

Appendix K

Compatibility Determinations

Compatibility Determinations

Appendix K includes the following draft compatibility determinations:

Sweetwater Marsh Unit

Wildlife Observation and Photography
Environmental Education and Interpretation
Mosquito Management
Fishing
Water Trail

South San Diego Bay Unit

Wildlife Observation and Photography
Environmental Education and Interpretation
Mosquito Management
Regional Trail

Compatibility Determination

-FINAL-

Use: Wildlife Observation and Photography

Refuge Name: Sweetwater Marsh Unit of the San Diego Bay National Wildlife Refuge
(San Diego County, Cities of Chula Vista and National City, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the Sweetwater Marsh Unit are the Endangered Species Act of 1973, as amended (16 U.S.C. §§1531-1543); Fish and Wildlife Act of 1956, as amended (16 U.S.C. §§742a-742j, not including 742d-742l); and the Fish and Wildlife Coordination Act of 1934, as amended (16 U.S.C. §§661-667e).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge (NWR) was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use:

At the scoping meetings for the Sweetwater Marsh and South San Diego Bay Units of the San Diego Bay NWR Comprehensive Conservation Plan (CCP), the public expressed a desire to see the existing opportunities for wildlife observation and photography on Gunpowder Point continued. There was also an interest in developing additional wildlife observation opportunities in the vicinity of Paradise Marsh. Wildlife observation and photography represent two of the six priority public uses of the National Wildlife Refuge System that if determined to be compatible uses should be facilitated on National Wildlife Refuges.

As described in the Public Use Program discussion in Section 2.2.2.1 of the Final CCP/ Environmental Impact Statement (EIS) (USFWS 2006), existing opportunities for wildlife observation and photography on the Sweetwater Marsh Unit are currently provided on Gunpowder Point. From the Chula Vista Nature Center, an observation pavilion located near the edge of the bay, and portions of the existing interpretive trail system (refer to Figure 2-1 of the Final CCP/EIS), Refuge visitors can observe migratory birds foraging within the salt marshes and tidal mudflats located adjacent to Gunpowder Point. Also available from the observation pavilion and portions of the trail system, are the sights and sounds of birds, such as black brant (*Branta bernicla nigricans*) and elegant tern (*Thalasseus elegans*), foraging and loafing in the bay. Although no new opportunities for wildlife observation and photography are proposed on Gunpowder Point, the CCP does include a proposal to redesign the existing interpretive trail system (refer to the Compatibility Determination prepared for environmental education and interpretation on the Sweetwater Marsh Unit, as well as Section 2.2.2.3 of the Final CCP/EIS). It is anticipated that this redesign would improve opportunities for wildlife observation.

Public access onto Gunpowder Point is only available via a bus that transports visitors from a satellite parking area (located to the east of the Refuge) to the Chula Vista Nature Center. The City of Chula Vista, which operates this shuttle bus, does not collect a fee to use the bus; however, an admission fee is collected to enter the facilities operated by the Chula Vista Nature Center. No fee is collected from visitors interested only in observing wildlife from the existing trail system and observation pavilion on Gunpowder Point. Public access onto the Refuge is permitted during those hours in which the Chula Vista Nature Center is open (Tuesday through Sunday, 10:00 AM - 5:00 PM, except major holidays). Approximately 35,000 people visited the Nature Center during 2003 and many of these visitors spend time on the interpretive trails located on the Refuge.

Appropriate upland sites are not available on Refuge property in the vicinity of Paradise Marsh or F&G Street Marsh to accommodate new opportunities for wildlife observation. Therefore, to address the public's request for wildlife observation sites in these areas, the CCP recommends that the Refuge Manager coordinate with adjacent local agencies (National City and Chula Vista) to develop wildlife observation sites within the public rights-of-way that abut Paradise Marsh and the F&G Street Marsh (see Figure 1-3 of the Final CCP/EIS).

Availability of Resources:

Direct costs to administer opportunities for wildlife observation and photography, including monitoring of trail user activities, are primarily in the form of staff time. Adequate staff positions and financial resources are currently available and committed to manage the continuation of existing opportunities for wildlife observation and interpretation on Gunpowder Point. To adhere to the stipulation regarding additional regulatory signage on the Refuge, approximately \$5,000 would be required to fabricate and install up to five signs on the Refuge. There is adequate funding in the current budget to cover this expense. The development of observation areas in the vicinity of Paradise Marsh and F&G Street Marsh would require participation by the adjoining property owners, which in this case are the Cities of National City and Chula Vista, respectively. Funding is not currently available in the Refuge budget to assist in the construction of observation areas in these locations, however, potential future funding sources could include Federal cost share grants, other state or local grants, private donations, and/or contributions from the Refuge's Friends Group.

Anticipated Impacts of the Use:

Activities related to wildlife observation and photography can result in negative impacts to wildlife by altering wildlife behavior, reproduction, distribution, and habitat (DeLong and Schmidt 2000). In addition, birds frequently approached by humans engaged in these activities may reduce foraging times in the affected area or avoid the area entirely (Huffman 1999). During studies conducted in south San Diego Bay, Huffman observed that human activity along the shoreline and in the mudflats would flush all birds within a 50 to 100 meter radius. To minimize these types of impacts within the Sweetwater Marsh Unit, various measures have been implemented in an attempt to keep individuals within designated observation areas and out of sensitive habitats. These measures include post and cable fencing, regulatory signage, and periodic monitoring of trail user activities.

Endangered and Threatened Species: Human activity can have adverse impacts to listed species, particularly when avian nesting or foraging activities are disrupted. Of particular concern are potential disturbances to the endangered light-footed clapper rail (*Rallus longirostris levipes*), which is supported by the salt marsh habitat that occurs on the Refuge. Maintaining designated trails to accommodate wildlife observation and photography, as well as regulatory and interpretive signage to keep authorized users out of sensitive areas, has minimized disturbance to this species. Another Federally-listed endangered species that is susceptible to harm as a result of off-trail activity is the salt marsh bird's beak (*Cordylanthus maritimus maritimus*), an annual plant found in the high marsh. The measures described above also minimize the potential for impacts to this species as a result of authorized wildlife observation and photography activities on the Refuge. However, to further minimize the potential for disturbance to these species, as well as to reduce the amount of unauthorized access onto the Refuge from adjoining parcels, additional signage would be installed to keep the public out of sensitive habitat areas.

Public uses such as wildlife observation and photography are only permitted on Gunpowder Point, the remainder of the Refuge is closed to public access in an effort protect sensitive habitat and the endangered and threatened species and migratory birds supported by that habitat. As a result, no impacts to the endangered California least tern (*Sternula antillarum*) or threatened western snowy plover (*Charadrius alexandrinus nivosus*) are anticipated.

Sensitive Habitats: Opportunities for wildlife observation and photography are generally limited to the area in and around the Chula Vista Nature Center and on the existing trail system, therefore, impacts to sensitive habitats as a result of these uses would be minimal (refer to the discussion provided under Endangered and Threatened Species).

Migratory Birds: The existing trail system provides access to the edge of the Refuge where expansive mudflats provide foraging habitat during low tides. To minimize off-trail activity in this area, post and cable fencing has been installed along the trails. Additional signage is recommended in areas where these trails abut sensitive habitat to further potential impacts.

Public Review and Comment:

Wildlife observation and photography have been discussed a several occasions at public workshops held in conjunction with the Comprehensive Conservation Plan (CCP) process. To initiate the CCP process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the South San Diego Bay and Sweetwater Marsh Units. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting. Approximately 50 to 60 people attended those meetings related to public use.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. One of these updates was devoted entirely to the topic of public use. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to public use between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003.

During the scoping meetings and public use workshops for the CCP, a number of individuals expressed a general desire to see additional opportunities for wildlife observation and photography within the south bay, however, most of the site specific suggestions related to the South San Diego Bay Unit. The one recommendation that related to the Sweetwater Marsh Unit involved a request to see opportunities for wildlife observation and interpretation in the vicinity of Paradise Marsh in the northern end of the Refuge.

The draft Compatibility Determination for wildlife observation and photography on the Sweetwater Marsh Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the draft CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

The following measures will be taken to minimize impacts to wildlife:

1. To discourage off-trail activity "Closed Area" or "Sensitive Habitat" signs will be installed in areas where trails or observation areas abut sensitive habitat.
2. Periodic monitoring of trail user activities will continue to determine if unauthorized off-trail activity is occurring in or around sensitive areas of the Refuge. If during monitoring it is determined that off-trail activity could result in impacts to Refuge resources, the Refuge Manager shall implement measures, such as additional signage, fencing, and/or barrier plantings, to further discourage this activity.

Justification:

The continuation of wildlife observation and photography on Gunpowder Point and the possible expansion of wildlife observation opportunities in the vicinity of Paradise Marsh and F&G Street Marsh would not adversely affect the Refuge's wildlife or its habitat. In addition, as the public engages in these types of activities on the Refuge, many will go away with a greater understanding of the importance of protecting native habitats and their associated wildlife species. The overall benefits of facilitating these uses would support the purposes of the Refuge by improving opportunities for managing, conserving, and protecting

fish and wildlife resources. In the same manner, allowing the public to observe the wildlife that is being protected within the Refuge without materially interfering with their daily activities supports the fulfillment of the National Wildlife Refuge System (System) mission's of wildlife first. The National Wildlife Refuge System Improvement Act (the Act) states that "compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System, directly related to the mission of the System...and through which the American public can develop an appreciation for fish and wildlife..." Wildlife observation and photography are two of the six priority public uses of the System, as defined by the Act, that when found to be compatible, should be facilitated. The continuation of these programs would implement the Refuge goal of fostering a broader understanding of the value of, and need for, wildlife conservation.

Mandatory Re-Evaluation Date:

Mandatory 15-year Re-Evaluation Date (for priority public uses)

Mandatory 10-year Re-Evaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

DeLong, Anita and Janet Schmidt. 2000. Literature Review: Effects of Human Disturbance on Wildlife with Emphasis on Wildlife-Dependent Recreation Relevant to Stillwater National Wildlife Refuge (Draft).

Huffman, Kathy. 1999. San Diego South Bay Survey Report – Effects of Human Activity and Water Craft on Wintering Birds in the South San Diego Bay.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader
Approval: _____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office: _____ Date: _____

Manager, California/Nevada
Operations Office: _____ Date: _____

Compatibility Determination

- FINAL -

Use: Environmental Education and Interpretation

Refuge Name: Sweetwater Marsh Unit of the San Diego Bay National Wildlife Refuge
(San Diego County, Cities of Chula Vista and National City, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the Sweetwater Marsh Unit are the Endangered Species Act of 1973, as amended (16 U.S.C. §§1531-1543); Fish and Wildlife Act of 1956, as amended (16 U.S.C. §§742a-742j, not including 742d-742l); and the Fish and Wildlife Coordination Act of 1934, as amended (16 U.S.C. §§661-667e).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge (NWR) was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use:

Environmental Education: As described in the Public Use Program discussion in Section 2.2.2.1 of the Final San Diego Bay NWR Comprehensive Conservation Plan (CCP)/Environmental Impact Statement (EIS) (USFWS 2006), the Sweetwater Marsh Unit is currently the setting for several environmental education programs involving students from Chula Vista and National City, as well as from the greater San Diego region. These programs represent a collaborative effort between the Service, the Chula Vista Nature Center, National City, several school districts, and nonprofit organizations. One program, implemented by the Chula Vista Elementary School District, focuses on a science and social studies curriculum. The program serves some 12,000 kindergarten through 12th grade students annually. The Refuge, specifically Gunpowder Point (refer to Figure 2-1 of the Final CCP/EIS), provides the outdoor classroom for this program where students study topics such as the tides, water quality, native vegetation, and birds.

Another program, created by the San Diego Zoological Society, Chula Vista Nature Center, and the San Diego NWR Complex through a grant to the Zoo's Habitat Conservation Education Department, is Sweetwater Safari. This program, which meets the State of California's science standards for fourth grade, was created for students to learn about science and the local environment through a hands-on experience. The program includes on-site curriculum that is conducted on the refuge and a post-visit curriculum that is conducted in the classroom. The on-site curriculum is taught by the teachers. To lead the self-guided on-site program, which takes place on Gunpowder Point, the teacher must first participate in a training session conducted by Refuge staff, Chula Vista Nature Center staff, and other volunteer teachers. These training sessions, which are provided free of charge, are conducted quarterly at the Chula Vista Nature Center. Once a teacher has completed this training, he or she can arrange a time with the Nature Center to guide his/her class through the program. Equipped with backpacks containing relevant educational materials, the class travels along the 0.5 mile trail system on Gunpowder Point gathering information regarding the many resources supported by the Refuge. The Refuge trails are flat, wide and wheelchair accessible. Transportation grants to bring student onto the refuge are available for this program.

Another program supported by the Refuge is conducted by Kimball Elementary School in National City. This program, which generally occurs just upstream of the Refuge, presents a science and mathematics-based curriculum focused on the protection of watersheds, the function of wetland systems, and water quality testing.

The Refuge also partners with the Chula Vista Nature Center, San Diego Zoo, Kimball Elementary, Paradise Creek Educational Park, Aquatic Adventures, and others to facilitate occasional field trips to the Refuge to support the organizations' desire to introduce students to the biological and cultural resources of the region, including those resources supported on the refuge. The majority of these programs incorporate language arts, math, and social

sciences into their curriculum in accordance with California State Education Standards. Several of these programs have been developed to reach the underserved youth of the region whose opportunities to experience the natural environment first hand may be limited.

Environmental education programs are conducted on the Refuge once or twice a week throughout the year, with field trip opportunities open to only one classroom of approximately 32 students per day. Participants are generally transported to the site by bus or van. In some cases, the students use the existing shuttle bus that provides access to the Refuge from a satellite parking facility located off Refuge property.

The environmental education community has also expressed a desire to have the various environmental programs available within the south bay coordinated by a single point of contact, a South Bay environmental education facilitator. The Refuge Complex proposes to partner with other agencies and institutions in the region to support the creation of and identify funding for such a position. This environmental education facilitator would be responsible for contacting school districts about the many field experience curricula available in the South Bay, including those on the Sweetwater Marsh Unit, developing a region-wide strategy for filling teacher workshops, soliciting transportation grants to be used by each program, and developing teacher in-service agreements with local school districts to more efficiently reach the greatest number of educators.

Environmental Interpretation: Interpretation of the many resources found on the Sweetwater Marsh Unit is currently provided through a series of interpretive panels installed along an existing half-mile trail system located on Gunpowder Point (refer to Figure 2-4 of the Final CCP/EIS). These panels provide general information about the coastal resources protected within the Refuge. Additional interpretation of the historic resources on Gunpowder Point is also provided along the trail system. Several of the existing interpretive elements along these trails are in need of refurbishment and/or replacement.

Public access onto the Refuge is only available via a bus that transports visitors from a satellite parking area (located east of the Refuge) to the Chula Vista Nature Center. The City of Chula Vista, which operates this shuttle bus, does not collect a fee to use the bus; however, an admission fee is collected at the Nature Center, should visitors wish to enter the facilities operated by the Chula Vista Nature Center. No fee is collected from visitors interested only in walking along the existing trail system. Public access onto the Refuge is permitted during those hours in which the Chula Vista Nature Center is open (Tuesday through Sunday, 10:00 AM - 5:00 PM, except major holidays). Approximately 35,000 people visited the Nature Center during 2003 and many of these visitors spend time on the interpretive trails located on the Refuge.

The Chula Vista Nature Center, which is located on Refuge lands that are leased to the City of Chula Vista, includes exhibits and signs that interpret Refuge resources, as well as the many biological resources of San Diego Bay. Included within the Nature Center are several live animal exhibits, including an aviary that includes various shorebirds commonly found in the area and a breeding pair of light-footed clapper rails. Several times a week, Nature Center docents lead small groups of people on interpretive walks along the Refuge's trail system.

The public has expressed a desire to not only see uses related to environmental interpretation continued on the Refuge, but also to see the existing opportunities expanded to reach a larger segment of the surrounding community. To improve opportunities for environmental interpretation, a step-down interpretive trail plan is proposed for Gunpowder Point. This plan would address the need to replace outdated interpretive panels and would include designs for new interpretive elements. The plan would also include an evaluation of the existing trail system on Gunpowder Point and where necessary propose a realignment of current trails to provide better coordination with the educational and interpretive programs occurring on the Refuge. This trail system, to be referred to as The Discovery Trail, would be provided primarily for the purpose of facilitating the Refuge's environmental education and interpretation programs. The redesigned trail system would also improve opportunities for wildlife observation and photography.

To address the public's desire to expand opportunities for environmental interpretation in other portions of the Refuge, the Refuge Manager would coordinate with adjacent local agencies (National City and Chula Vista) to develop interpretive elements within the public rights-of-way that abut Paradise Marsh and the F&G Street Marsh (refer to Figure 2-4 of the Final CCP/EIS).

Availability of Resources:

Direct costs to administer the current environmental education and interpretation programs are in the form of staff time. One environmental education program that includes all fourth grade students in the City of Chula Vista is administered and funded by the City of Chula Vista. The development and implementation of another program, Sweetwater Safari, was initially funded by a grant, while the responsibility for training is shared by Refuge staff and the Nature Center.

Additional funding would be required to prepare and implement a step-down interpretive trail plan for Gunpowder Point to expand and improve interpretive opportunities on the Refuge. Major construction expenses would involve replacing existing interpretative signage and creating new trail segments, while also closing and restoring other segments. The estimated cost to the Complex for current refuge education programs is under \$500 per year. This includes material costs and some staff time for occasional oversight of the programs, periodic updates to the current curriculum, and participation in teacher training sessions.

