition History and Establishment

As discussed previously, the Service completed a study in 1972 that identified potential parcels for inclusion in a South San Diego Wildlife Preserve. However, it was not until about 1978 that a grass-roots effort was initiated to build support for establishing a national wildlife refuge in South San Diego Bay. By 1987 a nonprofit group, Friends of South Bay Wildlife, had been formed to work with concerned organizations, individuals, local communities, and interested government agencies to develop a proposal for a sustainable South Bay that included the creation of a national wildlife refuge. The group's proposal was presented in *"A Comprehensive Proposal for the Enhancement, Conservation and Development of South San Diego Bay,"* published in September 1995. The goals of this proposal were "to protect and enhance South Bay's habitats for threatened

and endangered species, both migratory and resident wildlife, and the incorporation of local community concerns in order to foster a mutually beneficial development strategy."
In the early 1990s, prior to the Friends' proposal, the Service began revisiting the idea of establishing a refuge unit in the South Bay. One of the first steps in this process was implemented by the Service's Coastal Program, which assessed and documented the significant bird use in the South Bay and at the salt works. This information, which was published in three reports (*Stadtlander and Konecny 1994 and USFWS 1995a, 1995b)*, was essential to understanding the importance of this area to migrating shorebirds and wintering waterfowl, as well as nesting seabirds.

Based on this information and public comments provided at a series of public meetings, the Service proposed several Refuge boundary alternatives and began the preparation of a Land Protection Plan (LPP) *(USFWS 1999a)*. The LPP outlined the habitat protection methods the Service would use for the proposed South San Diego Bay Unit. Also presented within the LPP are the three objectives for creating the South San Diego Bay Unit, including:

- *To provide the Service with authority to acquire or otherwise protect wildlife habitat as part of the National Wildlife Refuge System . . .*

- *To provide the Service with the opportunity to manage, enhance, restore, and protect Refuge . . . areas for the benefit of federally listed and other trust species . . .*

- *To provide opportunity for the Service to develop compatible wildlife-dependent recreational activities in partnership with local communities.*

An EA *(USFWS 1999a)* was prepared in association with the LPP to evaluate the effects of establishing an approved Refuge boundary for four boundary alternatives. The study area for the proposed South San Diego Bay Unit included approximately 5,000 acres, stretching westward from the 24th Street Channel to just north of Crown Cove, southward around the salt ponds, and then northward along the Bay's edge (refer to Figure 1-6).

In 1993, the Naval Training Center, San Diego (NTC), located adjacent to the San Diego International Airport, was identified for closure during the Base Closure and Realignment Commission (BRAC) process of 1993. Presidential approval of the 1993 BRAC closure list slated NTC for closure and transfer of property by 1999, in accordance with the Base Closure and Realignment Act of 1990. During the base closure discussions, a 25-acre site on NTC was identified for protection as a California least tern nesting site. This resulted in the need to either protect the site in place or find an acceptable replacement site that would support least tern nesting. Following extensive negotiations, an agreement was reached among the U.S. Navy, the Service, and the Port that would provide alternative nesting habitat for the tern.

The terms and conditions of this agreement, which are described in the Biological Opinion prepared by the Service on October 13, 1998, include: the NTC least tern nesting site or a replacement nesting site must be placed under federal protection in the National Wildlife Refuge System; annual least tern and snowy plover monitoring and predator management shall be provided at the salt works in perpetuity; least tern habitat enhancement measures, including expansion of tern foraging habitat and enhancement of nesting substrate within the salt works shall be implemented; overall restoration plans for the salt works shall include new least tern nesting area; public access and human disturbance shall be controlled at the salt works during the nesting season; future restoration of the salt ponds shall avoid and minimize adverse effects to

least terns and snowy plovers; and habitat and management needs for least terns and snowy plovers shall be addressed in the CCP prepared for the South San Diego Bay Unit.

On October 16, 1998, the Service and the Port signed a Cooperative Agreement to protect and enhance nesting and foraging habitats for the endangered California least tern at the salt works in South San Diego Bay in accordance with the terms and conditions outlined in the Biological Opinion. This agreement, which was amended in March 1999 to clarify the terms and obligations of the agreement, required that in exchange for the release of a least tern nesting habitat conservation easement on the 25-acre NTC least tern site, the Port would: 1) acquire fee title most of the salt ponds owned by the Western Salt Company and then transfer the ownership of approximately 720 acres to the California State Lands Commission; 2) acquire leasehold interest from Western Salt on an additional 612 acres and transfer that interest to the State Lands Commission; 3) work with the State Lands Commission to effect transfer of those portions of the acquired property and leasehold interest to the Service that are within the acquisition boundary of the proposed South San Diego Bay Unit; and 4) commit $900,000 in mitigation and in-kind services for restoration and management within the acquired lands. It was through the execution of this Cooperative Agreement that a large portion of South San Diego Bay was ultimately incorporated into the South San Diego Bay Unit.

In January 1999, after considering the analysis provided in the EA and factoring in the comments received during the public comment period, the Service selected a preferred Refuge boundary and signed a Finding of No Significant Impact for the proposed South San Diego Bay Unit. This action established an approved acquisition boundary for the South San Diego Bay Unit that encompassed 3,940 acres of land and water in the south bay. Following this action, the California State Lands Commission approved a $20.5 million expenditure of Public Trust funds by the Port to acquire 722 acres of salt ponds owned by Western Salt Company. The lands were transferred from the Port to the State Lands Commission in accordance with State law, which requires lands acquired using public trust revenues to be retained by the trustee as an asset for the people of the State. In turn, the State Lands Commission leased these lands, as well as approximately 1,500 additional acres of State tidelands, to the Service for a period of 49 years, with an automatic extension to 66 years, to include in and be managed as a National Wildlife Refuge. The Refuge Unit was officially established on June 16, 1999, the day the lease for the 2,209 acres of State Tidelands was approved.

On January 27, 2000, the Service acquired an additional 91 acres of vacant land located within the Otay River floodplain (refer to Figure 1-4). This acquisition was the result of a donation from the Southwest Wetlands Interpretive Association (SWIA), a non-profit organization dedicated to the preservation, restoration, and acquisition of wetlands. SWIA obtained the funds needed to acquire this property from the California Coastal Conservancy. The Coastal Conservancy identified the acquisition area as a critical link between the coastal marine environment of South San Diego Bay and the riparian habitat of the Otay River Valley and subsequently authorized the disbursement of funds to SWIA for the property acquisition. Following acquisition, SWIA conveyed fee title of the property to the Service. With this acquisition, the total acreage within the approved acquisition boundary being managed as part of the National Wildlife Refuge System was increased to 2,300 acres.

On July 13, 2004, the acreage in the South San Diego Bay Unit of the San Diego NWR was added to the Sweetwater Marsh NWR and both areas were renamed the "San Diego Bay NWR." The San Diego Bay NWR is now made up of the South San Diego Bay Unit and the Sweetwater Marsh Unit. This change was made to streamline management and facilitate public understanding and recognition of the two Refuge areas.

