

Public Lands Transportation Scholar Final Report

San Diego National Wildlife Refuge Complex: A Plan to Improve Access by Multiple Modes of Transportation

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AUTHOR

This document was authored by Jacob Connor, Public Lands Transportation Scholar for the Federal Lands Transportation Institute at the Western Transportation Institute stationed at the San Diego National Wildlife Refuge Complex.

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ABSTRACT

Between June of 2014 and March of 2015, Public Lands Transportation Scholar Jacob Connor was assigned to write a long-range Multi-Modal Transportation Plan (MMTP) for the three San Diego County National Wildlife Refuges (NWR's) in the San Diego National Wildlife Refuge Complex (SDNWRC or the Complex).

The San Diego Bay, Tijuana Slough, and San Diego NWR's are located in the southwest corner of San Diego County. The Refuges preserve both coastal and inland habitat, and are bordered by both urban and rural communities. Many of the Refuges are accessible by transit, bicycle, and pedestrian transportation systems, but the Complex has not been able to fully integrate itself into the transportation systems.

The MMTP is an adaptable document that examines the range of transportation systems that currently serve the Refuges; identifies potential upgrades to existing transportation systems; suggests priorities for implementation, including potential funding sources for proposed upgrades; and includes marketing strategies and visitor experience programs to promote visiting the Refuges using alternative modes of transportation. Particular emphasis is placed on providing improved access to the under-served communities that neighbor the Refuges.

This report summarizes the MMTP and documents the progress made in implementing the recommendations. It also contains a first-hand account of Jacob's experience as a Transportation Scholar.

INTRODUCTION

The San Diego National Wildlife Refuge Complex (SDNWR or the Complex) consists of four Refuges in southwest California. Three of the Refuges (San Diego (SDNWR), San Diego Bay (SDBNWR), and Tijuana Slough (TSNWR)) are located in San Diego County, while the fourth (Seal Beach NWR) is located in Orange County, about 100 miles northwest of the other three. Seal Beach NWR is not regularly open to the public, and is therefore excluded from the scope of work.

The three San Diego County Refuges, SDNWR, SDBNWR, and TSNWR, are open to the public and offer wildlife dependent recreation for visitors to enjoy. They are located in southwestern San Diego County, and are adjacent to both urban and rural communities and other public, private, and government owned lands. Figure 1 shows the three Refuges within the scope of work, including the adjacent municipalities. San Diego Bay NWR is split into two units, shown on the map as Sweetwater Marsh Unit (SMU) and South San Diego Bay Unit (SSDBU).



Figure 1. Complex Setting Context Map

Data sources: SANGIS (2014), USFWS (2014)

The SDNWRC has a relatively unique opportunity in the National Wildlife Refuge System, since each of the Refuges, to a varying degree, has nearby alternative transportation facilities. There are on-street bike lanes, off-street bike paths, non-motorized recreational trails, light-rail trolley lines, and bus routes within 0.5 miles of each of the Refuges.

Although the alternative transportation facilities are nearby, staff at the complex has noticed that most visitors drive to the Refuges rather than riding their bikes or taking transit. Clearly there is a missing link between the Refuges and the alternative transportation systems. Furthermore, although neighboring many under-served communities, the Refuges have not traditionally been able to connect with these communities to invite them to experience the Refuges.

The Complex, therefore, sought out a Transportation Scholar to further study these observations and to write a Multi-Modal Transportation Plan (MMTP) that summarizes the current transportation systems, analyzes the gaps and needs in the alternative transportation systems, and provides recommendations to improve access to the Refuges by alternative modes of transportation.

The MMTP also identifies under-served communities within an hour of transit from the Refuges by a demographic analysis created by the John A. Volpe National Transportation Systems Center (Volpe Center). The plan provides marketing recommendations that, if implemented, will increase engagement with these communities and improve access to the Refuges, from these communities, by alternative modes of transportation.

The Transportation Scholar was able to complete the MMTP during his tenure at the Complex, but less emphasis was placed on the marketing aspect of the scope of work than was originally expected. Through study of the transportation systems, the scholar and the Complex staff discovered that many of the available facilities were not yet safe enough to invite visitors to utilize. Therefore, the scholar included recommendations of marketing strategies that the Complex can use once the transportation facilities have been improved enough to invite visitors to safely access the Refuges by bicycle and transit.