To implement and administer the proposed environmental education and interpretive programs described, the following staffing and materials/facilities would be required:

| Staffing | | | |
|--|---|------------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader/Deputy Project Leader | General oversight of programs | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.4 | \$36,400 |
| Refuge Operations Specialist | Periodic on-site oversight, occasional monitoring of program activities | 0.3 | \$26,000 |
| Wildlife Biologist | Monitoring, reporting, assistance in program development, oversight of biological technician | 0.3 | \$26,000 |
| Information and Education Specialist | Coordinate and provide oversight of environmental education programs and assist in interpretive plan design | 0.3 | \$23,400 |
| Outdoor Recreation Planner | Evaluate and redesign as required the existing interpretive trail system, assist in the design and siting of new interpretive signage, supervise trail construction | 0.5 | \$22,750 |
| Law Enforcement Officer | Law enforcement | 0.3 | \$20,800 |
| Park Ranger | Assist in trail realignment and installation of interpretive signage, facilities maintenance | 0.3 | \$13,000 |
| Biological Technician | Field data collection, assistance with monitoring, analysis, and report writing | 0.3 | \$15,170 |
| TOTAL FTES AND COSTS FOR STAFFING | | 3.1 | \$231,220 |

| Facilities | | |
|--|--|------------------|
| Material/Facility Required | Explanation of Need | Cost |
| Education materials and supplies | Various materials are required annually to implement existing environmental education programs | \$500 |
| Prepare a step-down interpretive trail plan for Gunpowder Point | Design new interpretive signs and redesign the existing trail system to better facilitate the Refuge's environmental education and interpretation programs | \$35,000 |
| Refurbished and/or new interpretive elements | Updated existing interpretative signs to better facilitate education and interpretation programs. | \$50,000 |
| Realign/refurbish existing trail system | New trail construction would be required to implement the step-down interpretative trail plan | \$25,000 |
| Interpretive elements to be installed along public right-of-ways | Contribute funds to assist in the installation of interpretive elements along designated public rights-of-way near Paradise Marsh and F&G Street Marsh. | \$10,000 |
| TOTAL COST FOR FACILITIES | | \$120,200 |

Adequate staff positions and financial resources are currently available and committed to manage the continuation of existing opportunities for environmental education and interpretation. However, the current Refuge budget is not adequate to fund the development and implementation of a step-down interpretive trail plan. The plan itself would be developed to address the current status of the existing trail system and the identification of appropriate realignments of some trails and the closure and revegetation of others. Also included in the plan would be designs for updated interpretive elements that would better coordinate with the environmental education programs conducted on the Refuge. In light of budget shortfall, project could be broken into phases funding sources are identified. Potential sources for additional funding include Federal cost share grants, state grants that focus on environmental education, private funding sources, and contribution from the Refuge's Friends group.

Anticipated Impacts of the Use:

Potential impacts associated with the continued and expanded implementation of environmental education and interpretation programs would be similar to those described in the Compatibility Determination prepared for wildlife observation and interpretation on the Sweetwater Marsh Unit. Such impacts can include disturbance to wildlife and trampling or damage to native habitats and sensitive plant species. These types of impacts would be minimized through appropriate program design, adequate Refuge oversight and supervision of educational activities, and ongoing coordination among partners.

Endangered and Threatened Species: Human activity can have adverse impacts to endangered and threatened species, particularly when avian nesting or foraging activities are disrupted. Of particular concern are potential disturbances to the Federally-listed endangered light-footed clapper rail (*Rallus longirostris levipes*), which is supported by the salt marsh habitat that occurs on the Refuge. Maintaining designated trails to accommodate environmental education and interpretation activities has minimized disturbance to this species. Another Federally-listed endangered species that is susceptible to harm as a result of off-trail activity is the salt marsh bird's beak (*Cordylanthus maritimus maritimus*), an annual plant found in the high marsh. Through appropriate supervision of students and the use of post and cable fencing along the trail, the potential for impacts has been minimized.

Activities related to environmental education and interpretation occur almost exclusively on Gunpowder Point, as a result, no adverse impacts to the endangered California least tern (*Sternula antillarum*) or threatened western snowy plover (*Charadrius alexandrinus nivosus*) are anticipated due to the continuation of these uses on the Refuge.

Interpretive elements proposed adjacent to Paradise Creek and F&G Street Marsh would occur within existing public access rights-of-way outside the boundaries of the marsh, therefore, the potential for impacts to the light-footed clapper rail and salt marsh bird's beak would be minimal.

Sensitive Habitats: The environmental education programs conducted on the Refuge utilize an existing trail system on Gunpowder Point to explore the resources present on the Refuge. This trail system is clearly delineated with post and cable fencing and students are supervised at all times. As a result, the potential for intentional and unintentional intrusion into sensitive habitat from this use is minimal.

Interpretive programs conducted on Gunpowder Point could be self-guided or lead by Chula Vista Nature Center docents. These activities would be confined to a designated system of trails on Gunpowder Point, therefore, the potential for off trail activity is low. Despite these measures, there would still be the potential for self-guided visitors to leave the trail and enter sensitive areas. The highest potential for such activities is at the end points of the existing trail system, where the trail brings users to the edge of sensitive habitat and then stops. In these areas, users may be tempted to travel beyond the existing post and cable fencing to gain better views of the adjacent mudflats or salt marsh habitats. As described in the Compatibility Determination for wildlife observation and photography for the Sweetwater Marsh Unit, realigning the trail to provide a loop system, thereby avoiding dead-end trails, would minimize the potential for such off-trail activity.

New interpretive elements proposed adjacent to Paradise Marsh and F&G Street Marsh would be placed within existing public access rights-of-way where no impacts to sensitive resources are anticipated.

Migratory Birds: The existing trail system provides access to the edge of the Refuge where expansive mudflats provide foraging habitat during low tides. Off-trail human activity in this area could result in disturbances to foraging migratory birds. Various studies have shown that frequent human disturbance can negatively impact wildlife by altering wildlife behavior, reproduction, distribution, and habitat (DeLong and Schmidt 2000). In addition, birds frequently approached by humans engaged in these activities may reduce foraging times in the affected area or avoid the area entirely (Huffman 1999). During studies conducted in south San Diego Bay, Huffman observed that human activity along the shoreline and in the mudflats would flush all birds within a 50 to 100 meter radius. To minimize these types of impacts within the Sweetwater Marsh Unit, various measures have been implemented in an attempt to keep individuals on the designated trail and out of sensitive habitats. These measures include post and cable fencing along the trail, regulatory signage at trail ends, and periodic monitoring of trail user activities.

Public Review and Comment:

Environmental education and interpretation have been discussed on several occasions at public workshops held in conjunction with the Comprehensive Conservation Plan (CCP) process. To initiate the CCP process, a Notice of Intent was published in the Federal

Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the South San Diego Bay and Sweetwater Marsh Units. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting. Approximately 50 to 60 people attended those meetings related to public use.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. One of these updates was devoted entirely to the topic of public use. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to public use between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003.

At the scoping meetings and public workshops for the CCP, the public expressed a desire to see the existing opportunities for environmental education and interpretation on the Sweetwater Marsh Unit continued. There were several recommendations to expand the current educational program. One individual suggested that opportunities for high school students be expanded. Another person recommended that additional interpretive opportunities be provided in the vicinity of Paradise Marsh and the F&G Street Marsh. Several community members commented that the Refuge's education and interpretive programs could reach a broader audience if the programs included multi-lingual outreach materials.

The draft Compatibility Determination for environmental education and interpretation on the Sweetwater Marsh Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the draft CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the draft was

sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

The following measures will be taken to ensure compatibility for environmental education and interpretation:

Prior to implementing a new environmental education program within this Refuge Unit, the various parties developing the program shall coordinate with the Refuge Manager to agree upon appropriate times of the year to conduct the program, access routes, maximum number of participants per visit, and appropriate activities to be conducted. All individuals who will be conducting these programs shall be made aware of these conditions.

The Refuge's Information and Education Specialist will review all materials and programs to ensure consistency with Refuge goals and the mission of the National Wildlife Refuge System.

"Closed Area" signs will be installed at the end of all trails leading to the edge of the bay.

Prior to installing any new interpretive elements at Paradise Marsh and F&G Street Marsh, the Refuge Manager shall review the sites to verify that no impacts to Refuge resources would occur as a result of anticipated human activity around the interpretive elements.

Justification:

The continuation and expansion of environmental education and interpretation uses on the Sweetwater Marsh Unit would not adversely affect the Refuge's wildlife or its habitat. In addition, as the public engages in these types of activities on the Refuge, many will go away with a greater understanding of the importance of protecting native habitats and their associated wildlife species. The overall benefits of facilitating these uses would support the purposes of the Refuge by improving opportunities for managing, conserving, and protecting fish and wildlife resources. In the same manner, presenting the public with information about the importance of the resources supported on the Refuge without materially interfering with their daily activities supports the fulfillment the National Wildlife Refuge System

(System) mission's conservation mission. The National Wildlife Refuge System Improvement Act (the Act) states that "compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System, directly related to the mission of the System...and through which the American public can develop an appreciation for fish and wildlife..." Environmental education and interpretation are two of the six priority public uses of the System, as defined by the Act, that when found to be compatible, should be facilitated. The continuation of these programs would implement the Refuge goal of fostering a broader understanding of the value of, and need for, wildlife conservation.

Mandatory Re-Evaluation Date:

Mandatory 15-year Re-Evaluation Date (for priority public uses)

Mandatory 10-year Re-Evaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

DeLong, Anita and Janet Schmidt. 2000. Literature Review: Effects of Human Disturbance on Wildlife with Emphasis on Wildlife-Dependent Recreation Relevant to Stillwater National Wildlife Refuge (Draft).

Huffman, Kathy. 1999. San Diego South Bay Survey Report – Effects of Human Activity and Water Craft on Wintering Birds in the South San Diego Bay.

U.S. Fish and Wildlife Service. 1985. Salt Marsh Bird's Beak (*Cordylanthus maritimus* subsp. *maritimus*) Recovery Plan.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader
Approval: _____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office: _____ Date: _____

Manager, California/Nevada
Operations Office: _____ Date: _____

Compatibility Determination

-FINAL-

Use: Mosquito Management

Refuge Name: Sweetwater Marsh Unit of the San Diego Bay National Wildlife Refuge
(San Diego County, Cities of Chula Vista and National City, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the Sweetwater Marsh Unit are the Endangered Species Act of 1973, as amended (16 U.S.C. §§1531-1543); Fish and Wildlife Act of 1956, as amended (16 U.S.C. §§742a-742j, not including 742d-742l); and the Fish and Wildlife Coordination Act of 1934, as amended (16 U.S.C. §§661-667e).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge (NWR) was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use:

Mosquito management throughout the coastal refuges of San Diego County is conducted under the auspices of a Refuge Special Use Permit (SUP) in coordination with the San Diego County Department of Environmental Health, Vector Control Division. The SUP is issued annually. The primary purpose for implementing mosquito management on this Refuge is to avoid threats to public or wildlife health from specific mosquito-borne disease. Mosquito management is implemented on the Sweetwater Marsh Unit through a phased approach that emphasizes early detection and treatment, if warranted, with larvicides. The use of adulticides is to be reserved for addressing human health emergencies.

Several mosquito species are expected to occur in the vicinity of the Refuge that are capable of transmitting microbial organisms that cause human diseases such as malaria and encephalitis. The mosquitoes of major concern in California belong to the genera *Culex*, *Ochlerotatus*, and *Anopheles*. The species of greatest public health concern include *Culex tarsalis*, *Culex pipiens*, *Culex quinquefasciatus* and *Anopheles hermsi*. Of lesser importance are the salt marsh mosquitoes: *Ochlerotatus squamiger* and *Ochlerotatus taeniorhynchus*.

The closest mosquito traps to the Sweetwater Marsh Unit are located at the Otay River and Hollister Street. These traps are monitored by the County of San Diego, Department of Environmental Health, Vector Control Division. The data collected from these traps in 2003 indicates that eight species of mosquito are commonly found in the general area, however, to date, the degree to which each of these species occurs within the Sweetwater Marsh Unit has not determined. The most common species found in the Otay traps include:

Anopheles hermsi – This species, which is very commonly found in the Otay traps, is a highly competent vector of malaria, although this disease is not prevalent in this region.

Culex erythrothorax – This species, which is the most common mosquito in San Diego, is typically considered a nuisance. It is commonly found in the Otay traps and occurs in densely vegetated freshwater marshes and heavily vegetated backwater zones. It is not considered to be a major disease carrier, although its ability to potentially harbor West Nile Virus (WNV) is currently unknown.

Culex tarsalis – A highly competent vector mosquito, this species is quite common in the Otay traps. Viewed generally as a nuisance mosquito, this species can also be an effective carrier of disease.

Culiseta incidens and *Culiseta particeps* – These two species are regularly captured in the Otay traps in small to moderate numbers. Neither species is considered to be a disease vector, but can be a biting nuisance. Their ability to harbor WNV is unknown.

Ochlerotatus increpitus – Primarily a nuisance mosquito, this species, which bites during the day, is common in the Otay traps. Its ability to vector WNV is unknown.

Ochlerotatus taeniorhynchus and *Ochlerotatus squamiger* – These mosquito species are prevalent in salt marsh habitat. *Ochlerotatus taeniorhynchus* is primarily a day-biting nuisance, and neither species is currently considered to be a disease carrier; however their ability to transmit WNV is unknown.

Mosquito management on the Sweetwater Marsh Unit is addressed through an integrated pest management approach in which Refuge and County vector control officials coordinate efforts to manage the overall environmental health of adjacent communities while minimizing impacts to Refuge trust resources. County and Refuge staff work together to agree upon issues related to access, methods of operation, and timing of access, as well as to exchange information related to listed species occurrences, permitting, and relevant agency policy.

The current procedures for implementing mosquito management on this Refuge involve an annual meeting between County and Refuge staff to coordinate all necessary permitting and implementation planning required to conduct mosquito monitoring and control on the Refuge for the upcoming year. Issues such as access points and pathways to be used by County personnel, appropriate hours of operation, and requirements for field coordination are discussed, agreed upon, and incorporated into the SUP. As part of this coordination process, County vector control personnel are provided with data generated by the Refuge biologist on listed species and other trust resources. County personnel share relevant data related to mosquito and disease monitoring in the vicinity of the Refuge. In addition, periodic meetings are conducted in the field with County field staff and the Refuge biologist to further coordinate activities. These meetings are scheduled throughout the season when warranted to ensure protection of endangered and threatened migratory birds and to avoid disturbance to nesting birds.

Following the conditions included in the SUP, County vector control personnel conduct periodic mosquito larvae surveys in many discrete areas throughout the Refuge. Because the primary means of mosquito management is the use of larvicides, it is essential that larvae be observed prior to pupation so that they may be treated appropriately by the least environmentally damaging means. As a result, the frequency of larvae surveys increases throughout the mosquito breeding season. Currently, treatment areas are determined based on the season, the species and density of the mosquitoes detected, the proximity of the vectors to surrounding urban areas, and the life stage the mosquitoes are found in. Control of adult or pupal mosquitoes is not currently conducted on the Refuge.

Public concern over human health issues related to mosquito-borne disease has intensified on the west coast with the advance of WNV across the United States. To address mosquito management, a phased response strategy has been developed for implementation on refuges in the Pacific Region. This strategy encourages an integrated pest management approach that incorporates habitat and best management practices to reduce the need for and use of insecticides on refuges, while also ensuring that legitimate human, fish, and wildlife health concerns are addressed. To implement this phased response strategy, the current procedures for managing mosquitoes on this Refuge will be augmented to better identify thresholds for mosquito treatment and presents specific responses to various conditions encountered in the field. Under this new program, if mosquito population monitoring and disease surveillance (implemented by County vector control personnel) indicate that human health thresholds are exceeded, the use of larvicides, pupicides, and/or adulticides may become necessary. In some cases, emergency actions may be required that are not addressed by this Compatibility Determination.

Two larvicide compounds that could be used to manage mosquitoes on the Refuge include: Bti (*Bacillus thuringienensis israelensis*) and Altosid (methoprene). Both are larvicides intended to control mosquitoes in wetlands prior to their emergence as adults. Bti is used primarily to control early stage larvae and is available in liquid and granular formulations. Altosid is used on later stage mosquito larvae and is available in liquid, briquet and pellet formulations. Both compounds are highly specific to mosquito larvae. The use of Golden Bear 1111, which is effective at preventing adult mosquito emergence from wetlands but toxic to fish and other aquatic organisms, is not permitted within the Sweetwater Marsh Unit.

Availability of Resources:

To implement and administer mosquito management on the Sweetwater Marsh Unit, the following staffing and facilities are required:

| Staffing | | | |
|--|--|---------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader/Deputy Project Leader | General oversight | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.3 | \$30,300 |
| Refuge Operations Specialist | On-site oversight when necessary | 0.3 | \$26,000 |
| Wildlife Biologist | Monitoring, reporting, plan development, and oversight of vector control activities | 0.3 | \$26,000 |
| TOTAL FTES AND COSTS FOR STAFFING | | 1.3 | \$130,000 |
| TOTAL COST FOR FACILITIES | none | | \$0 |

Adequate staff positions and financial resources are currently available and committed to implement mosquito management on the Sweetwater Marsh Unit.

Anticipated Impacts of the Use:

The purpose of this section is to critically and objectively evaluate the potential direct, indirect and cumulative effects mosquito management could have on the Refuge's endangered and threatened species and other fish and wildlife resources.

Habitat and Wildlife Disturbance: Vegetation trampling resulting from mosquito monitoring and mosquito control, as well as the possible creation of channels to drain stagnant water areas, could adversely impact native vegetation and wildlife habitat. In addition, these activities could result in disturbances to the existing wildlife that utilizes this area. At present, the marsh complex within the Refuge supports a variety of coastal wetland habitats including subtidal, intertidal mudflat, and salt marsh habitats. These wetland areas provide foraging, resting, and nesting habitat for a variety of birds, including migratory shorebirds, waterfowl, and songbirds. To minimize impacts related to disturbance, the Refuge biologist would coordinate with County vector control personnel at least annually to review appropriate conduct within these sensitive habitat areas. Specific field implementation protocols for working in sensitive habitat areas would be included in the Refuge SUP. No impacts to upland habitat are anticipated as a result of mosquito management activities.