1.6.4 Refuge Purposes for the San Diego Bay NWR

The refuge purpose refers to the justification for the establishment of a Refuge within the NWRS as a place owned by the American people and cared for on their behalf. The purposes of the refuge are defined by the Improvement Act as the "purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit" (Director's Order No. 132).

In combining and renaming the two Refuge areas in San Diego Bay, the original purposes for establishing these two Units were also combined. The consideration of these purposes is essential to the development of Refuge goals and objectives and in authorizing public uses on the Refuge, which must be shown to be appropriate and compatible with the purpose(s) of the Refuge and the mission of the NWRS before they are allowed. The Refuge purposes for the San Diego Bay NWR include:

> "to protect, manage, and restore habitats for federally listed endangered and threatened species and migratory birds, and to maintain and enhance the biological diversity of native plants and animals" 16 U.S.C. § 1531-1543 (Endangered Species Act of 1973, as amended) and 70 Stat. 1119 (Fish and Wildlife Act of 1956, as amended);
>
> ... for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. § 742f(a)(4) "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956); and
>
> ... shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements ... and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, ..." 16 U.S.C. § 664 (Fish and Wildlife Coordination Act)."

1.7 Management Direction and History

1.7.1 Introduction

The San Diego Bay NWR currently operates without an official management plan. In addition, no step-down plans have been approved to guide specific management activities. Management direction is currently influenced by laws, treaties, and executive orders related to the conservation and protection of natural and cultural resources; applicable Service recovery plans; and programs and recommendations associated with ongoing migratory bird planning efforts. The most important orders and laws affecting the operation and management of refuges include Executive Orders 12996 (Management and General Public Use of the National Wildlife Refuge System) and 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds), the NWRS Administration Act, as amended, the Refuge Recreation Act, the Endangered Species Act, and the Fish and Wildlife Act of 1956. Consistency with these and other orders and regulations is described in greater detail in Chapter 5.

The NWRS Administration Act, as amended, establishes a unifying mission for the Refuge System, a process for determining compatible uses of Refuges, and a requirement for preparing comprehensive conservation plans. First and foremost, this Act states that the mission of the NWRS should be focused singularly on wildlife conservation.

The Refuge Recreation Act requires that any recreational use on areas of the NWRS be "compatible" with the primary purpose(s) for which the area was acquired or established. It also requires that sufficient funding be available for the development, operation, and maintenance of recreational uses that are not directly related to the area's primary purpose(s).

The Endangered Species Act (ESA), as amended, does not specifically address the Refuge System, but does directly affect management activities within the NWRS. The Act directs Federal agencies to ensure that actions they carry out, authorize, or fund do not jeopardize endangered species or their critical habitat. The ESA also provides authority to the Service for land acquisition.

The Fish and Wildlife Act of 1956 establishes a comprehensive national fish, shellfish, and wildlife resources policy with emphasis on the commercial fishing industry. It recognizes the inherent right of every citizen and resident to fish for pleasure, enjoyment, and betterment and directs those administering the Act to maintain and increase public opportunities for recreational use of fish and wildlife resources.

1.7.2 Past Management Activities on Sweetwater Marsh Unit

For the first few years after establishing the Refuge, management efforts focused on developing and enhancing working relationships with the City of Chula Vista and other concerned parties; overseeing the design and implementation of numerous long range mitigation programs required by the Stipulated Settlement Agreement approved by the District Court in May 1988; and developing routine Refuge programs, such as law enforcement, resource monitoring, contaminant assessment, and educational activities *(USFWS 1988)*.

Many of these activities continue to be implemented today. Primary management activities include monitoring California least tern and western snowy plover (*Charadrius alexandrinus nivosus*) nesting at D Street Fill, annual breeding call surveys of the Refuge's light-footed clapper rail population, monitoring species covered by the City of San Diego's Multiple Species Conservation Program (MSCP), predator management, contaminants assessment, and enforcement of Refuge regulations related to public access. The Service jointly shares management responsibilities with the Port for pre-nesting season site preparation at the D Street Fill, which involves removing non-native weedy vegetation from the western portion of the fill area. Another management action previously implemented by the Service was the construction of artificial nesting platforms within the marsh to improve fledging success for the light-footed clapper rail.

For the past several years, a captive propagation protocol development program for the light-footed clapper rail has been implemented on the Refuge. Program development has involved a number of partners, including Refuge staff, the Carlsbad Fish and Wildlife Office, Division of Ecological Services, the Zoological Society of San Diego, SeaWorld San Diego, the Port, U.S. Navy, and experts, such as Dr. Richard Zembal. This program is an outgrowth of previous work conducted in the field in an attempt to enhance demographic and possibly genetic variability within the remaining sub-populations of light-footed clapper rails; it has lead to the successful hatching of rails in 2001, 2002, 2003, and 2004. Several captive bred birds were released at Sweetwater Marsh NWR in 2002. Additional releases into appropriate marshes occurred in 2003 and 2004. In January 2003, the program included four pairs of rails, with three pairs housed at the Chula Vista Nature Center and one at SeaWorld. The program is evaluating a variety of issues including identification of additional release locations, monitoring following release, genetic fingerprinting of captive and released birds, and concerns related to transmissible diseases.

Funding has been a major limiting factor for this program. Funding sources exist that, if tapped, could allow research to be expanded to include radio-telemetry tracking of released birds, genetic

"fingerprinting" of captive and wild birds, and other applied research activities that would benefit the recovery efforts for this species.

Periodic control of invasive plant species is also conducted on the Refuge. A variety of control methods are utilized, including manual, mechanical, and chemical control. The method chosen to control an infested area is based on the size of the infestation, the site location and proximity to sensitive resources, and the species being controlled. The primary method for controlling invasive plants on this Refuge is manual control of the invasive plants that grow along the existing trail system on Gunpowder Point. Mechanical removal is conducted on the D Street Fill, where large areas of weedy species tend to germinate during the rainy season. When chemical application is determined to be the most appropriate control method, a glyphosate based product, such as RoundUp or Rodeo, is used. A glyphosate-plus-surfactant product is used in upland areas, while a glyphosate product containing no surfactant is used in wet areas. The Refuge receives annual approval to apply specific chemical products through the Pesticide Use Proposal process. This process describes the proposed uses for the chemicals, where they might be applied, rates of application, and what steps will be taken to protect wetlands, endangered and threatened species, and other trust resources on the Refuge. The refuge manager has the authority to allow use of glyphosate on the Refuge without Regional approval; however, for most other pesticides and herbicides, an individual Refuge must have approval from the Regional Integrated Pest Management Coordinator prior to use. All approved chemical applications are performed by Refuge staff or contractors with a Qualified Applicator's License.

As described Section 1.6.2, the court action that led to establishing the Sweetwater Marsh Unit provided the underlying landowner (Santa Fe Land Improvement Company, a California Corporation), or its successors in interest, with certain leasehold interests over specific portions of Gunpowder Point, D Street Fill and F&G Street Marsh. These leasehold interests permit the leaseholder to obtain or sell mitigation credits for approved habitat enhancement projects that are implemented on the various leaseholds (refer to Section 2.2.2.1 for additional information on this subject). To date, two enhancement projects have been implemented on one of the mitigation leasehold overlays. One enhancement project involved a 10-acre parcel on the D Street Fill that was set aside for least tern nesting habitat as mitigation for impacts from the construction of a hotel on a historic least tern nesting site in the vicinity of Coronado Cays. The other involved the creation of 1.3 acres of shallow subtidal habitat near the eastern end of D Street Fill. This habitat was created to mitigate the loss of San Diego Bay surface water and bay bottom habitat related to activities at the National Steel and Shipbuilding Company shipyard.