In addition to writing the MMTP, the Transportation Scholar sought grant funding for two of the projects recommended in the MMTP. For the first project, a bikeway to connect the Sweetwater Marsh Unit of the San Diego Bay NWR and the San Diego NWR, the scholar coordinated scoping meetings with staff from the City of Chula Vista and the County of San Diego. Together, the three agencies considered applying for a Federal Lands Access Program (FLAP) grant, but ultimately decided that it was too soon in the planning process to apply for funding. The City of Chula Vista and the County of San Diego may consider applying in a future cycle of the grant.

For the second project, the Transportation Scholar completed a grant application seeking funding for a new deck and trail rerouting at the TSNWR. The project would provide an accessible gateway experience between bicycle, transit, and pedestrian facilities, and the Refuge trail system. Working with partners, the Transportation Scholar completed the Opening the Outdoors Grant application, administered by the San Diego Foundation. Unfortunately, the project was not recommended for funding.

METHODOLOGY

The first step in development of the MMTP required the scholar to understand the transportation landscape within and around the NWR's. To do so, the three main investigative methods utilized were:

- A demographic analysis to identify traditionally under-served communities;
- Field observations; and,
- Literature review.

The information collected using these three methods helped inform the recommendations included in the MMTP. The following sections summarize each. For additional information, please review the complete MMTP, included in Appendix I.

Demographic Analysis to Identify Traditionally Under-served Communities

A primary goal of the MMTP is to improve connectivity between traditionally under-served communities in San Diego County and the Refuges in an effort to make these Refuges more accessible to a larger segment of the surrounding population. Traditionally under-served communities are those that have had the least access to public lands. To understand where those communities are, the Scholar used a needs analysis tool developed by the US Department of Transportation Volpe Center for the U.S. Forest Service's CAR-LESS California project.

Through demographic research, the CAR-LESS California project identifies the traditionally under-served communities (those with the highest need for improved access) as those that have: a high minority representation, high percentage of households receiving food stamps, low vehicle ownership, and low median household income (Roberts, 2012).

The needs index tool assigns a value between one and five to each census tract in the region based on the demographic criteria explained above. The most under-served communities are those census tracts with the highest value on the needs index. In Figure 2, the red census tracts represent the highest need communities in proximity to the San Diego refuges. This information was used to inform the Complex where it should focus its efforts in improving transportation facilities. Also, it shows the Complex where to focus its marketing and outreach efforts.