Endangered and Threatened Species: One of the purposes for the establishment of the Sweetwater Marsh NWR is to protect Federally- listed endangered or threatened species. Human activity can have adverse impacts on endangered and threatened species, particularly when this activity disrupts bird nesting or foraging. The California least tern (*Sternula antillarum*) and California brown pelican (*Pelecanus occidentalis californicus*), both Federally-listed endangered species, forage within the main tidal channel within the Sweetwater Marsh, while the threatened western snowy plover (*Charadrius alexandrinus nivosus*) forages year round along the channel banks. The D Street Fill portion of the Refuge also supports least tern and western snowy plover nesting. Human activity within the Refuge's main marsh complex could disrupt the foraging activity of all of these species.

The Federal endangered light-footed clapper rail also occurs within Sweetwater Marsh Unit in the Refuge's salt marsh and brackish marsh habitats. Threats to the light-footed clapper rail consist primarily of direct habitat or nest losses through trampling of cordgrass or pickleweed. The State endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) occupies the high salt marsh vegetation throughout Sweetwater Marsh. Human intrusion into these areas could disrupt foraging activities, as well as result in direct habitat or nest losses through trampling of pickleweed. Impacts to these salt marsh species would be minimized through adherence to the field implementation protocols established for mosquito management in the Refuge SUP.

In addition to endangered and threatened bird species, the Sweetwater Marsh Unit also supports the Federally-listed endangered annual plant species, salt marsh bird's beak (*Cordylanthus maritimus maritimus*). Salt marsh bird's beak is distributed in various locations throughout the marsh, primarily in upper marsh elevations that are inundated by tides on a regular basis, but above areas that receive daily salt water flooding. Such areas are more likely to be impacted by human activity in the marsh, because they are drier than other portions of the marsh. Yearly population numbers depend directly on seed dispersal and successful plant establishment. Field observations indicate that even a moderate amount of foot traffic can damage the fragile seedlings (USFWS 1985), resulting in decreased population numbers. To reduce the potential for impacts to this species, periodic meetings would be conducted in the field with County field staff and the Refuge biologist to identify sensitive areas that should be avoided during monitoring and control activities and designate other areas that can be accessed without concern for habitat damage.

Nesting Season Disturbance: The nesting season varies with species but can generally be described as occurring between mid-February and mid-September. Disturbance to nesting bird species may occur if vector control personnel are present in the vicinity of avian nesting colonies or individual nests.

Several species, four of which are state and/or Federally-listed as endangered or threatened, nest within the Sweetwater Marsh Unit. As described above, the habitats present within the marsh complex support light-footed clapper rail and Belding's savannah sparrow nesting. Cordgrass stands within the marsh support clapper rail nesting, while high salt marsh vegetation supports savannah sparrow nesting. In addition, the California least tern and western snowy plover nest on the D Street Fill portion of the Refuge. To avoid impacts to nesting species, periodic meetings would be conducted in the field with County field staff and the Refuge biologist to coordinate activities and delineate sensitive nesting areas that should be avoided.

Public Review and Comment:

Two public scoping meetings and a series of public workshops to discuss habitat management, restoration, and public use were held in conjunction with the CCP process. To initiate the CCP process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the Sweetwater Marsh and South San Diego Bay Units. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to the CCP between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003. No public comments related to mosquito management have been received to date.

The draft Compatibility Determination for mosquito management on the Sweetwater Marsh Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the draft CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations:

1. The County of San Diego, Department of Environmental Health, Vector Control Division shall operate on Refuge lands under the terms and conditions outlined in a USFWS Refuge Special Use Permit, which shall be reviewed annually.
2. Special Use Permit conditions will stipulate that all control work will be carried out in conformance with pre-approved USFWS Pesticide Use Proposals, Section 7 Endangered Species Act consultations, and existing and future USFWS policies on mosquito management.

Justification:

Mosquito management would be implemented on this Refuge in accordance with the guidance provided for the Pacific Region by the Regional Office in March 2003. This guidance for mosquito management incorporates a phased-response strategy developed to manage mosquitoes in a manner that is compatible with refuge purposes and uses the best available science while minimizing impacts to fish and wildlife, which is consistent with the mission of the National Wildlife Refuge System. Mosquito management proposed for this Refuge would also address legitimate human, fish, and wildlife health concerns. Implementing mosquito control in accordance with the stipulations presented above would therefore not materially interfere with the ability to achieve the wildlife management goals established for this Refuge.

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

U.S. Fish and Wildlife Service. 1985. Light-footed Clapper Rail Recovery Plan.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader

Approval: _____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office: _____ Date: _____

Manager, California/Nevada
Operations Office: _____ Date: _____

Compatibility Determination

-FINAL-

Use: Recreational Fishing

Refuge Name: Sweetwater Marsh Unit of the San Diego Bay National Wildlife Refuge
(San Diego County, Cities of Chula Vista and National City, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the Sweetwater Marsh Unit of the San Diego Bay National Wildlife Refuge (NWR) are the Endangered Species Act of 1973, as amended (16 U.S.C. §§1531-1543); Fish and Wildlife Act of 1956, as amended (16 U.S.C. §§742a-742j, not including 742d-742l); and the Fish and Wildlife Coordination Act of 1934, as amended (16 U.S.C. §§661-667e).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use:

Recreational fishing is one of the six wildlife dependent recreational uses that should be facilitated on a Refuge when determined to be compatible with the Refuge purposes and the mission of the National Wildlife Refuge System (System). The public has expressed an interest in seeing fishing continue within the south bay, therefore, the potential for establishing a fishing program within the Sweetwater Marsh Unit was considered. As illustrated in Figure 1-3 of the Final San Diego Bay NWR Comprehensive Conservation Plan (CCP)/Environmental Impact Statement (EIS) (USFWS 2006), the areas available for fishing within the Sweetwater Marsh Unit are limited to the tidal channels that meander through the Refuge's coastal salt marsh habitat. Currently, these waters are closed to public access, including access related to fishing and boating. To facilitate shoreline fishing within the Refuge, it would be necessary to permit pedestrian access through coastal salt marsh or along the edge of the D Street Fill, as these are the primary areas of the Refuge that abut open water. Because of the sensitivity of the marsh habitat and presence of two Federally-listed endangered species within the marsh, opening the Refuge to shoreline fishing was not evaluated.

Consideration was given to permitting fishing from non-motorized boats and float tubes within the main tidal channel that extends along the south end of the D Street Fill (refer to Figure 1-3 of the Final CCP/EIS). The use of motorized vessels was not considered due to the shallow depths generally present in the tidal channel. If fishing in this area were to be implemented, it would be permitted only during daylight hours and only between mid-September and the end of January to avoid the nesting season. This proposal assumes no launching or landing of boats or float tubes within the Refuge. Existing boat ramps in National City and Chula Vista would be available to accommodate visitors.

Prior to opening the Refuge to this use, regulatory signage would have to be installed at the main tidal channel entrances to the Refuge, an information brochure describing fishing regulations and sensitive Refuge resources would have to be prepared, and a monitoring and periodic fishing line clean-up program would have to be in place. The effects of this activity on shorebird foraging and loafing would be monitored twice a month for a period of three years. If shorebird activity on the tidal mudflats that border the main tidal channels decreases as a result of the introduction of human activity in this area, measures to reduce disturbance would have to be implemented.

Availability of Resources:

To regulate fishing activities on the Sweetwater Marsh Unit, the following staffing and equipment would be required:

| Staffing | | | |
|--|---|------------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader/Deputy Project Leader | General oversight | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.4 | \$36,400 |
| Refuge Operations Specialist | Periodic on-site oversight, monitoring of fishing and law enforcement activities | 0.5 | \$39,000 |
| Wildlife Biologist | Monitoring, reporting, oversight of technician | 0.5 | \$39,000 |
| Biological Technician | Field data collection, assistance with monitoring, analysis, and report writing | 0.5 | \$22,750 |
| Outdoor Recreation Planner | Coordinate the development of a brochure describing the fishing opportunities and regulations within Sweetwater Marsh | 0.4 | \$18,200 |
| Information and Education Specialist | Assist in design of the brochure and the development and implementation of the fishing line clean-up program | 0.2 | \$15,600 |
| Law Enforcement Officer | Law enforcement | 0.5 | \$31,200 |
| Park Ranger | Assist in Refuge patrol, maintenance, and fishing line clean-up program | 0.3 | \$13,000 |
| Maintenance Worker | Install and maintain signs and buoys | 0.3 | \$12,870 |
| TOTAL FTES AND COSTS FOR STAFFING | | 4.0 | \$275,720 |

| Equipment | | |
|--|--|-----------------|
| Type of Equipment | Explanation of Need | Cost |
| Patrol boat/trailer | Needed to patrol refuge waters to ensure adherence to Refuge regulations, and to monitoring fishing activity | \$50,000 |
| Signs/Boundary Buoys | Needed to delineate the Refuge boundary, post regulations, and establish closed areas | \$10,000 |
| Create and Print an Informational Brochure | Needed to provide additional information about fishing opportunities, rules and regulations, wildlife friendly conduct, etc. | \$5,000 |
| TOTAL COST FOR EQUIPMENT | | \$65,000 |

Based on the Refuge's current staffing level, adequate staff to patrol and monitor fishing activity on the Refuge is not available to support the proposed use. The coastal refuges including Sweetwater Marsh and South San Diego Bay Units and the Tijuana Slough NWR currently share one Park Ranger, a Wildlife Biologist, and a Law Enforcement Officer. Additional staff time and personnel (including a biological technician, maintenance worker, and outdoor recreation planner) would be needed to implement and monitor a fishing program on the Refuge. In addition, access to potential fishing areas for monitoring and law enforcement patrol would be difficult and time consuming. To provide adequate staff to support this use based on the current Refuge budget, the priorities within the current work program would have to be reevaluated or staffing levels and the Refuge budget would have

to be increased.

Implementation of this use would also require approximately \$65,000 to purchase a patrol boat and trailer, design and print an informational brochure, and produce and install signs and buoys in the area proposed for fishing. Adequate funding is available to implement periodic clean ups of the area to control trash and discarded fishing line accumulation.

Anticipated Impacts of the Use:

DeLong and Schmidt (2000) in their literature review of the effects of human disturbance on wildlife summarized the results of a number of studies related to fishing. The majority of these studies concluded that fishing activities could influence the composition, distribution, abundance, and productivity of waterbirds. Such effects include bird fatalities resulting from entanglement with fishing line, trampling of vegetation, degraded habitat due to litter accumulation, and reduced water quality due to the deposition of sewage and other chemicals. The anticipated impacts of developing a recreational fishing program for this Refuge are presented below.

Endangered and Threatened Species: Human activity associated with fishing and boating can have adverse impacts to endangered and threatened species, particularly when this activity disrupts nesting or foraging activities. The California least tern (*Sternula antillarum*) and California brown pelican (*Pelecanus occidentalis californicus*), both Federally-listed endangered species, forage within the Refuge's main tidal channel. In addition, the threatened western snowy plover (*Charadrius alexandrinus nivosus*) forages along the channel banks. Potential threats to these species from fishing include disturbance during foraging, displacement from preferred feeding areas for prolonged periods, and death from entanglement in discarded fishing line. Observations of up to several dead or dying terns entangled in one length of fishing line are not unusual within the more dense nesting colonies at the South Bay Salt Works. Similar incidents could occur here. The potential for birds to become entangled in discarded fishing line could be reduced through public outreach to discourage improper disposal of fishing line and periodic cleanup in and along the banks of the channel.

The D Street Fill also supports least tern and western snowy plover nesting. Disturbance impacts would be reduced by closing the Refuge to fishing during the nesting season, although it is likely that some unauthorized fishing activity may continue to occur during the nesting season, potentially resulting in direct impacts to nesting least terns and western snowy plovers.

The endangered light-footed clapper rail (*Rallus longirostris levipes*) occurs year-round in salt marsh and brackish marsh habitats within the Refuge. Threats to this species consist primarily of direct habitat or nest losses through trampling of cordgrass or pickleweed that could occur if fishing boats are landed along the shoreline or during clean up of trash and discarded fishing line. Although clapper rails are not as prone to reacting to the presence of

humans in the vicinity of their habitat as are other species, fishing boats that remain in one area for too long could disrupt clapper rail foraging activities. Of equal concern to the health and safety of the Refuge's clapper rail population is the accumulation of discarded fishing line along the marsh's narrow channels. Rails could become entangled in the line and die. Trash accumulation resulting from fishing activity in the area could pose a similar threat in that predators such as coyotes could be attracted into clapper rail habitat.

The State endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) occupies the salt marsh associated vegetation throughout Sweetwater Marsh. Human disturbance in these areas could disrupt foraging activities, as well as result in direct habitat or nest losses through trampling of pickleweed. This species would also be most directly impacted by unauthorized shoreline fishing or landing of fishing boats, permitting access into the marsh. Such activity would likely result in vegetation trampling and habitat degradation.

In addition to endangered and threatened bird species, the Sweetwater Marsh Unit also supports the Federally-listed endangered annual plant species, salt marsh bird's beak (*Cordylanthus maritimus maritimus*). The salt marsh bird's beak is distributed in various locations throughout the marsh, primarily in upper marsh elevations that are inundated by tides on a regular basis, but above areas that receive daily salt water flooding. Such areas are more likely to be impacted by unauthorized pedestrian access, because they are drier than other portions of the marsh. Yearly population numbers depend directly on seed dispersal and successful plant establishment. Field observations indicate that even a moderate amount of foot traffic can damage the fragile seedlings (USFWS 1985), resulting in decreased population numbers. Therefore, unauthorized shoreline fishing or landing of fishing boats along the shoreline could result in direct impacts to this species. Fishing line cleanups could also result in impacts to this species.

Sensitive Habitats: Recreational fishing within the Sweetwater Marsh Unit would introduce human activity into the center of the Refuge and permit boating activity in proximity to sensitive wetland habitat, creating the potential for direct and indirect impacts to sensitive habitat. These impacts could involve trampling of vegetation, disturbance to tidal mudflats, possible damage to cordgrass habitat, and increased erosion along the shore.

Migratory Birds: The Sweetwater Marsh Unit provides essential habitat for avian species migrating along the Pacific Flyway. The coastal salt marsh within the Refuge, with its many interconnecting channels, provides important resting and feeding areas for many migratory birds. Common wintering and migrating birds include long-billed curlew (*Numenius americanus*), whimbrel (*Numenius phaeopus*) and willet (*Catoptrophorus semipalmatus*). The extensive mudflats that occur immediately to the west of the D Street Fill, outside the Refuge boundary, also provide important habitat for these and other migratory birds.

A study of the effects of watercraft on foraging and resting birds in San Diego Bay reported that all watercraft, including motorized boats and non-motorized boats, result in some level of disturbance to waterbirds (Huffman 1999). Observations made during the study indicate that when a boat approaches the shoreline, waterfowl located between the boat and shore and any shorebirds along the shoreline are flushed regardless of the speed of the watercraft. Huffman noted that when non-motorized vessels, including rowboats, kayaks, canoes, and longboats, came within 30 meters of the shoreline all waterfowl between the craft and the shore would flush. At the widest point, the channels within the Sweetwater Marsh are approximately 20 meters in width. Therefore, as a fishing boat moves through the channel, any birds foraging or resting on the tidal mudflats adjacent to the channel would be flushed. These birds would then be forced to move to another location in the general vicinity. Frequent disturbance to foraging and loafing shorebirds could occur depending upon the number of boats using the channel on a given day. Such disturbance would reduce an individual bird's ability to meet its energy requirements, while also causing the bird to expend energy in the process of flying away from the disturbance. If disturbance becomes too frequent, those birds that do not habituate could permanently leave the area (West et al. 2002). Increasing the intensity of boating activity in the vicinity of the mudflats immediately to the west of Gunpowder Point could also result in cumulative impacts to the migratory shorebirds that forage in proximity to the Refuge.

Huffman also documented disturbance to migratory birds as a result of pedestrian activity along the shoreline. This disturbance was greatest during low tides when pedestrians left designated accessways to explore the mudflats. This activity affected both shorebirds and waterfowl. Huffman observed that human activity along the shoreline and in the mudflats would flush all birds within a 50 to 100 meter radius. Based on these observations, it is assumed that if fishing were to be permitted along the shoreline on Refuge lands, the availability of habitat for migratory birds could be reduced. This is because the presence of anglers along the shoreline would cause most birds to avoid those habitats located as much as 100 meters away from the fishermen.

Migratory birds could also experience injury or death as a result of discarded fishing line. Once a bird becomes entangled in fishing line, it generally dies. Many bird deaths have been attributed to fishing line entanglement within the south bay.

Nesting Season Disturbance: The nesting season varies with individual species, but can generally be described as occurring between mid-February and mid-September. Nesting occurs within the Refuge's salt marsh habitat, as well as on D Street Fill. Several ground nesting avian species utilize the bare areas of the D Street Fill including the endangered California least tern and the threatened western snowy plover. Forster's terns (*Sterna forsteri*) also periodically nest in this area. Nesting activity on D Street Fill generally occurs from mid-April through mid-September.