Approximately 83 acres of the Refuge continue to be included in mitigation leasehold overlays. Since they were established, the Service has managed those portions of the leasehold overlays that have not yet been used for mitigation. These areas are managed for various purposes; for example, the western end of Gunpowder Point located near the Chula Vista Nature Center is managed as a public use area to facilitate environmental education and interpretation, wildlife observation, and wildlife photography. Portions of the D Street Fill are currently managed as nesting habitat for terns and plovers.

According to the provisions of the Stipulated Settlement, the leaseholder may use, in whole or in part, any of the specified lands for wildlife habitat enhancement projects, upon approval of the Service. In addition, the leaseholder may assign its rights under this lease, in whole or in part, to any third party for the purpose of carrying out such projects. The terms and agreements related to these leaseholds are described in Exhibit 4 of the Agreement and Escrow Instructions that were approved as part of the Stipulated Settlement, as well as in a Memorandum of Understanding (MOU), dated March 27, 1998, between the Service and Chula Vista Capital, the current

leaseholder. This leasehold interest expires in 2008 unless, per the provision of the MOU, the Service agrees to extend the term of the leasehold for an additional two years, to March 2010. The MOU specifies the types of habitat that should be restored on the various properties within the leasehold and establishes the procedures the Service will follow when reviewing proposed leasehold enhancement projects.

Authorized wildlife-dependent recreational uses on the Refuge include environmental education and interpretation and wildlife observation and photography. Successful partnerships with the Chula Vista Nature Center, the San Diego Zoological Society, and SeaWorld have produced several regionally important environmental education programs, such as Sweetwater Safari.

The Chula Vista Nature Center was constructed on Gunpowder Point before the establishment of the Refuge. When the Court conveyed Gunpowder Point to the Service, it stipulated that the conveyance would be subject to the existing easement and license that had previously been granted by the landowner for the Chula Vista Nature Center. The Nature Center easement covers approximately 3.33 acres near the eastern edge of Gunpowder Point and the license provides the Nature Center with the ability to utilize the Refuge access road for a vehicle entrance and exit.

The Chula Vista Nature Center is operated by the City of Chula Vista and plays an important role in the Refuge's environmental education and interpretation programs. The Center is generally open to the public Tuesday through Sunday and can be accessed via a shuttle bus that transports visitors from a parking lot located near the intersection of I-5 and E Street.

1.7.3 Past Management Activities on the South San Diego Bay Unit

Since the Refuge was established, management activities have been focused on posting signs along the Refuge boundary; monitoring seabird nesting activity on the salt works; conducting predator management to protect the endangered California least tern and light-footed clapper rail and the threatened western snowy plover; controlling invasive and weedy species on the Otay River floodplain; enhancing some of the salt pond levees; and enforcing Refuge regulations related to trespass. Wildlife-dependent recreational uses occurring on this Refuge are generally limited to the open waters of the bay and include fishing and wildlife observation and photography. Opportunities for wildlife observation are also provided during guided bird tours inside and adjacent to the salt works at appropriate times of the year, and for special events. Various recreational boating activities are also occurring within the Refuge boundary. A commercial solar salt evaporation facility operates on the Refuge under a Special Use Permit (SUP) between the Service and the San Diego County Airport Authority. To avoid adverse effects to federally listed and other trust species, the SUP includes various conditions that regulate activities on the salt works, particularly during the nesting season. The salt operator is responsible for maintaining the salt pond levees under the direction of the Refuge Manager.

Actions to enhance nesting habitat on the levees began in 2002 when clean, rough-grained sand was placed at a depth of approximately eight inches on the surface of several of the levees within the eastern portion of the salt works. This project was undertaken to reduce a significant limiting factor to successful nesting at the site involving eggshell adherence and soil concretions on the feet, feathers, and beaks of chicks due to existing soil conditions on the levees. The mortality of many developing embryos and young birds has been attributed to this effect in past nesting seasons. The first year of levee enhancement focused on adding a new sand cap to some of the most problematic sections of existing levees where ground nesting seabirds and shorebirds have previously nested.

Observations made during the 2003 nesting season indicated that substrate enhancement was successful in achieving its primary goal. No egg adherence or soil-to-foot concretions were

observed. However, this may have been partially due simply to limited precipitation, but it seemed clear to nest observers, based upon anecdotal observation, that the enhancement areas were preferentially used by some nesting species (*Collins pers. comm. 2003*).

Following completion of the initial project, additional areas were selected for enhancement. Enhancement activities are ongoing and occur during the non-breeding season. The effects of this enhancement on nesting preference and nesting success continue to be monitored as part of a larger least tern and snowy plover monitoring program that occurs on the Refuge during the nesting season.

In accordance with the terms of the Cooperative Agreement between the Service and the Port (refer to Section 1.6.3.) that resulted in the establishment of the Refuge, the Port has provided $900,000 in mitigation funds to the Service for restoration of least tern foraging habitat, enhancement of least tern nesting areas, and management of tern nesting areas. From the $900,000, a $500,000 Management Endowment has been established that through interest payments will help fund annual maintenance, including biological monitoring and predator control. Of the remaining $400,000, $200,000 was provided to fund the development of restoration plans and the completion of the CCP for the South San Diego Bay Unit and $150,000 is to be used to enhance a minimum of three acres of nesting habitat along the salt pond levees. Nesting enhancement involves placing six to eight inches of slightly compacted, clean, lightly-colored sand on the levee tops. The remaining $50,000 is to be used to increase tern foraging habitat.

Additional information regarding current management activities on the South San Diego Bay Unit is provided in Section 2.3.2.1.

1.8 Refuge Vision and Goals

1.8.1 Refuge Vision

The San Diego Bay National Wildlife Refuge protects a rich diversity of endangered, threatened, migratory, and native species and their habitats in the midst of a highly urbanized coastal environment. Nesting, foraging, and resting sites are managed for a diverse assembly of birds. Waterfowl and shorebirds over-winter or stop here to feed and rest as they migrate along the Pacific Flyway. Undisturbed expanses of cordgrass-dominated salt marsh support sustainable populations of light-footed clapper rail. Enhanced and restored wetlands provide new, high quality habitat for fish, birds, and coastal salt marsh plants, such as the endangered salt marsh bird's beak. Quiet nesting areas, buffered from adjacent urbanization, ensure the reproductive success of the threatened western snowy plover, endangered California least tern, and an array of ground nesting seabirds and shorebirds.

The San Diego Bay National Wildlife Refuge also provides the public with the opportunity to observe birds and wildlife in their native habitats and to enjoy and connect with the natural environment. Informative environmental education and interpretation programs expand the public's awareness of the richness of the wildlife resources of the Refuge. The Refuge serves as a haven for wildlife and the public to be treasured by this and future generations.