Disturbance to nesting bird species may occur if persons are present in the vicinity of avian nesting colonies or individual nests. Biologists performing nesting surveys on the South San Diego Bay Unit report that nesting seabirds responded to human activity occurring at some distance from the colony. Similar disturbance patterns would be expected at D Street Fill. In general, avian responses to disturbance can include flocking, alarm calling, nest abandonment, colony abandonment, and inter-colony antagonistic behaviors leading to crushed eggs and killed chicks. Predatory species, particularly avian species such as northern harrier, ravens, and crow, may also use disturbance episodes to depredate eggs and chicks while the adults are flocking or otherwise distracted. Disturbance to nesting birds from activities associated with fishing and boating can occur in several ways: disturbance from vessels located too close to the shoreline and disturbance from human encroachment into nesting areas when watercraft are landed along the shore. Human disturbance near nesting grounds has been identified as a primary limiting factor for seabird reproductive productivity in nesting areas with urban interfaces. By closing the Refuge to fishing during the nesting season, such impacts could be reduced. However, occasional monitoring and enforcement actions would likely be required during the closure, which could result in disturbance to nesting birds.

The Federal endangered light-footed clapper rail and State endangered Belding's savannah sparrow nest in Refuge's salt marsh vegetation, which abuts the main tidal channel. Nesting generally occurs from mid-February to mid-September. The primary threats to nesting these species from recreational fishing would occur if unauthorized fishing occurs from the shoreline or fishing boats are landed and fishermen enter sensitive nesting habitat along the edges of the marsh. As described above, such impacts could be minimized, although probably not avoided, by closing the Refuge to fishing during the nesting season. Clapper rail chicks could also be directly or indirectly impacted by the accumulation of trash and discarded fishing line in the marsh.

Public Review and Comment:

Recreational fishing has been discussed on several occasions at public workshops held in conjunction with the CCP process. To initiate this process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the San Diego Bay NWR. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting. Approximately 50 to 60 people attended those meetings related to public use.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. One of these updates was devoted entirely to the topic of public use. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to public use between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003.

The public provided a range of written and verbal comments related to fishing. These comments included requests to permit fishing within the Sweetwater Marsh and South San Diego Bay Units and to manage the refuge ecosystems for fish, prohibit fishing within both refuges, permit the use of low power motorized boats to accommodate fishing, and clearly define fishing and non-fishing areas if fishing is permitted on each refuge. Although most comments related to fishing from boats, there was a request to provide access along the shoreline to accommodate fishing for non-boat owners. Several individuals also expressed concerns regarding the adverse affects that discarded fishing line can have on seabirds.

The draft Compatibility Determination for recreational fishing on the Sweetwater Marsh Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge draft CCP/EIS. Specifically, it was included in Appendix K of the draft CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Justification:

The salt marsh complex within the Sweetwater Marsh Unit is the largest remaining coastal salt marsh within San Diego Bay, and as such it provides regionally significant habitat for

numerous migratory shorebirds. Further, this is one of only a few places in San Diego County that provides suitable habitat for the Federally-listed endangered light-footed clapper rail. It is for these reasons that the Sweetwater Marsh Unit was established. The Refuge purposes include conserving fish and wildlife which are Federally-listed as endangered or threatened species and managing, conserving, and protecting fish and wildlife resources.

After evaluating the anticipated impacts of implementing a recreational fishing program on the Sweetwater Marsh Unit, the Refuge Manager has determined that opening a portion of the Refuge to recreational fishing would materially interfere with one of the primary Refuge purposes, “to conserve endangered and threatened species.” The only areas available within the Refuge for fishing are the relatively narrow channels that flow through the existing coastal marsh habitat. The edges of these marsh channels provide important foraging and resting habitat for migratory birds and several listed species, including the light-footed clapper rail, one of the rarest avian species in California, and the western snowy plover. If fishing were permitted in these channels, direct and indirect impacts to clapper rails and their habitat could occur, which would be in direct conflict with Refuge’s current endangered species management efforts. In addition to potential impacts to listed species, introducing this use into the center of the Refuge would result in disturbance impacts to migratory birds potentially displacing those shorebirds and seabirds that forage along the main tidal channel within the marsh. These effects would materially interfere with the mission of the National Wildlife Refuge System.

Due to the sensitivity of the area available to accommodate the recreational fishing on this Refuge, it is not possible to facilitate a recreational fishing program and still achieve the Refuge’s endangered species and coastal wetland protection goals. In addition, to implement this proposal would require the identification of additional funds to cover the cost of materials and staff to monitor this activity. The reallocation of staffing priorities to implement this use would necessarily interfere with the Refuge’s ability to implement wildlife dependent recreational uses such as environmental education and interpretation that are currently occurring on the Refuge. The affects of implementing this proposal would therefore be contrary to the Refuge goal of providing opportunities for wildlife-dependent recreational uses that are compatible with refuge purposes and foster a broader understanding the value of, and need for, wildlife conservation.

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

DeLong, Anita and Janet Schmidt. 2000. Literature Review: Effects of Human Disturbance on Wildlife with Emphasis on Wildlife-Dependent Recreation Relevant to Stillwater National Wildlife Refuge (Draft).

Huffman, Kathy. 1999. San Diego South Bay Survey Report – Effects of Human Activity and Water Craft on Wintering Birds in the South San Diego Bay.

U.S. Fish and Wildlife Service. 1985. Salt Marsh Bird’s Beak (*Cordylanthus maritimus maritimus*) Recovery Plan.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

West, A. D., J. D. Goss-Custard, R. A. Stillman, R. W. G. Caldow, S. E. A. le V. dit Durell and S. McGrorty. 2002. Predicting the impacts of disturbance on shorebird mortality using a behaviour-based model. *Biological Conservation* 106:319-328.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader

Approval: _____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office:

_____ Date: _____

Manager, California/Nevada
Operations Office:

_____ Date: _____

Compatibility Determination

-FINAL-

Use: Interpretive Water Trail (Recreational Boating)

Refuge Name: Sweetwater Marsh Unit of the San Diego Bay National Wildlife Refuge
(San Diego County, Cities of Chula Vista and National City, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the Sweetwater Marsh Unit are the Endangered Species Act of 1973, as amended (16 U.S.C. §§1531-1543); Fish and Wildlife Act of 1956, as amended (16 U.S.C. §§742a-742j, not including 742d-742l); and the Fish and Wildlife Coordination Act of 1934, as amended (16 U.S.C. §§661-667e).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge (NWR) was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use:

Currently the waters of the Sweetwater Marsh Unit are closed to public access including any form of boating. During the September 2000 public workshop for the Sweetwater Marsh and South San Diego Bay Units of the San Diego Bay NWR Comprehensive Conservation Plan (CCP), the public expressed a desire to see an interpretive water trail developed through the Sweetwater Marsh for kayaks and canoes. As a result, such a proposal was considered during the development of alternatives for the CCP. Water trails and boating are not identified as wildlife dependent recreational uses, however, these uses would facilitate wildlife observation and photography and environmental interpretation, three of the six priority public uses that should be facilitated on a Refuge when determined to be compatible with the purpose of the Refuge and the mission of the System.

The development of an interpretive water trail on this Refuge would require that a portion of tidal channels within the Refuge be opened to boating. Due to the limited width and depth of the water channels within Sweetwater Marsh, only non-motorized, paddle-type vessels, such as kayaks and canoes, would be permitted to use the water trail. All other types of boats would be prohibited. This analysis assumes that non-motorized vessels would only be permitted to travel along a specific designated trail route; all other water areas of the Refuge would continue to be closed to public access. The trail route, which would be illustrated on signs placed at the two water entrances to the Refuge and delineated through small buoys, water markers, and/or signs, would begin in the Sweetwater flood control channel to the south of the point where the Paradise Marsh tidal channel enters the flood control channel (refer to Figure 2-1 in the Final CCP/EIS). From here, the trail would travel south through the connector marsh to its convergence with the historic Sweetwater River channel, then the trail would turn to the west. The trail would then continue west along the old river channel to the point where the channel reenters the Bay.

It is assumed that use of the interpretive water trail would be permitted daily from sunrise to sunset, although users would be encouraged to avoid periods of low tide when the water levels would be too shallow to permit easy navigation through the tidal channel. The trail would be closed during the nesting season (between mid-February through mid-September) to minimize disturbance to birds nesting on the D Street Fill. Prior to opening the Refuge to this use, regulatory signage would have to be installed at the water entrances to the Refuge and a monitoring program would have to be in place. Periodic monitoring of the effects of human activity on shorebird foraging and loafing would be necessary to ensure that no adverse effects to migratory birds were occurring.

Even if non-motorized boat use were to be permitted in the Refuge, the launching and landing of watercraft within the Refuge would be prohibited at all times. Watercraft would have to be launched from one of the existing boat launches to the north or south of the Refuge. Because this trail would travel through sensitive habitat that supports the Federal

endangered light-footed clapper rail (*Rallus longirostris levipes*), as well as numerous species of shorebirds, it would likely be necessary to implement a reservation system to limit the number of boats or groups of boats traveling through the area per week. The number of disturbances that could occur within this area without adversely affecting the rails and other birds supported by the surrounding tidal mudflats and salt marsh habitat would have be determined through a monitoring program.

To implement this use, the general route of the trail would have to be delineated with buoys and/or water markers and the tidal channels branching off from the main channel would have to be marked as closed. In addition, an interpretive pamphlet or brochure would be developed that would include a map of the trail route, rules and regulations to be followed while using the trail, and a description of the reservation system and how to reserve a time to use the trail. This information would be made available at the Chula Vista Nature Center, Refuge offices within the San Diego NWR Complex, and other appropriate locations. The information would also be provided on the Complex’s website.

Availability of Resources:

To implement an interpretive water trail and regulate and monitor the activities associated with the use of the trail, the following staffing and equipment would be required:

| Staffing | | | |
|--|--|------------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader/Deputy Project Leader | General oversight | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.4 | \$36,400 |
| Refuge Operations Specialist | Periodic on-site oversight, assist in the development of a reservation system, monitor law enforcement activities | 0.5 | \$39,000 |
| Wildlife Biologist | Assist in design of the trail, prepare and implement a monitoring plan to evaluate disturbance impacts, supervise bio tech | 0.5 | \$39,000 |
| Biological Technician | Field data collection, assistance with monitoring, analysis, and report writing | 0.5 | \$22,750 |
| Information and Education Specialist | Coordinate design of informational pamphlet and update website, assist in the development of a reservation system | 0.3 | \$23,400 |
| Outdoor Recreation Planner | Design the water trail and assist in siting of buoys and regulatory signs | 0.5 | \$22,750 |
| Park Ranger | Implement the reservation system, install and maintain buoys, water markers, and signs along the trail, monitor trail use | 0.3 | \$13,000 |
| Law Enforcement Officer | Law enforcement | 0.5 | \$31,200 |
| TOTAL FTES AND COSTS FOR STAFFING | | 3.9 | \$275,200 |

| Equipment | | |
|---------------------------------------|--|-----------------|
| Type of Equipment | Explanation of Need | Cost |
| Buoys, water trail markers, and signs | Buoys or water trail markers are needed to mark the alignment of the water trail; signs would illustrate the trail route, inform uses of closed areas, and provide general information about rules and regulations | \$20,000 |
| Patrol Boat/Trailer | Needed to patrol refuge waters for enforcement of Refuge regulations, monitoring, and safety related issues | \$50,000 |
| Information Pamphlet | Design, layout, and printing of an information pamphlet or brochure to illustrate the trail route, present rules and regulations, and provide interpretive information about the resources along the trail | \$5,000 |
| TOTAL COST FOR EQUIPMENT | | \$75,000 |

Refuge staff availability is critical to the implementation and administration of a seasonal interpretive water trail within the Sweetwater Marsh Unit due to the biological significance of the area in which the use is proposed. Based on the Refuge’s current staffing level, adequate staff is not available to support the proposed use. The coastal refuges including Sweetwater Marsh and South San Diego Bay Units and the Tijuana Slough NWR currently share one Park Ranger, a Wildlife Biologist, and a Law Enforcement Officer. Additional staff time would be needed to monitor and patrol the proposed interpretive trail, requiring either a reassessment of the current work program to change priorities or an increase in current staffing levels to support the use. Implementation of this use would also require approximately \$20,000 to purchase buoys, water markers, and signs needed to delineate the water trail and post closed areas and to design and print an informational pamphlet for the trail. An additional \$50,000 would be required to purchase a patrol boat and trailer to facilitate patrol and monitoring of boating activity within the Refuge.

Although funding may be identified through Federal cost share grants, local or state grants, or contributions to the Refuge’s Friends Group to purchase required materials, the lack of adequate staffing to implement the program could only be resolved through an increase in the current Refuge budget.

The proposal to open a portion of the Refuge waters to accommodate an interpretive water trail would not require any funds to develop boat ramps or other boating-related facilities as they would not be constructed within the Refuge. Adequate accommodations for such facilities are provided just outside the Refuge boundary in Chula Vista and Coronado.

Anticipated Impacts of the Use:

The effects of human disturbance on waterfowl and wintering birds have been the subject of numerous studies (DeLong and Schmidt 2000). These studies indicate that the degree of disturbance varies depending upon the use (Korschgen and Dahlgren 1992) and that boating activity can cause foraging and loafing shorebirds to flush if the activity occurs too close to the shoreline (Huffman 1999). The potential affects of introducing human activity into the marsh to accommodate an interpretive water trail are summarized below.

Migratory Birds: The Sweetwater Marsh Unit provides important habitat for avian species migrating along the Pacific Flyway. The Refuge's coastal salt marsh, with its many interconnecting channels and adjacent tidal mudflats, provide important foraging and resting areas for many wintering and migrating shorebirds and waterfowl. Some of the most common of these species include the long-billed curlew (*Numenius americanus*), whimbrel (*Numenius phaeopus*) and willet (*Catoptrophorus semipalmatus*).

In an effort to characterize species richness, relative abundance, and spatial distribution of the waterbird community in central and south San Diego Bay, waterbird surveys were conducted in South San Diego Bay between April 15, 1993 and April 14, 1994 (USFWS 1995). According to the report, "a mean of 6,981 birds were observed each visit during peak winter months (November through February)." In describing the locations of waterbird occurrences throughout central and south San Diego Bay, the report states that, "areas with relatively low water recreational intensity supported a greater abundance of waterbirds."

Between January and March 1998, a study was conducted to observe the effects of watercraft on wintering birds in the southern end of San Diego Bay (Huffman 1999). The study, which was prepared for the Fish and Wildlife Service, was designed to observe and record the effects of human disturbance, particularly disturbances related to watercraft, on wintering birds in the bay. During the study, Huffman observed that operating any watercraft, including motorized boats, non-motorized boats, jet skis, wind surfers, and parasails, within the Bay resulted in some level of disturbance to waterbirds. The degree of disturbance depended upon the vessel's speed, proximity to rafting birds, proximity to the shoreline, and amount of noise produced during operation. Of all the types of watercraft used in the bay, Huffman observed that powerboats resulted in the greatest disturbances to the avian community. Huffman also noted that disturbance to birds was greatly reduced when boats traveled at the posted "No Wake" speed (5 mph).

Other observations made by Huffman included the effect that watercraft had on shorebirds foraging along the edge of the bay. Huffman reports that in cases in which motorized watercraft were within 100 meters off the shore, all waterfowl between the boat and shore and any shorebirds along the shoreline would flush regardless of the speed of the watercraft. Similarly, when non-motorized vessels, including kayaks, canoes, and longboats, came

within 30 meters of the shoreline all waterfowl between the craft and the shore would flush to another portion of the bay. The approximate width of the tidal channels that would be included within the water trail route is 20 meters, therefore, based on the results of Huffman's observations; frequent disturbance to foraging and loafing shorebirds would be expected as a result of the proposed boating. Such disturbance can reduce an individual bird's ability to meet its energy requirements by causing the bird to expend energy in the process of flying away from the disturbance. If disturbance becomes too frequent, those birds that do not habituate could permanently leave the area (West et al. 2002). Increasing the intensity of boating activity in the vicinity of the mudflats immediately to the west of Gunpowder Point could also result in cumulative impacts to the migratory shorebirds that forage in proximity to the Refuge.

Endangered and Threatened Species: One of the purposes for the establishment of the Sweetwater Marsh Unit is to protect Federally-listed endangered or threatened species. Human activity can have adverse impacts on endangered and threatened species, particularly when this activity disrupts bird nesting or foraging. The California least tern (*Sternula antillarum*) and California brown pelican (*Pelecanus occidentalis californicus*), both Federally-listed endangered species, forage within the main tidal channel within the Sweetwater Marsh, while the threatened western snowy plover (*Charadrius alexandrinus nivosus*) forages year round along the channel banks. The D Street Fill portion of the Refuge also supports least tern and western snowy plover nesting. Increasing human activity within the Refuge's main tidal channel could disrupt current foraging patterns for these species, and possibly displace these species to other less productive portions of the Refuge.

The Federal endangered light-footed clapper rail also occurs within Sweetwater Marsh Unit in the Refuge's salt marsh and brackish marsh habitats. Threats to the light-footed clapper rail consist primarily of direct habitat or nest losses through trampling of cordgrass or pickleweed. Such impacts would occur if boats were landed along the channel banks and unauthorized intrusion into the marsh was to occur. Clapper rails are also at risk because they are slower to react to the presence of humans in the vicinity of their habitat as are other bird species; therefore, they are more vulnerable to injury and death from human intrusion. The introduction of human activity along the Refuge's primary tidal channel could indirectly impact the Refuge's rail population by forcing the birds to relocate away from the main areas of disturbance. Because the main tidal channel is located near the center of the Refuge, the rails would actually be relocating closer to the edges of the Refuge where the chances for predation would be greater. The potential effects to clapper rails of introducing human activity into the marsh would be contrary to the objectives of the Light-footed Clapper Rail Recovery Plan (USFWS 1985a). Specifically, the Plan's primary objective is to increase the rail breeding population by providing adequately protected, suitably managed, secure wetland habitat. Some of the recommendations included in the Recovery Plan include protecting existing habitat, controlling human disturbance in clapper rail areas, and increasing the carrying capacity and stability of existing habitat.