1.8.2 Refuge Goals

1.8.2.1 Sweetwater Marsh Unit

The following goals provide guiding principles for the Sweetwater Marsh Unit. They are consistent with Refuge purposes, NWRS goals, the Improvement Act, Service policies, and international treaties. These goals apply to all of the management alternatives evaluated for this Refuge Unit.

Goal 1: Protect, manage, enhance, and restore coastal wetland and upland habitats to benefit native fish, wildlife, and plant species within the Sweetwater Marsh Unit.

Goal 2: Support recovery and protection efforts for the federally and state listed threatened and endangered species and species of concern that occur within the Sweetwater Marsh Unit.

Goal 3: Protect and restore the environmental health of the Refuge's coastal salt marsh and upland habitats by making contaminants remediation a priority for Refuge lands, adjacent properties, and upstream developments.

Goal 4: Provide outstanding environmental education programs for all ages in partnership with the Chula Vista Nature Center and other public agencies and non-governmental organizations.

Goal 5: Provide quality wildlife-dependent recreation, interpretation, and outreach opportunities to enhance public appreciation, understanding, and enjoyment of the Refuge's biological and cultural resources.

1.8.2.2 South San Diego Bay Unit

The following goals provide guiding principles for the South San Diego Bay Unit. They are consistent with Refuge purposes, NWRS goals, the Improvement Act, Service policies, and international treaties. These goals apply to all of the management alternatives evaluated for this Refuge Unit.

Goal 1: Protect, manage, enhance, and restore open water, coastal wetlands, and native upland habitat to benefit the native fish, wildlife, and plant species supported within the South San Diego Bay Unit.

Goal 2: Support recovery and protection efforts for the federally and state listed threatened and endangered species and species of concern that occur within the South San Diego Bay Unit.

Goal 3: Provide high quality foraging, resting, and breeding habitat for colonial nesting seabirds, migratory shorebirds and waterfowl, and salt marsh-dependent species.

Goal 4: Provide opportunities for compatible wildlife-dependent recreation and interpretation that foster public appreciation of the unique natural and cultural heritage of South San Diego Bay.

1.9 Comprehensive Conservation Plan Process

1.9.1 Overview of the Process

The Improvement Act requires that every Refuge in the system prepare a CCP. Both the Service and the public benefit from this requirement, as the CCP process helps to ensure that each refuge fully evaluates, develops, and achieves its long-term vision and goals. Once a CCP is approved, the Refuge must follow the management priorities provided in the approved CCP.

The procedural provisions in the Council on Environmental Quality's Regulations for Implementing NEPA require all Federal agencies to integrate the NEPA process with other planning at the earliest possible time. In accordance with these regulations, the CCP Policy states that each CCP will comply with the provisions of the NEPA by concurrently preparing an EA or EIS to accompany or be integrated with the CCP. When preparing an EIS with a CCP, the two processes shall be integrated into one draft document. The purpose of integrating the two processes is to provide a systematic interdisciplinary approach; identify and analyze the environmental effects of the proposed actions; describe appropriate alternatives to the proposal; involve the affected State and Federal agencies, Tribal governments, and the affected public in the planning and decision-making process; and fully integrate all Refuge proposals that may have an impact on the environment. This Draft CCP/EIS for the Sweetwater Marsh and South San Diego Bay Units is intended to meet this dual requirement for compliance with the Improvement Act and NEPA.

The Draft CCP/EIS is available for public comment for a period of 60 days. Once the comment period has closed, all written and oral comments received on the Draft CCP/EIS will be reviewed and analyzed. Written responses will be prepared for all substantive comments and the CCP/EIS will be modified as appropriate. The Final CCP/EIS will identify the preferred alternative, which could be the proposed action, the no action alternative, another alternative, or a combination of actions or alternatives discussed in the Draft CCP/EIS. Following completion of the Final CCP/EIS, a stand-alone CCP, generally consisting of the preferred alternative and portions of Chapters 1, 3, 5 and Appendix D of the Final CCP/EIS, will be prepared.

The key steps in this CCP planning process include:

1. Forming the CCP planning team and conducting pre-planning tasks
2. Initiating public involvement and scoping
3. Identifying issues and developing a vision statement and goals
4. Developing alternatives and assessing their environmental effects
5. Identifying the Preferred Alternative
6. Preparing the Draft CCP/EIS
7. Publishing the Draft CCP/EIS for public review and comment
8. Responding to substantive comments and revising the document as necessary
9. Publishing the Final CCP/EIS at least 30 days prior to issuing a Record of Decision
10. Issuing the Record of Decision and providing the final, approved, stand-alone CCP
11. Implementing the CCP

1.9.2 The CCP Planning Team

A planning team was formed to produce this CCP in February 2000. Recognizing the complexities involved in developing a CCP for this Refuge, the Service selected planning team members with a range of skills and technical knowledge. Core team members include representatives from the Refuge Complex, as well as from the Service's Coastal Program, Endangered Species Program, and Environmental Contaminants Division. Others who provided the team with assistance on specific CCP tasks included representatives from the Carlsbad Field Office's GIS Mapping and

Analysis Section, the NWRS's Branch of Cultural Resources and Branch of Refuge Biology, and the Service's Migratory Birds Program. The California Department of Fish and Game was also invited to participate on the Planning Team, and the core team met on several occasions with other interested and/or affected agencies, including NOAA Fisheries and the Regional Water Quality Control Board. The planning team also organized several technical workshops with researchers, consultants with expertise in coastal restoration planning, and representatives from other agencies to address topics, such as coastal salt marsh restoration, brine invertebrates, saline systems, and colonial nesting seabirds. Ducks Unlimited, Inc. (DU) was included in the CCP process through a Cooperative Agreement involving DU, Refuges, and the Coastal Program. With funding provided by the Coastal Program, DU provided technical support needed to design restoration proposals for the South San Diego Bay Unit. The Coastal Program also funded analysis specific to coastal restoration involving engineering and hydrological consultation. A list of CCP Planning Team members, document preparers, and other participants is provided in Chapter 6.

1.9.3 Public Involvement in the CCP Process

Public involvement has been an essential component of this CCP process. From the beginning of the process through the distribution of the Draft CCP/EIS, every effort has been made to provide the public with detailed information about the process and the proposed action.

The CCP planning team formally initiated this CCP process in June 2000, by publishing a Notice of Intent in the Federal Register, issuing the first in a series of Planning Updates, and inviting the public to attend an initial scoping meeting. Between July 2000 and June 2001, the team held a series of public workshops to address a range of issues related to the CCP process. In July 2000, two initial scoping meetings were held to receive general comments about current and future management of the San Diego Bay NRW. These initial meetings were followed by a workshop on general public use issues in September 2000. Three meetings addressing issues related to wildlife management and restoration were held in November 2000, March 2001, and May 2001. In June 2001, another meeting was held to address public use proposals.