The State endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) occupies the high salt marsh vegetation throughout Sweetwater Marsh. Human intrusion into these areas could disrupt foraging activities, as well as result in direct habitat or nest losses through trampling of pickleweed. This species would also be most directly impacted by unauthorized access into the marsh from boats that have landed on the shoreline. Such activity would likely result in vegetation trampling and habitat degradation.

In addition to endangered and threatened bird species, the Sweetwater Marsh Unit also supports the Federally-listed endangered annual plant species, salt marsh bird's beak (*Cordylanthus maritimus maritimus*). Salt marsh bird's beak is distributed in various locations throughout the marsh, primarily in upper marsh elevations that are inundated by tides on a regular basis, but above areas that receive daily salt water flooding. Such areas are more likely to be impacted by unauthorized pedestrian access, because they are drier than other portions of the marsh. Yearly population numbers depend directly on seed dispersal and successful plant establishment. Field observations indicate that even a moderate amount of foot traffic can damage the fragile seedlings (USFWS 1985b), resulting in decreased population numbers. Therefore, the unauthorized landing of boats along the edges of the marsh's main channel could result in direct impacts to this species.

Nesting Season Disturbance: Human disturbance to nesting birds from activities associated with watercraft can occur in several ways: disturbance from the vessel itself due to encroachment on the shoreline and disturbance from human encroachment into nesting areas when watercraft are landed along the shore. Huffman (1999) observed bird flushing when motorized watercraft came within 100 meters of the shoreline and non-motorized vessels came within 30 meters of the shoreline. Similar effects to nesting seabirds would be expected. When a kayaker landed along the shore of the Chula Vista Wildlife Reserve, a habitat mitigation area created by the Unified Port of San Diego that is located just to the north of the salt works in the southern end of San Diego Bay, Huffman noted that the remaining shorebirds and other upland birds in the area flushed. Such human disturbance on the nesting grounds has been identified as a primary limiting factor for seabird reproductive productivity in nesting areas with urban interfaces.

Disturbance to nesting migratory bird species may occur if a watercraft is present in the vicinity of a nesting colony or individual nests. Several species, many of which are rare, sensitive or state and/or Federally-listed, nest on the relatively bare ground at D Street Fill, as well as in vegetated habitats within Sweetwater Marsh. The Belding's savannah sparrow nests in salt marsh associated vegetation throughout Sweetwater Marsh, while the endangered California least tern and threatened western snowy plover nest at D Street Fill. Biologists performing nesting surveys at the salt works on the South San Diego Bay Unit report that seabird colonies will respond to pedestrian traffic. These responses vary with

date, nature of disturbance and other unknown factors. Avian responses to disturbance can include flocking, alarm calling, nest abandonment, colony abandonment and inter-colony antagonistic behaviors leading to crushed eggs and killed chicks. Predatory species, particularly avian predators such as northern harrier, common raven, American crow, and some gull species, may also use disturbance episodes to depredate eggs and chicks while the adults are flocking or otherwise distracted. Closing the water trail during the nesting season would reduce these types of disturbance impacts, however, enforcement of the nesting season closure could be difficult once the public becomes accustomed to the trail being open during much of the year. Opening the water trail only to those with a reservation could help in the process of informing the public about when and how the proposed trail can be used.

Public Review and Comment:

The development of water trails to facilitate wildlife dependent recreational uses was discussed on several occasions at public workshops held in conjunction with the Comprehensive Conservation Plan (CCP) process. To initiate the CCP process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the Sweetwater Marsh and South San Diego Bay Units. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting. Approximately 50 to 60 people attended those meetings related to public use.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. One of these updates was devoted entirely to the topic of public use. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to public use between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003. The draft Compatibility Determination for a water trail through the Sweetwater Marsh Unit was circulated for public review and comment as part of the San Diego Bay National

Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the draft CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Justification:

After evaluating the anticipated impacts of implementing an interpretive water trail on the Sweetwater Marsh Unit, the Refuge Manager has determined that allowing this use would materially interfere with one of the primary purposes of this Refuge, which is "to conserve endangered and threatened species." The introduction of human activity within the main portion of the marsh would impede the foraging and nesting activities of the light-footed clapper rail and could potentially disrupt foraging activity of the western snowy plover. The proposed activity would also result in frequent disturbance to shorebirds that forage and rest on the tidal mudflats along the main tidal channel in the marsh. These impacts would be contrary to the wildlife conservation mission of the National Wildlife Refuge System. The affects of implementing this proposal would therefore be contrary to the Refuge goal of providing opportunities for wildlife-dependent recreational uses that are compatible with refuge purposes and foster a broader understanding the value of, and need for, wildlife conservation.

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

DeLong, Anita and Janet Schmidt. 2000. Literature Review: Effects of Human Disturbance on Wildlife with Emphasis on Wildlife-Dependent Recreation Relevant to Stillwater National Wildlife Refuge (Draft).

Huffman, Kathy. 1999. San Diego South Bay Survey Report – Effects of Human Activity and Water Craft on Wintering Birds in the South San Diego Bay.

Korschgen, Carl and Robert Dahlgren. 1992. Human Disturbances of Waterfowl: Causes, Effects, and Management.

U.S. Fish and Wildlife Service. 1985a. Light-footed Clapper Rail Recovery Plan.

U.S. Fish and Wildlife Service. 1985b. Salt Marsh Bird’s Beak (*Cordylanthus maritimus* subsp. *maritimus*) Recovery Plan.

U. S. Fish and Wildlife Service. 1995. Waterbirds of Central and South San Diego Bay 1993-1994.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

West, A. D., J. D. Goss-Custard, R. A. Stillman, R. W. G. Caldow, S. E. A. le V. dit Durell and S. McGrorty. 2002. Predicting the impacts of disturbance on shorebird mortality using a behaviour-based model. *Biological Conservation* 106:319-328.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader

Approval: _____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office: _____ Date: _____

Manager, California/Nevada
Operations Office: _____ Date: _____

Compatibility Determination

-FINAL-

Use: Wildlife Observation and Photography

Refuge Name: South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge (San Diego County, Cities of Coronado, Chula Vista, Imperial Beach, National City, and San Diego, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the San Diego National Wildlife Refuge are the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742a-742j, not including 742d-742l), and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Descriptions of Use:

At present, the primary opportunities for wildlife observation and photography from within the Refuge boundary are available via watercraft in the open waters of the Refuge or immediately adjacent to the Refuge along the Bayshore Bikeway. Opportunities for the public to observe wildlife from within the salt works are also available via guided tours.

At the scoping meetings for the Comprehensive Conservation Plan (CCP), as well as at subsequent public use workshops held in September 2000 and June 2001, the public expressed an interest in expanding opportunities for wildlife observation and photography within the South San Diego Bay Unit. As described in the Public Use Program discussion in Section 2.3.2.4 of the Final CCP/Environmental Impact Statement (EIS) for the South San Diego Bay Unit (USFWS 2006), the CCP includes several proposals for expanding opportunities for these uses including:

1. Increasing the number of guided tours provided of the salt works between mid-September and early February of each year to about two per month;
2. Establishing observation points on the north side of the Bayshore Bikeway: at the northern terminus of 10th Street, at the northern terminus of 8th Street, and in the vicinity of Florida Street in Imperial Beach. From these areas, the wildlife activities occurring in the river channel and Ponds 22, 23, and 10 can be observed (refer to Figure 2-14 of the Final CCP/EIS);and
3. Establishing an observation area along the eastern edge of Pond 29 in the City of Chula Vista, where views of the northeastern pond system could be provided (refer to Figure 2-14 of the Final CCP/EIS).

An elevated platform was also proposed near 13th Street in the draft CD, however, upon further analysis, it was determined that this structure was not needed to achieve the goals for wildlife observation and photography. The existing elevations to the north of the bikeway in the vicinity of Florida Street are high enough to allow for observations of avian activities within the salt ponds without the need for an elevated platform. As a result, the elevated platform has been replaced with a proposal to construct an overlook area on a knoll to the north of the Bayshore Bikeway and the northeast of the terminus of Florida Street.

The observation areas proposed around the perimeter of the Refuge would be accessible from the Bayshore Bikeway and several public streets in northern Imperial Beach. A parking area that serves users of the Bayshore Bikeway is available at the northern terminus of 13th Street and on-street parking is available along Florence Street, 8th Street, and Boulevard Avenue. The City of Imperial Beach also proposes to construct a new parking area at the terminus of 10th Street. Based on preliminary concepts for the observation areas, the design would be relatively informal, consisting of a leveled area with a hardened surface of stabilized soil or

decomposed granite. A post and cable fence or other appropriate barrier would be provided at the northern edge of the observation areas to minimize disturbance to adjacent vegetation. These observation areas would also include interpretive elements as described in the Compatibility Determination for environmental education and interpretation for this Unit.

A reservation system would be established in association with the expansion of the salt works guided tour program, as these tours would be limited to approximately 15 people per tour. About two tours per month would be conducted between mid-September and mid-February. No tours would be provided during the breeding season to avoid disturbance to nesting birds.

Availability of Resources:

To implement and administer opportunities for wildlife observation and photography, the following staffing and materials/facilities would be required:

| Staffing | | | |
|--|---|------------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader/Deputy Project Leader | General oversight | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.3 | \$27,300 |
| Refuge Operations Specialist | Periodic on-site oversight, monitoring of law enforcement activities | 0.4 | \$31,200 |
| Wildlife Biologist | Monitoring, reporting, assistance in the design and siting of overlook areas and oversight in their implementation, oversight of bio tech; assist in conducting tours | 0.5 | \$39,000 |
| Biological Technician | Field data collection, assistance with analysis and report writing | 0.3 | \$22,750 |
| Information and Education Specialist | Assist in the development, design, and coordination of the step-down wildlife observation plan and develop and assist with the guided tour program | 0.3 | \$23,400 |
| Law Enforcement Officer | Law enforcement | 0.3 | \$20,800 |
| Park Ranger | Facilities maintenance; take reservations for and assist in conducting guided tours | 0.4 | \$15,600 |
| TOTAL FTES AND COSTS FOR STAFFING | | <u>2.9</u> | <u>\$227,750</u> |

| Facilities | | |
|--|---|------------------|
| Material/Facility Required | Explanation of Need | Cost |
| Step-down Plan | Needed to develop construction plans and specifications for observation areas and to describe and provide cost estimates for necessary amenities (i.e. benches, signage, fencing, viewing scopes, etc.) | \$35,000 |
| Observation Areas (with benches/fencing, scopes) | Level sites with surfaces prepared to meet accessibility standards; amenities to aid in observing wildlife | \$70,000 |
| Regulatory signage and fencing | Signs and appropriate fencing are required to delineate areas open to public access and those that are closed | \$30,000 |
| 8 – 10 passenger van | An accessible van with good visibility needed to accommodate seasonal guide tours | \$45,000 |
| TOTAL COST FOR FACILITIES | | \$180,000 |

The current Refuge budget is not adequate to fund all of the wildlife observation proposals included in the CCP, therefore, additional funding must be identified before these proposals can be implemented. It is possible to implement these proposals in phases as funding sources are identified. Potential sources for funding include Federal cost share grants, interagency partnerships, state and private grants, and contributions from Friends groups.

Increasing the number of guided tours conducted on the salt works could be facilitated through the Refuge’s current partnership with the City of Chula Vista’s Nature Center. Additional funding, estimated at approximately \$45,000, would be needed to acquire an additional van for the Refuge Complex and another \$35,000 would be required to prepare the step-down wildlife observation plan and specific construction plans. The actual cost of developing the observation areas cannot be determined until more specific plans are development.

Anticipated Impacts of the Use:

A number of studies have been conducted to evaluate the effects of wildlife observation and photography on wildlife. The studies are summarized in a literature review prepared for the Stillwater National Wildlife Refuge (DeLong and Schmidt 2000). In summarizing the findings of these studies, DeLong and Schmidt state that wildlife observation and photography can “negatively impact wildlife by altering wildlife behavior, reproduction, distribution, and habitat.” In addition, these studies show that birds frequently approached by humans may reduce foraging times in the area or avoid the area entirely. Huffman (1999) in observing waterbird disturbance in South San Diego Bay documented disturbance to migratory birds as a result of pedestrian activity along the shoreline. This disturbance was greatest during low tides when pedestrians left designated accessways to explore the mudflats. This activity affected both shorebirds and waterfowl. Huffman observed that

human activity along the shoreline and in the mudflats would flush all birds within a 50 to 100 meter radius.

To reduce the potential for disturbance to wildlife, the majority of the new opportunities for wildlife observation and wildlife photography on the South San Diego Bay Unit would be provided along the perimeter of the Refuge rather than dispersed throughout the Refuge. For a discussion of the potential impacts to Refuge resources associated with wildlife observation and photography uses conducted in bay from water vessels, refer to the Compatibility Determination for recreational boating on the South San Diego Bay Unit.

Endangered and Threatened Species: Human activity can have adverse impacts on endangered and threatened species, particularly when it disrupts bird nesting or foraging activities. Requests from the public to consider opening the levees around Ponds 10 and 11 (refer to Figure 2-6 of the Final CCP/EIS) to public access were evaluated in the CCP/EIS, where it was determined that such access could result in disturbances to nesting tern colonies located across the river channel (refer to the discussion of Nesting Season Disturbance below), as well as disturbances to an established California brown pelican (*Pelecanus occidentalis californicus*) roosting area located on the levee separating Ponds 10 and 11. Opening these levees to public access could also adversely affect the Federally-listed endangered light-footed clapper rail (*Rallus longirostris levipes*), which has been observed within the South Bay Biological Study Area, located immediately to the north of Pond 11. Potential threats to clapper rails from human activity on these levees consist primarily of direct habitat or nest losses resulting from human intrusion in the adjacent salt marsh areas. The effects of such disturbance would become even more significant following the restoration of Ponds 10 and 11, which are proposed for restoration to support the clapper rail. Repeated intrusion into clapper rail occupied salt marsh habitat could disrupt foraging and intrusion into restored habitat could discourage the use of restored areas by this species.

No adverse effects to listed species are anticipated from the current proposals to provide wildlife observation points around the perimeter of the Refuge. In addition, closing the salt works to guided tours during the nesting season would avoid any potential impacts to the Federally-listed endangered California least tern (*Sternula antillarum*) or threatened western snowy plover (*Charadrius alexandrinus nivosus*).

Nesting Season Disturbance: The nesting season varies for each species, but can generally be described as occurring between mid-February and mid-September of a given year. Disturbance to nesting bird species may occur if persons are present in the vicinity of avian nesting colonies or individual nests. A variety of ground nesting avian species utilize the levees around the salt ponds for nesting, including colonies of Caspian terns (*Sterna caspia*), elegant terns (*Thalasseus elegans*), royal terns (*Thalasseus maximus*), gull-billed terns (*Gelochelidon nilotica vanrossemei*), Forster's terns (*Sterna forsteri*), endangered California least terns and black skimmers (*Rynchops niger*). Loud noises from activities on adjacent

areas could result in disturbances to those nesting colonies located closest to activity areas. Avian responses to disturbance can include flocking, alarm calling, nest abandonment, colony abandonment, and inter-colony antagonistic behaviors leading to crushed eggs and killed chicks. Predatory species, particularly avian predators such as northern harriers, ravens, crows, and other gulls, may also use disturbance episodes to depredate eggs and chicks while the adults are flocking or otherwise distracted by the initial source of the disturbance.

The observation areas to be located along the southern edge of the Refuge would be situated approximately 150 meters or more from known nesting sites and physically separated from these sensitive areas by the Otay River channel. As a result, activities occurring at the observation areas would not be expected to result in disturbance to nesting seabirds.

No guided tours of the salt works would be conducted during the nesting season; therefore, no nesting season disturbance from this use would occur.

Sensitive Habitats: Although the proposed wildlife observation sites would be located around the perimeter of the Refuge, they would still occur in proximity to sensitive wetland habitat. Therefore, to avoid disturbance related impacts to sensitive habitat, such as trampling of vegetation, observation areas would be located along existing public trails and/or in areas where topographic relief or existing or future fencing would make it difficult for the public to gain access to sensitive areas.

The potential for impacts to sensitive habitats as a result of guided tours would be negligible due to the level of supervision that would occur during such tours.

Migratory Birds: Proposed observation areas have been sited away from locations that support an abundance of migratory bird foraging and loafing, therefore, disturbance from human activity in the vicinity of these areas is expected to be minimal.

Disturbance and possible displacement of migratory shorebirds could occur around the salt works if guided tours result in excessive out-of-vehicle activity. According to DeLong and Schmidt (2000), Klein (1993) tested the behavioral response of waterbirds to human disturbance, including vehicular travel at Ding Darling NWR and found that as the intensity of disturbance increased, avoidance response by waterbirds tended to increase. Out-of-vehicle activity was also observed to be more disruptive than vehicular movement through the area. Although the degree of disturbance may vary for the species and local populations of waterbirds occurring within the South San Diego Bay Unit, similar differences between out-of-vehicle activity and vehicle travel related to guide tours through the salt works would be expected.

Public Review and Comment:

Wildlife observation and photography have been discussed a several occasions at public workshops held in conjunction with the Comprehensive Conservation Plan (CCP) process. To initiate the CCP process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the South San Diego Bay and Sweetwater Marsh Units. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting. Approximately 50 to 60 people attended those meetings related to public use.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. One of these updates was devoted entirely to the topic of public use. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to public use between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003.

During the CCP scoping meetings and public use workshops, a number of individuals expressed their desire to see the needs of the Refuge's wildlife met before any consideration is given to the provision of public uses on the Refuge. Others stated that the Refuge should be managed as a place for people as well as wildlife. With respect to wildlife observation, one individual requested that the ability to observe the sounds of wildlife on the Refuge, particularly during seabird nesting season, be preserved. The San Diego Audubon Society expressed an interest in having one or more viewing platforms provided near the salt works to permit viewing into the salt works. A number of potential observation areas were suggested, including those described above.