Throughout the process, the team distributed meeting notices and Planning Updates to over 1,000 Federal, State, and local agency, Tribal governments, non-governmental organizations, and individual contacts. The CCP planning team also developed a CCP web page to provide an additional opportunity for the public to review information presented at our public meetings. The web page also provided the Planning Team with a tool for soliciting public comments throughout the planning process. Chapter 5 of this document provides additional details regarding the public involvement and outreach program that has been implemented for this CCP.

1.10 Planning Issues

Planning issues were identified through discussions with planning team members and workshop participants, and through the public scoping process. From these discussions and input provided during scoping, seven major issues were identified for the Sweetwater Marsh Unit and six major issues were identified for the South San Diego Bay Unit. Each of the issues presented, below was considered during the development of management alternatives for each Refuge Unit. A summary of all of the issues raised and comments provided during public scoping is provided in Appendix E.

1.10.1 Major Issues Identified During the Scoping Process for Sweetwater Marsh Unit

Issue 1: Refuge Boundary Expansion
Should the Refuge boundary be expanded to include the intertidal mudflats that occur immediately to the west of the Sweetwater Marsh Unit?
Prior to human disturbance, the Sweetwater River estuary supported extensive areas of coastal salt marsh, a system of tidal channels, intertidal mudflats, and saltpans. Today, the Sweetwater Marsh Unit includes most of what remains of the coastal salt marsh habitat within the historic Sweetwater River estuary, while the majority of the remaining intertidal mudflats that once extended well to the north and south of Sweetwater Marsh are located immediately to the west of the Refuge. This area consists of approximately 200 acres and represents about 37 percent of the total remaining intertidal mudflat habitat within the bay. The intertidal mudflats adjacent to Sweetwater Marsh were identified for possible inclusion in the Refuge when the original proposal to establish a national wildlife refuge over the Sweetwater Marsh mitigation/preservation areas was presented to the Director of the Fish and Wildlife Service in December 1986. However, when the Stipulated Settlement Agreement was approved, the intertidal mudflats were not included within the approved Refuge boundary.

During the CCP scoping process, the public voiced considerable interest in examining the feasibility of expanding the Refuge boundary to incorporate the adjacent mudflats into the Sweetwater Marsh Unit. The intent was to ensure the long-term protection of this habitat, which supports a significant population of wintering shorebirds and migratory waterfowl. Protection of the salt marsh habitat alone cannot satisfy the foraging needs of these shorebirds and the other fish and wildlife species that have historically utilized the variety of intertidal habitats that occurred within the South Bay.

The public also offered the opinion that a more comprehensive habitat management program could be implemented if both the salt marsh and the adjacent mudflats were managed by the same entity. Currently, management of the salt marsh habitat is the responsibility of the Service, while management of the activities occurring on the adjacent mudflats is the responsibility of the Port. This separation of management authority has the potential to reduce the effectiveness and enforcement capability of both entities, resulting in impacts to the resources due to the lack of enforceable resource protection regulations outside of the existing Refuge boundary. Of particular concern is the presence of free-roaming dogs and associated human disturbance on the mudflats. These activities result not only in frequent disturbances to foraging shorebirds, but also often result in trespass onto Refuge lands and further disturbance of sensitive bird species. Several members of the public stated that by expanding the Refuge boundary to incorporate the intertidal mudflats, the Service could establish and enforce use regulations that would minimize disturbance to sensitive wildlife both on the mudflats and within the salt marsh.

Options for managing this area as part of the Refuge were explored during the CCP process and included expanding the Refuge boundary to include this area and managing the area under an agreement between the Service and Port. Additional discussion regarding this issue is included in section 2.2.3.1.

Issue 2: Improved Tidal Circulation
Should tidal circulation within the marsh be improved, and, if so, to what extent should this occur?
Prior to the construction of the flood control channel at 24th Street, the Sweetwater River provided freshwater inflows into Sweetwater Marsh. According to the Final EIS for the flood control

project, under historic conditions the marsh received flood waters up to ten times per year *(U.S. Army, Corps of Engineers 1982).* Following construction, these primary freshwater flows were diverted out of the wetlands and into the flood control channel. The result of this project was fragmentation of the wetlands complex. Paradise Marsh was separated from Sweetwater Marsh, which changed the capacity and function of the historic tidal prism in the wetland complex. These changes, as well as the construction of the access road from E Street to Gunpowder Point, have all contributed to the degradation of the marsh's tidal circulation. Many tidal channels and creeks that were once connected have been severed and are now becoming filled with silt. As a result, cordgrass habitat is being replaced by high marsh vegetation dominated by pickleweed (*Salicornia virginica*) and glasswort (*Salicornia subterminalis*). The specific effect of this loss of tidal prism has been a gradual degradation of the marsh's ability to support a viable clapper rail population. The Draft CCP/EIS evaluates several proposals for improving tidal circulation within Sweetwater Marsh, in accordance with the recovery actions outlined in the Recovery Plan for the Light-footed Clapper Rail *(USFWS 1985).*

Issue 3: Identification and Remediation of Contaminants
What management actions are necessary to ensure adequate identification and remediation of various contaminants known or suspected to occur within the Refuge boundaries?
Field observations, historic records of past land use activities, and limited soil and water sampling suggest that contaminants are present in several locations within the boundaries of the Sweetwater Marsh Unit and may be present, but have not yet been confirmed, in other portions of the Refuge. A preliminary assessment of potential contaminant issues within the Refuge boundary was conducted in March 1988. This assessment determined that the presence of environmental contaminants may be suspected based on the heavy municipal, military, and industrial past and present use of the San Diego Bay and adjacent lands *(USFWS Memorandum, March 7, 1988).*

In 1996, the County of San Diego, Department of Environmental Health determined that properties in the vicinity of Paradise Marsh in National City were used as a municipal solid waste burn dump from about the late 1930s to early 1950s. Burn ash often contains concentrations of heavy metals and other chemical constituents that could pose a threat to public health and safety, as well as to fish, wildlife, and their habitats. Soil sampling conducted between 1973 and 1984 showed an area of lead-contaminated materials in the general vicinity of the Refuge; however, the extent of contamination and whether it extends onto Refuge property has not been determined. Although those areas identified as potential burn ash sites are inspected quarterly, the extent of contamination and the actions required to remediate the sites have yet to be identified. Initial review also indicates the potential for contaminants to be present on Gunpowder Point and in sediments at the F&G Street Marsh.

During the scoping process for the CCP, the planning team identified as a high priority the need to characterize the extent and type of contaminants present within the Refuge. Since that time, the Refuge complex and the Carlsbad Fish and Wildlife Office, Division of Environmental Contaminants have completed a Contaminant Assessment Process (CAP) for the Sweetwater Marsh and South San Diego Bay Units. The CAP is a standardized and comprehensive approach for documenting and assessing potential threats posed by environmental contaminants to lands and biota within refuges. Based on the information available regarding conditions within and adjacent to the Refuge, additional contaminants assessments and site characterizations appear warranted.

Issue 4: Habitat Restoration

How much, if any, of the D Street Fill should be restored to intertidal habitat?

The D Street Fill is located between the historic Sweetwater River channel to the south and the 24th Street flood control channel to the north. This 85-acre dredge disposal site was created in 1969 as a result of the construction of the western end of the 24th Street channel and an associated marina. When the Sweetwater Marsh Unit was established, approximately 52 acres of this fill site were included within the Refuge boundary. The Port retains ownership of the rest of the D Street Fill, including 12 acres at the western end and about 21 acres along the site's northern perimeter. Of the 52 acres included in the Refuge boundary, 13 acres were designated as a least tern nesting site. Since Refuge establishment, an additional 10 acres of Refuge property on the D Street Fill have been designated for management as least tern nesting habitat and 1.5 acres have been converted to tidal habitat. These actions were the result of mitigation measures required to offset impacts associated with development elsewhere in the bay. The remaining 26.9 acres are included in a mitigation leasehold overlay established through the MOU, dated March 27, 1998, between Chula Vista Capital and the Service. Currently, the MOU states that the permissible and preferred uses of this leasehold are salt marsh restoration. An issue raised during public scoping, as well as by the planning team, was whether more of the D Street Fill area should be retained and managed for California least tern and western snowy plover nesting, or the area should continue to be designated for restoration to intertidal habitat.

Prior to disturbance, the site of the D Street Fill supported intertidal mudflat and salt marsh habitat. Once constructed, the fill remained unvegetated for several years as a result of uncontrolled public access and off road vehicle activity. In 1973, least tern nesting was observed for the first time on this fill site *(USFWS 2002)*. Since 1978, least terns have been recorded attempting to nest at this location 21 out of the 24 years. The site was used regularly between 1994 and 2001, but fledgling production was poor in four of those eight years. The question of whether to restore most of the D Street Fill to wetland habitat, which the site historically supported, or manage more of the area as potential nesting area was addressed at two public workshops. Service staff also discussed this topic at several planning team meetings and during a Wildlife Habitat and Management Review conducted by the Service's Regional Office. An objective of the planning team in developing the management goals for the Sweetwater Marsh Unit, as well as the South San Diego Bay Unit, was to develop management goals that are science-based and reflect the principles of conservation biology including the maintenance of biological integrity, diversity, and environmental health pursuant to the Improvement Act.

Issue 5: Management of Invasive Species

What actions should be undertaken to prevent, control, and/or remove invasive species that could negatively impact the biological value of the Refuge's important coastal resources?

Another issue raised during the public scoping process was the need to identify current and potential invasive species problems on the Refuge and develop and implement appropriate management responses. The Refuge's habitats have been impacted by a variety of non-native invasive species. For example, the quality of the Refuge's salt marsh habitat, particularly the habitat within the marsh's tidal channels, has been compromised to some extent by the presence of the exotic benthic invertebrate, *Sphaeroma quoyanum.* This isopod, which originates in the southern Pacific, is found in extremely high densities in the banks of the marsh's tidal channels where its burrowing activity has converted the gentle banks of the channel to steep, often undercut slopes. These structural changes to the tidal channels could be having negative impacts on a variety of species within the marsh, including native benthic populations, shorebirds, and the light-footed clapper rail.

The magnitude of the exotic species invasion problem in San Diego Bay and in other coastal wetlands is largely unknown. Many of the marine associated species group's taxonomy are not well documented. Bilge water discharges and illegal aquarium dumping are presumed to present serious risks to the estuarine and near-shore marine environments of the bay, including the intertidal habitats of Sweetwater Marsh Unit. It is acknowledged that preventing the introduction of exotic aquatic and benthic organisms requires the cooperation of all of the stakeholders within San Diego Bay. However, for the Refuge, understanding how these organisms might impact coastal resources and identifying effective measures for controlling or eliminating these species, if introduced, is a long-term management issue that must ultimately be addressed.
An example of the extent of damage that could occur to the local marine environment as a result of the introduction of an exotic species is *Caulerpa taxifolia*, marine algae that has destroyed thousands of acres of marine habitat in the Mediterranean Sea. This species was identified in Aqua Hedionda Lagoon, a San Diego coastal lagoon located approximately 40 miles north of San Diego Bay. After several years of costly control procedures, this species was successfully eliminated.

The presence of non-native invasive plant species is a common problem for natural areas that occur along the urban interface. Many invasive species can displace native vegetation and often require annual control, such as giant cane (*Arundo donax*), tamarisk (*Tamarix sps.*), garland chrysanthemum (*Chrysanthemum coronarium*), fennel (*Foeniculum vulgare*), tree tobacco (*Nicotiana glauca*), pampas grass (*Cortaderia jubata*), and castor bean (*Ricinus communis*). Other non-native invasive plant species have been recorded in San Diego County, but have not yet invaded the native habitats of the Sweetwater Marsh Unit. It is only through aggressive management actions that existing invasive species can be controlled and the future presence of other species can be avoided.

Issue 6: Predator Management
Should the current predator management strategies being implemented on the Refuge be expanded or modified? Are there other management strategies that should be considered that, if implemented, would more effectively achieve the Refuge purpose of protecting endangered and threatened species?
The sensitive coastal habitats of Sweetwater Marsh Unit are situated in the midst of a densely populated urban area. As a result, the open spaces of the Refuge tend to attract domestic and feral dogs and cats. To complicate matters, the scarcity of undeveloped land in the vicinity of the Refuge results in more intensive predation from the remaining local wildlife community, including native and non-native mammalian and avian predator species. Many of these predators continue to survive or become abundant in this urban setting because they are generalists or scavengers, demonstrating little if any prey discretion. The combination of these factors significantly increases the vulnerability of the Refuge's endangered and threatened species to predation.

Mammalian and avian predator management is currently conducted on this Unit. The program focuses on the protection of listed species, particularly the California least tern, western snowy plover, and light-footed clapper rail. Managed species include feral dogs and cats, native and introduced mammals, and predatory birds. During scoping, the planning team was encouraged to evaluate the long-term effectiveness of the current predator management program. Potential changes to the program should be evaluated that would ensure better protection of threatened and endangered species, while also emphasizing effective non-lethal predator management methods. The combination of effective predator management, in association with the enhancement of nesting substrate in preferred nesting areas, is thought to be more effective for least tern and snowy plover reproductive success than simply controlling predators. The predator management plan is described in detail in Appendix M.

Issue 7: Effects of Urban Development on Refuge Resources
How can current Refuge management practices be enhanced to better address the impacts of adjacent development on Refuge resources?
The Sweetwater Marsh Unit is located in a highly populated region that supports a variety of urban land uses, including residential, commercial, industrial, and active and passive recreation. Immediately to the north of the Refuge are maritime-related uses associated with the Port of San Diego. The closest Port activities include ship berthing and 24-hour off-loading of large cargo ships, involving the need for substantial night lighting visible from within the Refuge. Other uses in the vicinity of the Refuge include industrial and recreational development to the north within the City of National City, industrial development to the south, and commercial and residential uses to the east of I-5, all within the City of Chula Vista. Currently, the property immediately to the east of the Refuge is vacant. However, future development plans for this property and other properties along the Chula Vista Bayfront are currently being prepared by the City of Chula Vista and the Port. Potential uses in the vicinity of the Refuge Unit could include commercial, office, hotel/resort, and active and passive open space. The potential also still exists for residential development to occur in proximity to the Refuge, as the future use of the properties within the Chula Vista Bayfront master plan area are dependent upon various approvals required from the California State Lands Commission and other agencies.