The draft Compatibility Determination for wildlife observation and photography on the South San Diego Bay Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the draft

CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the Draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Prior to constructing any observation areas within the Refuge, a step-down wildlife observation plan that includes specific designs for the various observation areas will be developed and approved by the Refuge Manager. During the development of this plan, concepts will be reviewed with the adjacent community to receive comments and recommendations regarding its design.
2. To reduce the potential for off-trail activity on Refuge lands and waters, regulatory signage and fencing or other appropriate barriers will be installed prior to opening an observation area.
3. For three years following the completion of an observation area, monitoring shall be conducted during the nesting season to determine the effects, if any, of increased human activity at the site on nearby nesting seabirds. Additionally, weekly monitoring during peak migration periods shall also be conducted to observe any effects to bird foraging and resting behavior as a result of increases in activity at the observation site. If adverse effects are observed, additional measures shall be implemented to reduce disturbance.
4. Guided tours of the salt works shall not be conducted during the nesting season (February 15 through September 15). From February 1 to February 14 and September 16 to September 30 of each season, the Refuge Biologist shall confirm one day prior to a scheduled tour that no nesting or fledgling activity is occurring on or within 150 meters of the tour route.
5. To avoid excess disturbance during migration, the Refuge Manager shall establish guidelines for when and how often visitors on a guided tour are permitted to exit the vehicle for observation purposes.

Justification:

Expanding the opportunities for wildlife observation and photography on the South San Diego Bay Unit will enhance the public's appreciation of the wildlife resources supported within this Refuge. Although adequate funding is not currently available to implement all of the proposals, implementation can be phased over several years. As new opportunities are provided, the public's appreciation for the species and habitats found within the Refuge will increase, and in turn conditions will improve for ensuring the protection and management of the Refuge's listed species and other wildlife. This outcome is consistent with the Refuge purposes of protecting, managing, and restoring habitats for Federally-listed endangered and threatened species and migratory birds and maintaining and enhancing the biological diversity of native plants and animals. A review of the environmental consequences of implementing these uses, as provided in the Final CCP/EIS (USFWS 2006), demonstrates that these uses would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission, provided the stipulations to ensure compatibility are followed. Further, wildlife observation and photography are two of the six priority public uses of the System, as defined by the Act. Therefore, implementation of these programs would contribute to the fulfillment of the Refuge System mission, and the achievement of the goals established for the Refuge, particularly the goal to provide opportunities for compatible wildlife-dependent recreational uses that foster public appreciation of the unique natural and cultural heritage of South San Diego Bay.

Mandatory Re-Evaluation Date:

Mandatory 15-year Re-Evaluation Date (for priority public uses)

Mandatory 10-year Re-Evaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

DeLong, Anita and Janet Schmidt. 2000. Literature Review: Effects of Human Disturbance on Wildlife with Emphasis on Wildlife-Dependent Recreation Relevant to Stillwater National Wildlife Refuge (Draft).

Huffman, Kathy. 1999. San Diego South Bay Survey Report – Effects of Human Activity and Water Craft on Wintering Birds in the South San Diego Bay.

Klein, M. L. 1993. Waterbird Behavioral Responses to Human Disturbances. Wildlife Society Bulletin 21:31-39.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/ Project Leader

Approval: _____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada

Operations Office: _____ Date: _____

Manager, California/Nevada

Operations Office: _____ Date: _____

Compatibility Determination

-FINAL-

Use: Environmental Education and Interpretation

Refuge Name: South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge
(San Diego County, Cities of Coronado, Chula Vista, Imperial Beach, National City, and San Diego, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the San Diego National Wildlife Refuge are the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742a-742j, not including 742d-742l), and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Descriptions of Use:

Various community members identified the development of environmental education and interpretation programs for the South San Diego Bay Unit as a key element of the Comprehensive Conservation Plan (CCP) for this Refuge. As a result, existing environmental education and interpretation programs are proposed for expansion. Environmental education, particularly the Habitat Heroes program, would be expanded to focus on new partnerships with area elementary, middle school, high school, and community college districts. In addition, a variety of interpretive concepts are proposed in response to comments received during the public workshop process. Many of these concepts would be implemented in conjunction with expanded opportunities for wildlife observation. New and expanded environmental education and interpretation programs are intended to provide the community and visitors to the region with an opportunity to better understand the wildlife and habitats found within the Refuge, increase public awareness for the need to protect these resources, and experience through interpretation the traditional wildlife-dependent recreational uses of the National Wildlife Refuge System.

Environmental Education: As described in the Public Use Program discussion in Section 2.3.2.3 of the Final CCP/Environmental Impact Statement (EIS) for the South San Diego Bay Unit (USFWS 2006), continuation of the Refuge's Habitat Heroes program would provide elementary through community college students with the opportunity to participate in an innovative program that incorporates the use of GIS technology, traditional and internet-based instruction, cross-age student mentoring, and habitat-based investigations for the purpose of developing an appreciation for the importance of the coastal wetlands protected within the Refuge. This program would continue to focus on two significant threats to the habitat quality of these coastal wetlands: invasive plant species and stormwater pollution. Working on an upland area along the southern perimeter of the Refuge in Imperial Beach, students will have the opportunity to map native and nonnative plants, remove invasive plant species, and cultivate and plant native plants. The continued implementation of the program, which involves partnering with elementary, secondary, and post secondary students and teachers, volunteer groups, trained environmental educators, the City of Imperial Beach, and interested individuals from the surrounding community, will require the identification of additional funding sources.

A significant activity of "Habitat Heroes" will be the inclusion of students' work on a national web site with links to other such education programs in which the Complex participates called, "Hands on the Land." Hands on the Land is sponsored by numerous federal agencies including the U.S. Fish and Wildlife Service and is funded by Congress through the National Environmental Education and Training Foundation.

Environmental Interpretation: The interpretive program proposed for the South San Diego Bay Unit, as described in the Public Use Program discussion in Section 2.3.2.4 of the Final CCP/EIS (USFWS 2006), would include several components. The first is a proposal to design a variety of interpretive elements that would provide the public with an overview of the many resources present on the Refuge, including coastal wetland and upland habitats,

migratory birds, colonial nesting seabirds, and endangered and threatened species. These interpretive elements would be installed around the southern perimeter of the bay, where visual and other sensory access into the Refuge is readily available. The second component involves a proposal to interpret one of the traditional wildlife-dependent recreational uses of the National Wildlife Refuge System, hunting.

Opportunities for interpreting the resources protected within the Refuge would be provided along the strip of upland terrace that defines the Refuge's southern boundary, generally the area immediately to the north of the Bayshore Bikeway (refer to Figure 2-14 in the Final CCP/EIS). Interpretive sites are proposed to generally correspond to the proposed wildlife observation areas, described in the Compatibility Determination prepared for wildlife observation and photography. These interpretive sites would be developed at the following locations: 1) between the northern terminus of 13th Street and the northern terminus of Florida Street; 2) at the northern terminus of 10th Street, near the City of Imperial Beach's Public Works facility; and 3) at the northern terminus of 8th Street. All of these locations are located within the City of Imperial Beach. An observation area would be collocated at the interpretive site proposed for the end 10th Street. The City of Imperial Beach proposes to construct a bike path connection from the adjacent community onto the Bayshore Bikeway at this location, to develop a parking lot just to the south of the Refuge boundary, and to assist in the development of the proposed observation and interpretive site. The specific design for the proposed interpretive sites would be developed as part of a step-down interpretive plan.

All of the proposed sites would be accessible from the Bayshore Bikeway and several public streets in northern Imperial Beach. A parking area that serves users of the Bayshore Bikeway is available at the northern terminus of 13th Street and on-street parking is available along Florence Street, 8th Street, and Boulevard Avenue. The interpretive areas would be accessible during daylight hours. The interpretive theme for each of these sites, the types of interpretive elements to be installed, and the detailed cost estimates for each interpretive site would be developed as part of the step-down plan. Opportunities for additional interpretation at existing public use locations where interpretive elements such as kiosks, signs, remote video cameras and other cutting edge approaches to public interpretation could be provided would also be examined in this step-down plan.

Several members of the public expressed a desire to see hunting recognized on this Refuge as one of the traditional wildlife-dependent recreational uses of the National Wildlife Refuge System. To address this suggestion, the interpretive program for the Refuge would include the seasonal interpretation of a waterfowl hunting program along the northern levee of the salt ponds. This interpretive program, which would be conducted approximately four times a year between November and January, would involve up to 12 participants per session and each session would take place during the hours of sunrise to 9:00 a.m. One or two temporary hunting blind would be installed along the northern levee and as part of the interpretive program waterfowl historically harvested in the south bay would be called in to simulate the traditional hunting method. A docent would be present to describe historic hunting activities

within the south bay, answer questions about waterfowl hunting programs in general, and discuss various hunting opportunities throughout the National Wildlife Refuge System. Participants would be transported from an off refuge location in vans and reservations would be needed to participate. No fee would be required to participate in this program.

The CCP also recommends the development of a coordinated interpretive program for San Diego Bay that would involve collaboration among all of the agencies surrounding the Bay including the Cities of Coronado, Imperial Beach, National City, Chula Vista, and San Diego, County of San Diego, U.S. Navy, and Port of San Diego. The Refuge is interested in working with these agencies to interpret bay habitats and refuge resources in a coordinated style so that a member of the public traveling along the Bayshore Bikeway will be able to experience different yet harmonious interpretive elements that serve to enhance an understanding of the bay ecosystem as a whole, while allowing for individual interpretation of various discrete characteristics of bay habitats, endangered species, watershed issues, and cultural and historic values.

Availability of Resources:

To implement and administer the environmental education and interpretation programs described, the following staffing and materials/facilities would be required:

| Staffing | | | |
|--|---|------------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader//Deputy Project Leader | General oversight | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.3 | \$27,300 |
| Refuge Operations Specialist | Periodic on-site oversight, monitoring of law enforcement activities | 0.3 | \$26,000 |
| Wildlife Biologist | Monitoring, reporting, review interpretive plan, and provide oversight of bio tech | 0.3 | \$26,000 |
| Information and Education (I&E) Specialist | Coordinate the development of curriculum for the environmental education program and assist in the design of the interpretive plan, build partnerships with other agencies and organizations, and outreach to schools | 0.3 | \$23,400 |
| Law Enforcement Officer | Law enforcement | 0.3 | \$20,800 |
| Park Ranger | Facilities maintenance, participate in the educational and interpretation programs, and assist with interpretive programs | 0.3 | \$15,000 |
| Maintenance Worker | Maintain interpretive areas and amenities | 0.3 | \$12,870 |
| Biological Technician | Field data collection, assistance with analysis and report writing | 0.3 | \$15,170 |
| TOTAL FTES AND COSTS FOR STAFFING | | <u>2.8</u> | <u>\$214,240</u> |

| Facilities | | |
|---|---|------------------|
| Material/Facility Required | Explanation of Need | Cost |
| Step-down Plan | Needed to design and prepare specifications for the interpretive sites proposed at the northern terminus of 8 th , 10 th , and 13 th Streets and to identify the interpretive theme for each area, the types of interpretive elements to be provided, and fabrication and installation specifications for the interpretive elements. | \$45,000 |
| Construct an Interpretive Trail w/ associated upland restoration on Refuge land near the northern terminus of 10 th Street | To interpret the importance of coastal uplands to the function and value of coastal wetlands on an upland area; would involve the removal of nonnative vegetation and the installation of native plants and the construction of an a pathway through the restored area with access from the Bayshore Bikeway | \$35,000 |
| Interpretive elements for the interpretive trail | Fabricate and install 20 small interpretive plant signs and three larger interpretive panels | \$15,000 |
| Temporary hunting blind | To accommodate the interpretation of hunting in the South Bay and throughout the NWRS | \$500 |
| Development of educational curriculum for a middle school program | Curriculum for the elementary school program has been developed, but a middle school curriculum for the Habitat Heroes program is still needed. | \$5,000 |
| Materials/Instructors to Implement the Habitat Heroes Program | Annual costs associated with implementing the program including instructors, miscellaneous materials, and native plants | \$25,000 |
| TOTAL COST FOR FACILITIES | | \$125,500 |

The current Refuge budget is not adequate to fund all of the environmental and interpretive programs proposed, therefore, additional funding must be identified before these proposals can be fully implemented. The first year of the Habitat Heroes program was funded through a challenge cost share grant. To fully implement this program, which would involve expanding the program to reach elementary, middle, and high school students would require funding of approximately \$25,000 annually. Funding could come from a combination of sources including the Refuge operating budget, funds from individual schools involved in the program and one-time or on-going public and private grant funds awarded to the Refuge's Friends Group. Additional assistance would be provided by volunteers and participating teachers and student mentors.

Implementation of the interpretation proposals could be phased to coincide with the identification of appropriate funding sources. Potential sources for interpretive funding include Federal cost share grants, state grants that focus on education and/or the environment, local partnerships, private funding sources, and contributions from the Refuge's Friends group. Funding for the hunting interpretive program could be provided by local hunting groups and/or state and national organizations interested in traditional hunting activities.

Anticipated Impacts of the Use:

As described in Section 4.2.2.3 of the Final CCP/EIS (USFWS 2006), potential impacts associated with the implementation of the proposed environmental education and interpretation programs could include disturbance to wildlife, destruction of native habitats, and intrusion onto sensitive refuge lands by members of the public. Such impacts would be minimized through appropriate program design, adequate Refuge oversight and supervision of educational activities, and ongoing coordination among partners.

Endangered and Threatened Species: Human activity can have adverse impacts to endangered and threatened species, particularly when this activity disrupts nesting or foraging activities. Through adherence to the stipulations outlined below, the potential for adverse impacts to the endangered light-footed clapper rail (*Rallus longirostris levipes*) that could occur as a result of increased human activity in the vicinity of the northern terminus of 8th Street and between Ponds 10 and 10A would be minimized. As part of the design of future interpretive areas, issues such as location, size, orientation, construction timing and access, as well as specific activities to be permitted and physical improvements to be completed, would be reviewed by the Refuge Biologist to ensure that there would be no direct, indirect, or cumulative impacts to clapper rails or their habitat. It may be necessary to construct physical barriers such as post and cable fencing between the interpretive element and the wetlands to reduce the potential for habitat damage. These types of measures would be incorporated into the design of the interpretive areas as part of the future step-down interpretive plan.

The interpretive elements proposed along the Bayshore Bikeway would be topographically separated from the more sensitive habitat areas within the Refuge making access into these areas difficult. The combination of natural barriers and the installation of additional post and cable fencing and signage would minimize the potential for impacts to clapper rails and other sensitive coastal wetland species. No adverse effects to the Federally-listed endangered California least tern (*Sternula antillarum*), the endangered California brown pelican (*Pelecanus occidentalis californicus*), or the threatened western snowy plover (*Charadrius alexandrinus nivosus*) are anticipated as a result of the current environmental education and interpretation proposals.

The hunting interpretive program would be confined to the salt works and would occur during the non-breeding season; therefore, no adverse effects to endangered or threatened species are anticipated.

Sensitive Habitats: The Habitat Heroes program would utilize an isolated, degraded upland area located on Refuge land. This upland, which is separated from nearby wetlands to the north by the Bayshore Bikeway, is located adjacent to a remnant of a much larger historic marsh area that was filled many decades ago to accommodate urban development. The

playground of the Bayside Elementary School abuts the marsh to the south. Although the marsh supports several native coastal salt marsh plant species, it also includes various exotic, invasive plants and currently provides little benefit to native wildlife. The educational use of the adjacent upland could result in some trampling of native marsh vegetation; however, such impacts would be minimized through adequate teacher participation and monitoring of student activity. The proximity of this degraded marsh land provides opportunities to increase the students' understanding of the importance of protecting wetland and native upland areas and adjacent watersheds. These benefits would outweigh the limited impacts to wetland plants from occasionally trampling.

Locating interpretive areas around the perimeter of the Refuge, taking advantage of topographic barriers to separate public uses from sensitive resources, and installing appropriate signage and fencing where required would minimize the potential for impacts to sensitive habitats as a result of increased human activity. Public access onto the salt works during the nesting season is not proposed, therefore, no impacts to sensitive tern nesting habitat are anticipated.

Migratory Birds: The salt ponds and mudflats along the edges of the Otay River support a diverse array of migratory birds including shorebirds, ducks, and seabirds. Various studies have shown that frequent human disturbance can negatively impact wildlife by altering wildlife behavior, reproduction, distribution, and habitat. Such disturbances may also cause birds to reduce their foraging times in these areas or avoid the areas entirely (DeLong and Schmidt 2000). Human activity in the vicinity of the proposed interpretive areas, particularly the areas to be located at the end of 10th Street and 8th Street, could result in some disturbance to resting and foraging migratory birds. These areas are already impacted to some degree by existing activities occurring along the Bayshore Bikeway. The addition of interpretive areas along the bikeway would likely increase the intensity of use resulting in an increase in the frequency of disturbance. Because the proposed interpretive elements and the environmental education program site are located along the perimeter of the Refuge, the birds that are flushed would likely move further into the Refuge and resume foraging or resting. Therefore, the effects of these uses on migratory birds are expected to be minimal.

Disturbance and possible displacement of migratory shorebirds could occur around the salt works if guided tours result in excessive out-of-vehicle activity. According to DeLong and Schmidt (2000), Klein (1993) tested the behavioral response of waterbirds to human disturbance, including vehicular travel at Ding Darling NWR and found that as the intensity of disturbance increased, avoidance response by waterbirds tended to increase. Out-of-vehicle activity was also observed to be more disruptive than vehicular movement through the area. Although the degree of disturbance may vary for the species and local populations of waterbirds occurring within the South San Diego Bay Unit, similar differences between out-of-vehicle activity and vehicle travel could occur at the salt works. To avoid excessive disturbance, guides would reduce the number of stops in areas where high concentrations of foraging birds are located in proximity to the access road.