Because of the proximity of the Refuge to existing urban uses, many of the management actions undertaken by Refuge staff are directly related to unauthorized use of the Refuge. Examples of such unauthorized use include illegal dumping, trespass into sensitive resource areas, vandalism to locks, fences, and signs, illegal encampments, and allowing pets, particularly dogs, to roam off-leash on Refuge lands. Other impacts from surrounding development include degraded water quality resulting from upstream urban runoff; the introduction of hazardous substances into the surface and ground water from existing and past industrial uses; adjacent night lighting that spills over onto sensitive nesting areas; and the release of feral cats and dogs into the area. During the scoping process, the planning team identified the need to expand enforcement activities on the Refuge and to work with other agencies to implement design and development standards that would reduce direct and indirect impacts to Refuge resources. The quality of the water entering the Refuge from upstream sources is of particular concern. Plans for new development in proximity to the Refuge, make it necessary to identify and evaluate the type and extent of additional management actions that might be required to ensure the long term protection of the Refuge's sensitive resources.

1.10.2 Major Issues Identified During the Scoping Process for the South San Diego Bay Unit

Issue 1: Incorporate In-holdings Into Refuge Management Area
Should the Refuge Complex continue to pursue management authority for all of the areas within the approved acquisition boundary for the South San Diego Bay Unit?
The approved acquisition boundary for the South San Diego Bay Unit includes approximately 3,940 acres; however, at present, the Service only has management authority over 2,300 acres. The majority of the open bay that is located within the acquisition boundary of the Refuge Unit, but outside the current management boundary (an area of approximately 1,130 acres) is State Tidelands that are managed by the Port. Approximately 35 acres of these bay tidelands located in the southwestern corner of Emory Cove and just to the north of Pond 11 are owned by the Navy and leased to the County of San Diego, Department of Parks and Recreation. This area is referred to as the South Bay County Biological Study Area. During the public scoping meetings, several individuals suggested that the wildlife and habitat resources of the South Bay could be better protected if one entity retained management authority over all of the land and waters included

within the approved Refuge acquisition boundary. This situation would facilitate uniform enforcement of existing regulations, such as the 5 miles-per-hour speed limit that is posted for much of the South Bay, and would ensure the comprehensive review of public uses proposed for the area. Discussions between the Port and the Service regarding a comprehensive approach to managing these areas are ongoing.

Issue 2: Habitat Restoration and Management of the Salt Ponds
Should the salt ponds within the Refuge be restored to intertidal habitat? If so, to what extent should this occur?
The south end of San Diego Bay has been the site of an active solar salt operation since the late 1800s. Today's facility has operated in its current configuration for over 50 years and a smaller version of the salt works (which did not include the outer primary ponds) has existed since at least 1916. South Bay Salt Works currently operates under a Special Use Permit between the Service and the San Diego County Airport Authority. Under the current agreement, the operator is responsible for all levee management and water movement within the ponds.

The ponds provide resting and loafing habitat for an abundant and diverse group of migratory birds that travel along the Pacific Flyway. Brine invertebrates including brine flies (*Ephydra* sp.) and brine shrimp (*Artemia* sp.) are also abundant in some of the ponds, providing prey for various avian species, including phalaropes (*Phalaropus sp.*) and eared grebes (*Podiceps nigricollis*). The levees also provide important nesting habitat for a variety of colonial nesting seabirds, as well as two federally-listed species, the endangered California least tern and threatened western snowy plover. The variety of birds using the salt ponds levees for nesting is due in large part to the isolated nature and minimal threat of human disturbance provided at this site. These attributes are relatively scarce along the highly urbanized southern California coast.

Much of the area now occupied by the salt works historically supported coastal wetlands, primarily intertidal mudflats and coastal salt marsh *(U.S. Navy 2000)*. Today in San Diego Bay, only remnants of the vast acreage of coastal wetlands that once occupied the areas around the bay have been preserved. The remainder has been filled or dredged to accommodate port development and associated commercial, industrial, and residential uses.

Although the salt works displaced a large area of historic native migratory bird habitat in the south bay, the ponds and levees do provide resting, loafing, and foraging opportunities for a large number of birds and a number of the salt pond levees also provide important nesting habitat for ground nesting birds, including seven species of seabirds. However, because of the high salinities within most of the salt ponds, this area provides very little habitat value for fish, aquatic plants, and bay invertebrates. In addition, approximately 15 percent (about 160 acres) of the system (the pickling, crystallizer, and magnesium chloride ponds) provide virtually no habitat value for wildlife.

During the scoping process, a range of perspectives were presented regarding the future of the solar salt operation. Some suggested that the existing benefits of the salt works for shorebirds and nesting seabirds were so significant that no changes to the current operation should be considered. Others expressed their desire to see the overall habitat value of the area enhanced by restoring intertidal habitat to some or all of the area currently occupied by the salt works. Technical issues also arose related to desalinating the salt ponds to accommodate habitat restoration. There were clearly certain features or aspects of the existing salt ponds that the majority of the respondents felt should be preserved and/or enhanced. These included retaining, and in some cases enhancing, portions of the existing levee system in order to accommodate nesting areas for colonial seabirds; maintaining an adequate area of hypersaline habitat to ensure the continued production of brine shrimp and brine flies; and continuing to manage this area in a manner that would maintain the low

disturbance levels experienced at this location over the past 100 years. These options are addressed in the range of alternatives evaluated for this Refuge (refer to Chapter 2).

Issue 3: Floodplain Management and Habitat Restoration in the Otay River Floodplain
What are the existing flood hazards in the Otay River floodplain? Could habitat restoration within the floodplain alter existing upstream or downstream flood flow characteristics? How much restoration should occur and what types of habitat should be restored?
Included within the South San Diego Bay Unit are 145 acres of upland and wetland habitat located within the 100-year floodplain of the Otay River. Nestor Creek also flows through this area, merging with the Otay River near its convergence with San Diego Bay. The flows of both the Otay River and Nestor Creek are constricted in this area by a series of levees associated with the salt ponds to the north. In the early 1900s, the natural course of the Otay River was altered to accommodate the development of the salt works. The Otay River presently crosses the site within a diked channel that extends westward from I-5, then turns north at the point where it crosses the Saturn Boulevard right-of-way. The channel then turns west paralleling the railroad, until empting into the San Diego Bay near 9th Street in Imperial Beach.

Under current conditions, this portion of the Refuge is subject to flooding during a 100-year flood, as are some of the existing developments to the south. The low flow channels of both the Otay River and Nestor Creek carry the smaller storm flows to the bay; however, larger flows collect behind the levees that constrict the natural flows of these waterways. If the flows are large enough, the floodwaters will overtop the levees and flow into the adjacent salt ponds. The backwater effect that currently occurs at the confluence of Nestor Creek and the Otay River results in higher flood levels upstream of Nestor Creek.