Because the activity associated with the hunting interpretive program would be confined to one or two areas along the northern levees of Ponds 12, 14, and 15, disturbance along the mudflats would also be limited. In addition, this activity would be scheduled to occur during period of high tide when shorebirds are less likely to be present in large numbers. Based on the timing of the activity, which would coincide with the high tide, the small size of the groups, and the limited number of times that participants in this activity would be present along the levee during the year, disturbance impacts as a result of this activity would be minimal.

Public Review and Comment:

Environmental education and interpretation have been discussed on several occasions at public workshops held in conjunction with the Comprehensive Conservation Plan (CCP) process. To initiate the CCP process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the Sweetwater Marsh and South San Diego Bay Units. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting. Approximately 50 to 60 people attended those meetings related to public use.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. One of these updates was devoted entirely to the topic of public use. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to public use between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003.

Opportunities for environmental education and interpretation were addressed at the initial scoping meetings for the CCP, as well as at the June 21, 2001 Public Use Workshop. Several members of the public expressed the desire to see the Refuge used as a setting for environmental education and others suggested the development of an interpretive area in proximity to the Bayside Elementary School. Creating partnerships with other agencies,

school districts, and the adjacent community to implement educational programs was also emphasized.

The draft Compatibility Determination for environmental education and interpretation on the South San Diego Bay Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the Draft CCP/EIS. The Notice of Availability for the Draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the Draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the Draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Each year, prior to initiating the Habitat Heroes program, all participating teachers, outside instructors, and other facilitators shall coordinate with the Refuge Manager to review the area-specific guidelines for implementing the program in a manner that will minimize impacts to wildlife and its habitat. These guidelines will specify the maximum number of participants per visit to the site, appropriate access routes into and through the site, the activities that can be conducted, and any times during the year when activities should be suspended or minimized.
2. The Refuge's Information and Education Specialist shall review all materials and programs to ensure consistency with Refuge goals and the mission of the National Wildlife Refuge System.
3. All required regulatory signage and fencing or other appropriate barriers shall be installed prior to the opening of interpretive sites at the northern terminus of 10th Street and 8th Street to reduce the potential for off-trail activity on Refuge lands and waters.
4. Hunting interpretation programs will be scheduled to coincide with the high tide to reduce disturbance to migratory birds.
5. Monitoring of the effects of increased human activity on migratory birds and nesting seabirds shall be implemented weekly during the first three years of the

environmental education program and the first three years following the completion of an interpretive area. This monitoring should be conducted during peak migration periods, as well as during the nesting season, to determine what, if any, effect increases in activity as a result of these programs are having on bird foraging, resting, and/or nesting behavior. If excessive disturbance is observed, additional measures should be implemented to reduce these effects.

Justification:

The development of environmental education and interpretation programs for the South San Diego Bay Unit would provide various opportunities to inform community members and visitors to the region of the importance of the resources protected within the Refuge. In addition, the Habitat Heroes program is designed to encourage stewardship of the many resources protected in the Refuge. Although adequate funding is not currently available to implement all of the elements proposed within these programs, the phasing of program implementation over several years would have no adverse effects. Rather, the benefits of these programs would simply take longer to be realized.

An informed and involved public, cultivated as a result of these programs, will benefit the wildlife and habitats protected and managed within the Refuge consistent with the Refuge purposes of protecting, managing, and restoring habitats for federally-listed endangered and threatened species and migratory birds and maintaining and enhancing the biological diversity of native plants and animals. A review of the environmental consequences of implementing these uses, as provided in the Final CCP/EIS (USFWS 2006), demonstrates that these uses would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission, provided the stipulations to ensure compatibility are followed. Further, environmental education and interpretation are two of the six priority public uses of the System, as defined by the National Wildlife Refuge System Improvement Act of 1997. Therefore, implementation of these programs would contribute to the fulfillment of the Refuge System mission, as well as the achievement of the goals established for the South San Diego Bay Unit, particularly the goal to provide opportunities for compatible wildlife-dependent recreational uses that foster public appreciation of the unique natural heritage of South San Diego Bay.

Mandatory Re-Evaluation Date:

Mandatory 15-year Re-Evaluation Date (for priority public uses)

Mandatory 10-year Re-Evaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

 X Environmental Impact Statement and Record of Decision

References Cited:

DeLong, Anita and Janet Schmidt. 2000. Literature Review: Effects of Human Disturbance on Wildlife with Emphasis on Wildlife-Dependent Recreation Relevant to Stillwater National Wildlife Refuge (Draft).

U.S. Fish and Wildlife Service. 2006. Final San Diego Bay National Wildlife Refuge Comprehensive Conservation Plan/Environmental Impact Statement.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader
Approval:

_____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office:

_____ Date: _____

Manager, California/Nevada
Operations Office:

_____ Date: _____

Compatibility Determination

-FINAL-

Use: Mosquito Management

Refuge Name: South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge (San Diego County, Cities of Coronado, Chula Vista, Imperial Beach, National City, and San Diego, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the San Diego National Wildlife Refuge are the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742a-742j, not including 742d-742l) and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use:

Mosquito management throughout the coastal refuges of San Diego County is conducted under the auspices of a Refuge Special Use Permit (SUP) in coordination with the San Diego County Department of Environmental Health, Vector Control Division. The SUP is issued annually. The primary purpose for implementing mosquito management on this Refuge is to avoid threats to public or wildlife health from specific mosquito-borne diseases. Mosquito management is implemented on the South San Diego Bay Unit through a phased approach that emphasizes early detection and treatment, if warranted, with larvicides. The use of adulticides is to be reserved for addressing human health emergencies.

Several mosquito species occur in and around the South San Diego Bay Unit that are capable of transmitting microbial organisms that cause human diseases such as malaria and encephalitis. The mosquitoes of major concern in California belong to the genera *Culex*, *Ochlerotatus*, and *Anopheles*. The species of greatest public health concern include *Culex tarsalis*, *Culex pipiens*, *Culex quinquefasciatus* and *Anopheles hermsi*. Of lesser importance are the salt marsh mosquitoes: *Ochlerotatus squamiger* and *Ochlerotatus taeniorhynchus*.

Specific data regarding the species presence in the vicinity of the Refuge was collected in 2003 at the Otay River and Hollister Street mosquito trap array by the County of San Diego, Department of Environmental Health, Vector Control Division. This data indicates that eight species of mosquito are commonly found in this area. These species include:

Anopheles hermsi – This species, which is very commonly found in the Otay traps, is a highly competent vector of malaria, although this disease is not prevalent in this region.

Culex erythrorhax – This species, which is the most common mosquito in San Diego, is typically considered a nuisance. It is commonly found in the Otay traps and occurs in densely vegetated freshwater marshes and heavily vegetated backwater zones. It is not considered to be a major disease carrier, although its ability to potentially harbor West Nile Virus (WNV) is currently unknown.

Culex tarsalis – A highly competent vector mosquito, this species is quite common in the Otay traps. Viewed generally as a nuisance mosquito, this species can also be an effective carrier of disease.

Culiseta incidens and *Culiseta particeps* – These two species are regularly captured in the Otay traps in small to moderate numbers. Neither species is considered to be a disease vector, but can be a biting nuisance. Their ability to harbor WNV is unknown.

Ochlerotatus increpitus – Primarily a nuisance mosquito, this species, which bites during the day, is common in the Otay traps. Its ability to vector WNV is unknown.

Ochlerotatus taeniorhynchus and *Ochlerotatus squamiger* – These mosquito species are prevalent in salt marsh habitat. *Ochlerotatus taeniorhynchus* is primarily a day-biting nuisance, and neither species is currently considered to be a disease carrier; however their ability to transmit WNV is unknown.

Mosquito management on this Unit is addressed through an integrated pest management approach in which Refuge staff and County vector control officials coordinate efforts to manage the overall environmental health of adjacent communities while minimizing impacts to Refuge trust resources. Working together, the two agencies agree upon issues related to access, methods of operation, and timing of access, as well as to exchange information related to listed species occurrences, permitting, and relevant agency policy.

The current procedures for implementing mosquito management on this Refuge involve an annual meeting between County and Refuge staff to coordinate necessary permitting and implementation planning required to conduct mosquito monitoring and control on the Refuge for the upcoming year. Issues such as access points and pathways to be used by County personnel, appropriate hours of operation, and requirements for field coordination are discussed, agreed upon, and incorporated into the SUP. As part of this coordination process, County vector control personnel are provided with data generated by the Refuge biologist on listed species and other trust resources. County personnel share relevant data related to mosquito and disease monitoring in the vicinity of the Refuge. In addition, periodic meetings are conducted in the field with County field staff and the Refuge biologist to further coordinate activities. These meetings are scheduled throughout the season when warranted to ensure protection of listed species and to avoid disturbance to nesting birds.

Following the conditions included in the SUP, County vector control personnel conduct periodic mosquito larvae surveys in many discrete areas throughout the Refuge. Because the primary means of mosquito management is the use of larvicides, it is essential that larvae be observed prior to pupation so that they may be treated appropriately by the least environmentally damaging means. As a result, the frequency of larvae surveys increases throughout the mosquito breeding season. Currently, treatment areas are determined based on the season, the species and density of the mosquitoes detected, the proximity of the vectors to surrounding urban areas, and the life stage the mosquitoes are found in. Control of adult or pupal mosquitoes is not currently conducted on the Refuge.

Public concern over human health issues related to mosquito-borne disease has intensified on the west coast with the advance of WNV across the United States. To better address mosquito management, a phased response strategy has been developed for implementation on refuges in the Pacific Region. This strategy encourages an integrated pest management approach that incorporates habitat and best management practices to reduce the need for and use of insecticides on refuges, while also ensuring that legitimate human, fish, and wildlife health concerns are addressed. To implement this phased response strategy, current

procedures for managing mosquitoes on this Refuge will be augmented to better identify thresholds for mosquito treatment and present specific responses to various conditions encountered in the field. Under this new program, if mosquito population monitoring and disease surveillance (implemented by County vector control personnel) indicate that human health thresholds are exceeded, the use of larvicides, pupicides, and/or adulticides may become necessary. In some cases, emergency actions may be required that are not addressed by this Compatibility Determination.

Two larvicide compounds that could be used to manage mosquitoes on the Refuge include Bti (*Bacillus thuringienensis israelensis*) and Altosid (methoprene). These larvicides are intended to control mosquitoes in wetlands prior to their emergence as adults. Bti is used primarily to control early stage larvae and is available in liquid and granular formulations. Altosid is used on later stage mosquito larvae and is available in liquid, briquet and pellet formulations. Both compounds are highly specific to mosquito larvae. The use of Golden Bear 1111, which is effective at preventing adult mosquito emergence from wetlands but toxic to fish and other aquatic organisms, is not currently permitted for use on the Refuge.

The potential for mosquito production during and following brackish and freshwater wetland restoration on the Refuge would be reduced by appropriate restoration design, as described in Section 2.3.2.3 of the Final San Diego Bay NWR Comprehensive Conservation Plan (CCP)/Environmental Impact Statement (EIS) (USFWS 2006). Specifically, deeper water channels (greater than 4 feet) would be included in the design to break up areas of dense emergent vegetation and provide access for aquatic predators that feed on mosquito larvae. These restored wetlands would also include appropriate surveillance access points to aid County vector control personnel in monitoring wetlands for potential mosquito production.

Availability of Resources:

To implement and administer mosquito management on the South San Diego Bay Unit, the following staffing and facilities are required:

| Staffing | | | |
|--|--|---------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader/Deputy Project Leader | General oversight | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.3 | \$30,300 |
| Refuge Operations Specialist | On-site oversight | 0.3 | \$26,000 |
| Wildlife Biologist | Monitoring, mosquito management plan prep., coordination/oversight of vector control activities, annual prep. of SUP | 0.3 | \$26,000 |
| TOTAL FTES AND COSTS FOR STAFFING | | 1.3 | \$130,000 |
| TOTAL COST FOR FACILITIES | none | | \$0 |

Adequate staff positions and financial resources are currently available and committed to implement mosquito management on the South San Diego Bay Unit.

Anticipated Impacts of the Use:

The purpose of this section is to critically and objectively evaluate the potential direct, indirect and cumulative effects mosquito management could have on the Refuge's endangered and threatened species and other fish and wildlife resources. The evaluation of direct impacts focuses primarily on existing and future freshwater wetlands and coastal salt marsh areas of the South San Diego Bay Unit, as these portions of the Refuge are or will be most prone to mosquito production. The potential for indirect impacts to the remainder of the Refuge, which consists of the open bay, salt pond levees, mudflats, and upland habitat, is also evaluated.

Habitat and Wildlife Disturbance: Vegetation trampling resulting from mosquito monitoring and mosquito control, as well as the possible creation of channels to drain stagnant water areas, could adversely impact native vegetation and wildlife habitat. In addition, these activities could result in disturbances to the existing wildlife that utilizes this area. At present, the Otay River floodplain and the existing salt ponds on the Refuge support both native and non-native vegetation and wetland habitats of varying types. The most significant habitats supported within the Otay River floodplain include freshwater marsh and willow scrub habitat, which occurs along the eastern portions of the Otay River channel and the salt marsh areas located along the western end of the river channel. These wetland areas provide foraging, resting, and nesting habitat for a variety of birds, including migratory shorebirds, waterfowl, and songbirds, as well as various native mammals, reptiles, and amphibians. To minimize impacts related to disturbance, the Refuge biologist would coordinate with County vector control personnel at least annually to review appropriate conduct within sensitive habitat areas. Specific field implementation protocols for working in sensitive habitat areas would be included in the Refuge SUP.

Although the upland portion of the Otay River floodplain currently supports non-native vegetation, this area does provide foraging habitat for a variety of raptor species including northern harriers (*Circus cyaneus*), white-tailed kites (*Elanus leucurus*), American kestrels (*Falco sparverius*) and red-tailed hawks (*Buteo jamaicensis*). Foraging and nesting opportunities for raptors should not be reduced by mosquito control activities.

Endangered and Threatened Species: One of the purposes of the South San Diego Bay Unit is to conserve fish and wildlife that are listed as endangered or threatened. A number of listed species occur within the boundaries of this Refuge, including several that utilize the wetland areas within the Otay River floodplain. The Federal endangered California least tern (*Sterna antillarum browni*) forages within the Otay River channel during the spring and summer, while the Federal endangered light-footed clapper rail (*Rallus longirostris levipes*) and State endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)

utilize the wetland habitats along the river channel year round. The cordgrass stands and brackish marsh habitat growing along the river channel provide foraging, resting, and/or breeding habitat for both species.

Potential impacts to the light-footed clapper rail and Belding's savannah sparrow would consist primarily of direct habitat or nest losses through trampling of cordgrass or pickleweed where nests could occur, but would also include indirect adverse affects related to the disruption of foraging opportunities in both clapper rail and Belding's savannah sparrow territories. The relatively limited time that vector control personnel would be present in these habitat areas, as well as the use of those controlled access points and pathways agreed upon between the County and Refuge personnel and described in the Refuge SUP would minimize the potential for adverse affects to these species as a result of mosquito management.

Mosquito control in this area does require some access to sensitive wetland areas; however no mowing or ditching of wetland areas is authorized. The level of allowed activity, combined with its controlled management by Refuge biological staff would not likely result in direct, indirect, and cumulative impacts to the light-footed clapper rail.

Nesting Season Disturbance: The nesting season varies with species but can generally be described as occurring between mid-February and mid-September. Disturbance to nesting bird species may occur if vector control personnel are present in the vicinity of avian nesting colonies or individual nests.

Several species, many of which are rare, sensitive or state and/or Federally-listed occur within the South San Diego Bay Unit. As described above, the habitats present within the Otay River channel support light-footed clapper rail and Belding's savannah sparrow nesting. Cordgrass stands along the Otay River channel and the brackish marsh within the channel support clapper rail nesting, while high salt marsh vegetation, such as the pickleweed stands that occur in the intertidal habitats within the river channel, are known to support savannah sparrow nesting. No nesting survey monitoring reports for the savannah sparrow are available for this location, but it is probable that nesting attempts by the species do occur within the area being evaluated. To avoid impacts to nesting species within the lower portions of the Otay River channel, periodic meetings would be conducted in the field with County field staff and the Refuge biologist to coordinate activities and delineate sensitive nesting areas that should be avoided or entered within extreme caution.

There is also a potential for direct and indirect impacts to breeding waterfowl such as gadwall (*Anas strepera*) and mallard (*Anas platyrhynchos*), which have also been observed nesting in the Otay River channel, however these impacts are not likely to be significant due to the controlled and limited nature of the access into habitat areas by authorized personnel.

A variety of ground nesting avian species utilize the levees around the salt ponds for nesting, including colonies of Caspian terns (*Sterna caspia*), elegant terns (*Sterna elegans*), royal terns (*Sterna maxima*), gull-billed terns (*Sterna nilotica vanrossemei*), Forster's terns (*Sterna forsteri*), endangered California least terns, and black skimmers (*Rynchops niger*). Avian responses to disturbance can include flocking, alarm calling, nest abandonment, colony abandonment, and inter-colony antagonistic behaviors leading to crushed eggs and killed chicks. Predatory species, such as ravens, crows, certain gulls, and harriers, may also use disturbance episodes to depredate eggs and chicks while the adults are flocking or otherwise distracted by the initial source of the disturbance. However, it is not anticipated that there will be a need in the immediate future for access by vector control personnel to the salt pond nesting areas. Implementation of restoration plans for the salt works (refer to Section 2.3.2.4 of the Final CCP/EIS) would however restore wetland habitats in these areas that would require monitoring. Therefore, additional procedures for monitoring would be incorporated into the Refuge SUP following restoration to ensure protection of nesting seabirds, eggs, and fledglings.