The existing Otay River floodplain has been altered by a combination of agricultural activities and urban development. The portion of the floodplain located within the Refuge supported farming activities until 1986. Today, non-native weeds and exotic grasses dominate the upland portions of the site. The freshwater wetland habitat of the Otay River includes components of southern willow scrub habitat, as well as a variety of exotic, invasive wetland species such as giant reed, salt cedar, and castor bean. This freshwater wetland habitat transitions into salt marsh habitat about 0.5 miles downstream of I-5, at which point the channel supports coastal salt marsh species, such as pickleweed and sparse stands of cordgrass (*Spartina foliosa*).

During the scoping process, the public identified the need to address potential flooding problems on the Refuge and in the surrounding developed areas. In addition, several members of the public expressed a desire to see the Otay River floodplain restored to native wetland and upland habitat. As a result of these initial comments, the planning team reviewed the potential for restoration in this area. Additional information related to the tidal and river hydrology in the area would be needed to evaluate the feasibility of restoration and to address existing flooding issues. Restoration options for the Otay River floodplain are described in Chapter 2. The existing hydrological characteristics of this area are summarized in Chapter 3 and described in greater detail in Appendix I. The potential effects of restoration on the existing flood conditions in this area are described in Chapter 4.

Issue 4: Managing for California Least Terns, Western Snowy Plovers, and Gull-billed Terns
Is it possible to implement management actions on this Refuge that will assist in the recovery and conservation of all three of these trust species?
The California least G, western snowy plover, and western gull-billed tern (*Gelochelidon nilotica vanrossemi*) all nest on the salt pond levees within the South San Diego Bay Unit and each of these species has benefited from the various management actions that are implemented on the Refuge to

conserve the Refuge's listed species. The three species are all protected under International Treaties and various Federal and State laws. In addition, the least tern is federally-listed as endangered and the snowy plover is listed as threatened, therefore, both of these species are protected under the authorities of the ESA. The gull-billed tern is not federally-listed as threatened or endangered; however, because of its declining population trends and threats to breeding birds, it has been identified by the Service as a Bird of Conservation Concern *(USFWS 2002)*. The best scientific data available for this subspecies indicate a small population of less than 600 known nesting pairs range wide and a limited distribution with ten known breeding sites, only two of which are located within the United States. Approximately seven percent of the total population of this subspecies nests at the salt works.

Current management actions that have provided direct benefits to all three species include protecting the site from human disturbance and improving nesting substrate on the salt pond levees. Gull-billed terns also receive indirect benefits from mammalian and avian predator management that is implemented to improve the reproductive success of least terns and snowy plovers. Predation of least tern and snowy plover eggs and chicks has been recorded on the salt works for over twenty years. The effect of predation on fledging success varies from year to year, but in some years the effects can be dramatic and devastating to the colony. In recent years, the issue of managing for avian predation has become more complicated, as gull-billed terns have been observed preying on least tern and snowy plover chicks, not only at the salt works, but elsewhere around the bay and adjacent coastal areas. To date, no actions have been taken to remove offending gull-billed terns from the Refuge.

The current situation has raised questions as to whether the control of offending gull-billed terns should be initiated and if initiated what effects could this control have on the gull-billed tern nesting colony at the salt works. Other related questions include: to what extent are gull-billed tern foraging activities impeding the recovery of least terns and snowy plovers in San Diego Bay and are there other management options that could be implemented to reduce gull-billed tern predation on least tern and snowy plover chicks and eggs?

The various programs within the Service, including Migratory Birds, Refuges, and Ecological Service, are currently working together to address these and other questions in an effort to identify management actions that would achieve the recovery goals of the least tern and snowy plover, while also supporting the continued reproductive success of the gull-billed tern in Southern California. Actions are already being implemented that we hope will increase our understanding of the effects and interrelationship of these species. These actions include limited monitoring of gull-billed tern nesting and foraging activities on the Refuge; monitoring of nesting activity, reproductive success, and predation of least terns and snowy plovers; and conducting range wide surveys for the western gull-billed tern.

Issue 5: Wildlife-Dependent Recreational Uses

Should the current wildlife-dependent recreation uses on the Refuge be expanded? If so, what opportunities for wildlife-dependent recreational uses are available that would satisfy the needs of the surrounding community, while conserving the Refuge's trust resources?

The South San Diego Bay Unit consists primarily of open bay waters, salt ponds, intertidal areas, and disturbed uplands. Public access onto the Refuge is limited to activities that can be conducted from a boat, personal watercraft, or sailboard on the open waters of the bay. Public access into the salt works and along the salt pond levees is only permitted during occasional guided tours conducted for purposes of wildlife observation and interpretation. The remainder of the Refuge is closed to all public access. Public uses currently occurring in the open waters of the bay include recreational boating, fishing in accordance with State regulations, wildlife observation,

interpretation, and photography. Visual access into the Refuge is available from the public rights-of-way that extend around the south end of the bay, including the Bayshore Bikeway, and from the Biological Study Area, maintained by the County of San Diego.

During the public scoping process, the public provided considerable input regarding the types and intensities of uses that should be implemented on the Refuge. There were requests to develop environmental education programs for the elementary schools in the immediate area, to open the salt works levees to public access for wildlife observation, and to provide opportunities for remote viewing of nesting activity on the levees through the use of video cameras. Others requested that trails be developed in the Otay River floodplain that would link the Refuge to the main trail system proposed for the Otay Valley Regional Park and that the establishment of an interpretive kayak trail be considered. A waterfowl hunting program was suggested, as was opening the salt ponds to fishing and permitting dog trials to be conducted within the Refuge. Others stated that the Refuge's management goals should emphasize wildlife and habitat protection over public recreation uses and that no uses should be permitted that would negatively impact endangered species, migratory shorebirds, or nesting seabirds. The public use options considered for the Refuge are described in detail Chapter 2.

Issue 6: Waterfowl Hunting
Should waterfowl hunting be permitted on the Refuge?
Although hunting is a part of San Diego Bay's history, hunting has not legally occurred anywhere in the South Bay for more than thirty years. Historically, market hunting of shorebirds was a common practice in the South Bay, but this practice ended with the passage of the Migratory Bird Act of 1918. Waterfowl hunting continued to occur in the area until about 1970. Since its establishment in 1999, the South San Diego Bay Unit has been closed to hunting.

During the scoping process for the CCP, several members of the public requested that hunting be evaluated in the Draft CCP/EIS and approved as one of the uses to be permitted on the Refuge. Others expressed opposition to this idea, stating that hunting was not appropriate on an urban refuge established to protect endangered species.

The potential for opening the Refuge to waterfowl hunting generated significant public comment both in support and in opposition. These comments were provided in the form of letters, emails, and telephone calls to the Refuge office. Some individuals stated that the Refuge should be opened to waterfowl hunting because hunting has historically occurred in the South Bay; therefore, it is a heritage that should be allowed to continue. Others indicated that they support opening the Refuge to hunting, because of the limited opportunities available for hunting in the San Diego region. Those who presented comments in opposition stated that hunting in such an urban area posed a threat to public safety; the activities associated with hunting would be incompatible with nearby residential uses; and hunting would displace the wintering shorebirds. Opening the Refuge to waterfowl hunting is not proposed at this time for the reasons addressed in Section 2.3.3.3.