Future Impacts: As described above, the Final CCP/EIS (USFWS 2006) includes a proposal to restore portions of the South San Diego Bay Unit to native vegetation. The intent of this restoration is to restore habitat for the variety of sensitive and endangered species that currently and historically occurred in this area. Following restoration, the field implementation protocols for mosquito management that are included in the Refuge SUP shall be adjusted annually to incorporate new landscape conditions as they develop.

To minimize the potential for successful mosquito breeding in restored wetlands, primarily brackish to freshwater areas, conditions that favor the development of thick stands of aquatic freshwater wetland vegetation would be avoided. Designs for all future restored wetland areas would take into account vector control related issues as well as habitat development. For instance, deep water areas (greater than 4 feet in depth) such as channels through the marsh would be constructed and maintained to provide open areas between stands of vegetation. This would provide access for mosquito predators such as fish and aquatic insects. Open areas of water would also make it difficult for female mosquitoes to lay eggs and mosquito larvae to find cover from predation.

Public Review and Comment:

Two public scoping meetings and a series of public workshops to discuss habitat management, restoration, and public use were held in conjunction with the CCP process. To initiate the CCP process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the South San Diego Bay and Sweetwater Marsh Units. Due to the public's level of interest in these Refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three

additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to the CCP between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003. No public comments related to mosquito management have been received to date.

The draft Compatibility Determination for wildlife observation and photography on the South San Diego Bay Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the Draft CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations:

1. The County of San Diego, Department of Environmental Health, Vector Control Division shall operate on Refuge lands under the terms and conditions outlined in a USFWS Refuge Special Use Permit, which shall be reviewed annually.

2. Special Use Permit conditions shall stipulate that all control work will be carried out in conformance with pre-approved USFWS Pesticide Use Proposals, Section 7 Endangered Species Act consultations, and existing and future USFWS policies on mosquito management.

Justification:

Mosquito management would be implemented on this Refuge in accordance with the guidance provided for the Pacific Region by the Regional Office in March 2003. This guidance for mosquito management incorporates a phased-response strategy developed to manage mosquitoes in a manner that is compatible with refuge purposes and uses the best available science while minimizing impacts to fish and wildlife, which is consistent with the mission of the National Wildlife Refuge System. Mosquito management proposed for this Refuge would also address legitimate human, fish, and wildlife health concerns. Implementing mosquito control in accordance with the stipulations presented above would therefore not materially interfere with the ability to achieve the wildlife management goals established for this Refuge.

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

U.S. Fish and Wildlife Service. 1985. Light-footed Clapper Rail Recovery Plan.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader
Approval:

_____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office: _____ Date: _____

Manager, California/Nevada
Operations Office: _____ Date: _____

Compatibility Determination

-FINAL-

Use: Regional Trail

Refuge Name: South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge (San Diego County, Cities of Coronado, Chula Vista, Imperial Beach, National City, and San Diego, California)

Establishing and Acquisition Authorities:

The authorities for the establishment of the San Diego National Wildlife Refuge are the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742a-742j, not including 742d-742l) and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

Refuge Purposes:

The San Diego Bay National Wildlife Refuge was established:

“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...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...” (Fish and Wildlife Act of 1956).

[This refuge] “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...” (Fish and Wildlife Coordination Act of 1934).

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use:

At the eastern end of the South San Diego Bay Unit is the Otay River floodplain. This area is included within the approved planning boundary of the Otay Valley Regional Park (OVRP), a multi-jurisdictional planning effort by the County of San Diego and the cities of San Diego and Chula Vista. The planning boundary for the OVRP, which was approved prior to the establishment of the South San Diego Bay Unit, encompasses more than 8,000 acres, and extends about 13 miles inland from the southeastern edge of the salt ponds at the mouth of the Otay River, through the Otay River Valley, to the land surrounding both Lower and Upper Otay Lakes. A Concept Plan for the OVRP was approved by the participating agencies in May 2001 (County of San Diego 2001). One of the components of the OVRP, as described in the Concept Plan, is a proposal to create a regional trail through the Otay River Valley. The trail would extend east/west through the river valley, from the eastern planning boundary to the Bayshore Bikeway located to the west of Interstate 5 (I-5). To implement this proposal, the County of San Diego and supporters of the OVRP have requested that the Refuge allow the western end of the trail to extend through the Refuge where it would then connect with the Bayshore Bikeway.

This Compatibility Determination addresses the proposal to designate an alignment through the Refuge for the future construction of a portion of this regional trail. Although the exact alignment of the trail will be worked out with the various agencies involved in implementing the OVRP, the alignment presented in the Comprehensive Conservation Plan (CCP) extends west from the I-5 undercrossing, north of the river channel, then travel northwest along the eastern border of the South San Diego Bay Unit for approximately 2,000 feet. When constructed, the trail would connect to the proposed Bayshore Bikeway near the northeastern corner of the Refuge. The Concept Plan does not include any specifics regarding the recommended width, proposed surfacing materials, or permitted uses for the trail, as these specifications would be worked out during step-down planning. The local agencies participating in the development of the OVRP would be responsible for obtaining approval from the Refuge Manager prior to constructing the trail, funding and installing the trail in accordance with the requirements placed on the project by the Refuge, maintaining the trail and associated amenities such as fencing and signage, monitoring trail use, and patrolling the trail to ensure compliance with established trail regulations.

Once constructed, the trail would support two wildlife dependent recreational uses: wildlife observation and environmental interpretation.

Availability of Resources:

Designation of an alignment for the Otay Valley Regional Trail would not result in the expenditure of any additional Refuge funds and trail construction and maintenance, as well as required fencing and regulatory signage, would be the responsibility of the local agencies participating in the OVRP. However, refuge resources would still be required to assist the local agencies in developing a trail design that meets the approval of the Refuge Manager, as well as

to monitor the potential effects of trail use on Refuge wildlife and native habitat. Periodic patrol by Refuge law enforcement would also be required; however, enforcement is already required in this area due to its proximity to urban uses. The following staffing would be required:

| Staffing | | | |
|--|---|------------|-------------------|
| Position | Involvement | FTE | Cost |
| Project Leader/ Deputy Project Leader | General oversight | 0.2/0.2 | \$25,700/\$22,000 |
| Refuge Manager | Periodic on-site oversight | 0.3 | \$27,300 |
| Refuge Operations Specialist | On-site oversight | 0.3 | \$26,000 |
| Wildlife Biologist | Monitoring, reporting, assist in the design and siting of the trail, provide some oversight of trail construction and long-term monitoring of refuge resources surrounding the trail, oversight of biological technicians | 0.3 | \$26,000 |
| Refuge Planner | Assist in the design and siting of the trail, provide some oversight of trail construction | 0.2 | \$16,510 |
| Park Ranger | Assist in trail monitoring, facilities maintenance | 0.3 | \$13,000 |
| Law Enforcement Officer | Law enforcement | 0.3 | \$20,800 |
| TOTAL FTES AND COSTS FOR STAFFING | | 2.1 | \$177,310 |

Refuge staffing is adequate to accommodate law enforcement, wildlife monitoring, and planning related to trail design and layout. No Refuge funds would be needed for trail construction or long-term trail maintenance. Adequate resources are available to allow for this use.

Anticipated Impacts of the Use:

The proposed alignment for the future regional trail, which would extend along the Refuge’s eastern border, has been designed to avoid fragmentation of habitat and minimize impacts to wildlife. However, the construction and use of the proposed trail does have the potential to adversely affect the diversity and abundance of wildlife and the quality of its habitat. These impacts may include: direct loss of native vegetation; displacement of native vegetation due to the introduction of invasive species, including noxious weeds; and disturbance and displacement of wildlife. In addition, trail construction and trail use can disturb and compact soils, causing changes in infiltration and runoff that can lead to increased erosion and siltation in adjacent waterways (DeLong and Schmidt 2000). Unauthorized off trail activities can also occur resulting in additional disturbance and compaction of soil, vegetation trampling, and wildlife disturbance.

In reviewing studies related to the influence of recreational trails on bird communities, DeLong and Schmidt (2000) report that several of these studies suggest that both the physical presence of

a trail and human disturbance associated with the trail can affect bird abundance, species composition, and nest predation in the immediate vicinity of a trail. Many of these impacts can be minimized through proper trail planning that limits fragmentation of habitat, avoids sensitive habitat areas, and establishes clearly defined paths to reduce off trail activities. The anticipated impacts of accommodating the proposed OVRP Trail are presented in detail in Chapter 4 of the Final CCP/EIS (USFWS 2006) and summarized below.

Endangered and Threatened Species: One of the purposes for the establishment of the South San Diego Bay Unit is to protect Federally-listed endangered or threatened species. With the exception of the Federal endangered light-footed clapper rail, the habitats that support the Refuge's listed species do not occur in proximity to the proposed regional trail alignment. If however off trail activities increase following the construction of the trail, disturbance to other listed species such as the Federal endangered California least tern (*Sternula antillarum*) and State endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) could occur.

Human activity can have adverse impacts on endangered and threatened species, particularly when their nesting or foraging activities are disrupted. Human activity within the Otay River floodplain could increase as a result of the construction of the proposed regional trail potentially impacting several sensitive species, including the clapper rail, which has been observed in the habitats that extend along the Otay River channel within the Refuge boundary. Threats to light-footed clapper rail from humans consist primarily of direct habitat or nest losses due to trampling of vegetation where nests occur. Belding's savannah sparrow utilize the higher salt marsh habitat that occurs near the western end of the river channel, as well as along the edges of the river channel further upstream. Human disturbance in these areas as a result of off trail activity could disrupt foraging activities, as well as result in direct habitat or nest losses through trampling of pickleweed. These species are also vulnerable to injury or death if dogs are not confined to the designed trail. The potential for off trail activity can be reduced through appropriate fencing and signage along the trail and patrol of the trail to regulate the activities of trail users.

Nesting Season Disturbance: The nesting season varies for each species, but can generally be described as occurring between mid-February and mid-September. Disturbance to nesting bird species may occur if persons or dogs are present in the vicinity of avian nesting colonies or individual nests.

Several species, many of which are rare, sensitive or Federally and/or State listed, nest within the South San Diego Bay Unit. As described above, the habitats present within the Otay River channel support light-footed clapper rail and Belding's savannah sparrow nesting. Cordgrass stands along the Otay River channel and the brackish marsh within the channel provide nesting habitat for clapper rails, while high salt marsh vegetation such as the pickleweed stands that occur in the intertidal habitats within the river channel are known to support savannah sparrow

nesting. Off trail activities by humans and dogs would most likely result in direct adverse impacts to both of these species. Similar impacts to breeding waterfowl, such as gadwall (*Anas strepera*) and mallard (*Anas platyrhynchos*), which have been observed nesting in the Otay River channel, could occur.

Sensitive Habitats: With the exception of the native vegetation occurring within the river channel, the general area proposed for the future construction of the regional trail is highly disturbed and dominated by non-native, weedy vegetation. Under these conditions, the impacts of trail construction and trail use on sensitive habitats would be minimal, although unauthorized off trail activity could result in impacts to native wetland vegetation. The CCP proposes to restore the upland portions of the Otay River floodplain to native upland habitat necessitating coordination between restoration planning and trail design to avoid future impacts to restored upland areas. The proposed trail alignment is located along the perimeter of the Refuge to minimize the effects of habitat fragmentation. Once native upland vegetation is restored, impacts to this sensitive habitat could occur as a result of unauthorized off trail activities. These impacts could be avoided through the implementation of appropriate measures such as fencing and signage to discourage off trail activities by humans and dogs. Migratory Birds: The alignment proposed for the regional trail is located in an area that does not currently support migratory bird foraging and loafing, therefore activities on the trail would not be expected to impact these resources. However, if off trail activities were to occur, disturbance to migratory birds could result. The use of appropriate fencing and signage along the trail is expected to reduce the potential for off trail activities. In addition, by providing a well-designed trail within this area to accommodate recreational users, some of the existing unauthorized access on the Refuge could be reduced, resulting in minor benefits to Refuge resources.

Public Review and Comment:

The OVRP Trail has been discussed on several occasions at public workshops held in conjunction with the CCP process. To initiate the CCP process, a Notice of Intent was published in the Federal Register on June 23, 2000 (65 FR 39172). At that time, written comments were solicited. In July 2000, two initial scoping meetings were held, one in Imperial Beach and one in Chula Vista, to receive input from the public on issues related to the South San Diego Bay and Sweetwater Marsh Units. Due to the public's level of interest in these refuges, focused public workshops were held in September 2000 and June 2001 to specifically address the issue of public use. Three additional workshops were held between November 2000 and May 2001 to receive input from the public on wildlife management and restoration proposals for these refuges. All of the public meetings were well attended with at least 40 people present at each meeting. Approximately 50 to 60 people attended those meetings related to public use.

At each workshop, the public was encouraged to provide verbal comments or to send us written comments following the workshop. A CCP web page (www.sandiegorefuges.fws.gov) was established to provide the public with specific information regarding the topics addressed at the

various workshops and to present information regarding when and where to provide comments. A number of Planning Updates have also been prepared to summarize the progress of the CCP and to discuss specific issues related to the planning process. One of these updates was devoted entirely to the topic of public use. These Planning Updates have been distributed to more than 1,000 individuals and organizations representing interested members of the public, conservation organizations, hunting, fishing and boating organizations, public agencies, municipalities, special districts, Tribes, and adjoining property owners. We received more than 50 letters, emails, and phone calls related to public use between June and November 2001 and numerous other communications relevant to public uses on the Refuge were received in 2002 and 2003.

The provision of trails on the Refuge generated relatively few comments during the public scoping process and at the Public Use Workshop held on June 21, 2001. Comments that were provided included a desire to see limited access provided to those areas of the Refuge in which such use would be compatible with and not result in impacts to the Refuge's sensitive wildlife resources. There was also a suggestion that a seasonal walking trail be provided around Ponds 10 and 11, while others requested that all public access be prohibited with the salt works.

The draft Compatibility Determination for wildlife observation and photography on the South San Diego Bay Unit was circulated for public review and comment as part of the San Diego Bay National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS). Specifically, it was included in Appendix K of the draft CCP/EIS. The Notice of Availability for the draft CCP/EIS was published in the Federal Register on July 22, 2005 and a Planning Update announcing the availability of the draft was sent to over 1,000 individuals, agencies, non-governmental organizations, and other stakeholders. In addition, the draft CCP/EIS was provided to over 275 interested parties and made available for review on the Refuge's CCP website. Public comments were accepted through September 19, 2005. No comments related to this Compatibility Determination were received during the public comment period.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Prior to the design and construction of the trail, the entity responsible for implementing the OVRP Concept Plan or one of Park's member agencies shall enter into an agreement and/or obtain a Special Use Permit from the Fish and Wildlife Service. This agreement or permit to allow the installation and use of the proposed trail must outline the responsibilities of each agency. This agreement/permit should specify that the entity responsible for the OVRP will: 1) work cooperatively with the Refuge Manager in the

design and proposed alignment of the trail; 2) receive written approval for the final trail design from the Refuge Manager; 3) be responsible for complying with all CEQA/NEPA requirements, as well as obtaining all required local, state, and federal permits for the trail; 4) finance and implement all aspects of trail construction including any required environmental mitigation and monitoring requirements, fencing, signage, and revegetation; 5) maintain the trail in perpetuity; and 6) establish and maintain a volunteer trail patrol to assist the agencies in monitoring trail conditions, the activities of trail users, and wildlife responses to trail use by the public. If an adequate number of volunteers (as determined by the Refuge Manager) cannot be found, a paid patrol officer should be provided in perpetuity, or until the OVRP volunteer program is activated.

2. The specific route for the trail and any materials developed to publicize the trail shall be coordinated with and receive written approval from the Refuge Manager.
3. The OVRP is responsible for the development and installation of special signage at both points along the trail where the trail enters Refuge property. This signage, which is to be in place before the trail is opened to public access, must explain that the trail is entering a National Wildlife Refuge and describe the importance of staying on the trail.
4. Appropriate fencing and regulatory signage, which must be paid for and installed by the OVRP before the trail opens, is to be provided along the trail as it passes through the Refuge.
5. The trail surface must be approved by the Refuge Manager and should consist of native soil, decomposed granite, or a hardened surface.
6. Equestrian uses will not be permitted on the portion of the trail that crosses the Refuge lands.
7. Use of the trail between dusk and dawn will be prohibited and this regulation should be included on all appropriate trail signage.
8. All stipulations must be in place prior to opening the trail for public use.

Justification:

The extension of the proposed Otay Valley Regional Trail onto refuge lands, if permitted in accordance with the stipulations listed above, would not materially interfere with or detract from the purposes for which the South San Diego Bay Unit was established or the fulfillment of the National Wildlife Refuge System mission. This trail, although not regarded as a priority public use, would provide the public with additional opportunities to observe wildlife on Refuge lands, therefore contributing to the goal of providing safe wildlife dependent recreational activities on

the Refuge.

Mandatory Re-Evaluation Date:

Mandatory 15-year Re-Evaluation Date (for priority public uses)

Mandatory 10-year Re-Evaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision:

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

References Cited:

DeLong, Anita and Janet Schmidt. 2000. Literature Review: Effects of Human Disturbance on Wildlife with Emphasis on Wildlife-Dependent Recreation Relevant to Stillwater National Wildlife Refuge (Draft).

County of San Diego. 2001. Otay Valley Regional Park Concept Plan. Adopted by the County of San Diego Board of Supervisors, the Chula Vista City Council, and the San Diego City Council.

U.S. Fish and Wildlife Service. 2006. San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Final Comprehensive Conservation Plan/Environmental Impact Statement.

Refuge Determination:

Prepared by: _____ Date: _____

Refuge Manager/
Project Leader

Approval: _____ Date: _____

Concurrence:

Refuge Supervisor: _____ Date: _____

Assistant Manager, Refuges
California/Nevada
Operations Office: _____ Date: _____

Manager, California/Nevada
Operations Office: _____ Date: _____