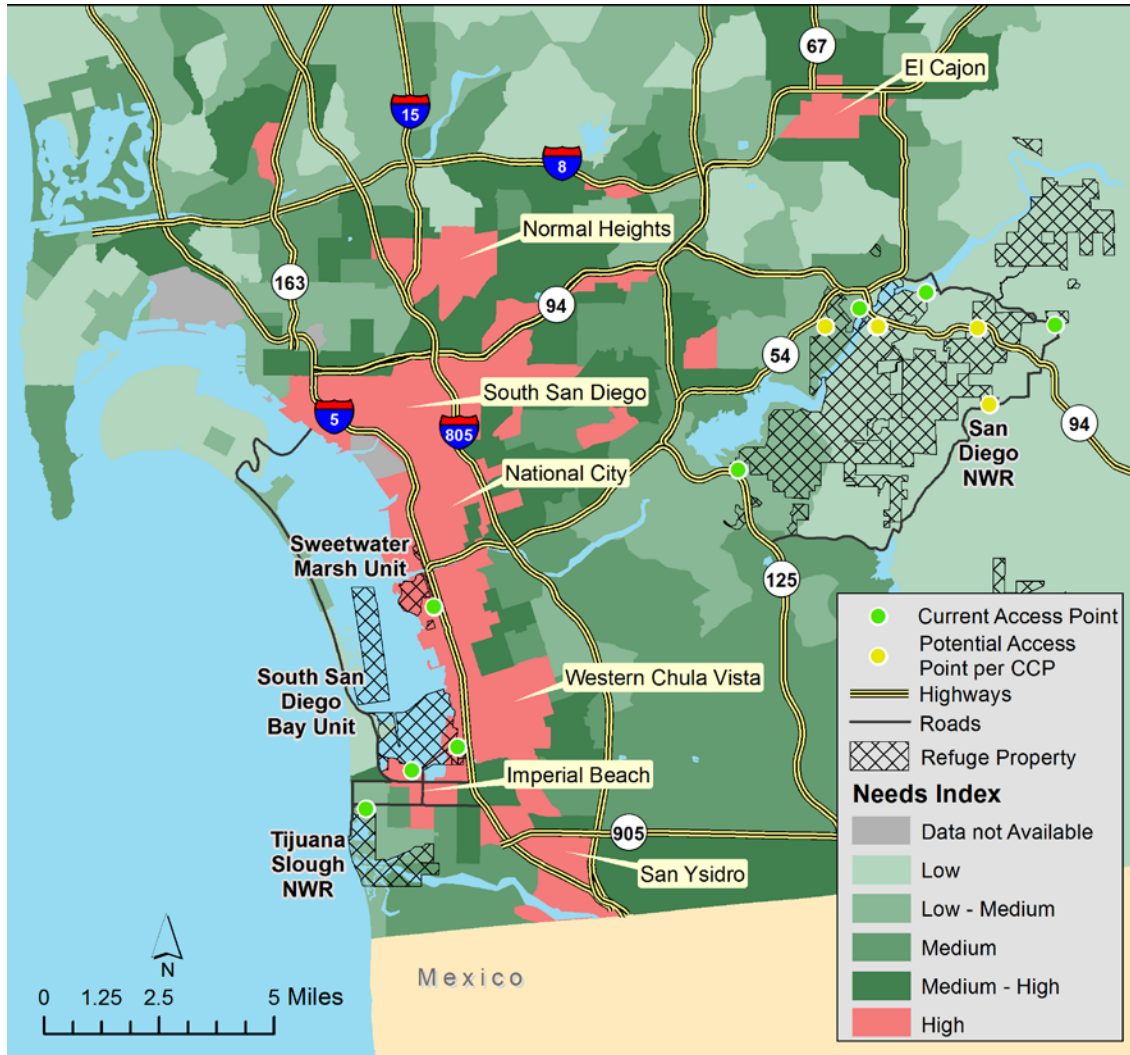


Figure 2. Analysis of Under-served/Highest Needs Communities, 2010

Data sources: US Census Bureau (2010), SANGIS (2012), USFWS (2014)

It should be noted that only 10 other census tracts in San Diego County are categorized as “High Need,” all of which are located approximately 40 miles north of the Refuges, near Oceanside, CA. The time on transit necessary to access the Refuges from these areas is over two hours; therefore, they are not addressed in this report.

Field Observations

The Scholar spent much of his first several months making observations in the field to develop the existing conditions sections of the MMTP. In many cases, information found online was not enough to understand what was really happening on the ground. It was necessary for the Scholar to ride the bikeways, ride the buses, and walk to the Refuges from transit stops to understand what the experience is like for current alternative transportation users, and to know which facilities are safe enough to invite visitors to use.

The following sections summarize the key observations made during the Scholar's assignment.

Transit System

The Metropolitan Transit System (MTS) is the transit service provider for the San Diego region. It serves approximately three million people in a region of 570 square miles. As of 2015, the system operates 91 bus routes and three light-rail trolley lines (Blue, Green, and Orange Lines). MTS reached a record high ridership in FY 2014, with over 95 million trips (Metropolitan Transit System, 2014).

Each of the Refuges in San Diego County is served by multiple MTS routes, which connect to a large number of additional routes (Figure 3). The number of routes serving the Refuges is not as important as the area that those routes cover and the quality of service provided. MTS does actually connect the Refuges with much of the metropolitan area, especially those communities that are traditionally under-served. In fact, almost all of the under-served communities have a connection to one of the Refuges within an hour of travel on transit.

In the field, the Scholar looked to verify that the most recent schedules and maps were posted, that the transit stops were in good shape, and that the transit stops were conveniently located for accessing the Refuges.

While time was not available for the Scholar to ride every route that serves the Refuges; he was able to visit a good number and, in general, the transit stops were in decent shape and the information posted was up to date.

The Scholar concluded that the major concern with the transit system is the hours and days of operation. Transit service is geared toward work commuting, meaning many of the routes do not operate on weekends, when the majority of people visit the Refuges. Furthermore, many of the transit routes operate every 30 minutes or more, making them unreliable for visitors who may not be able to wait that long for their next bus.

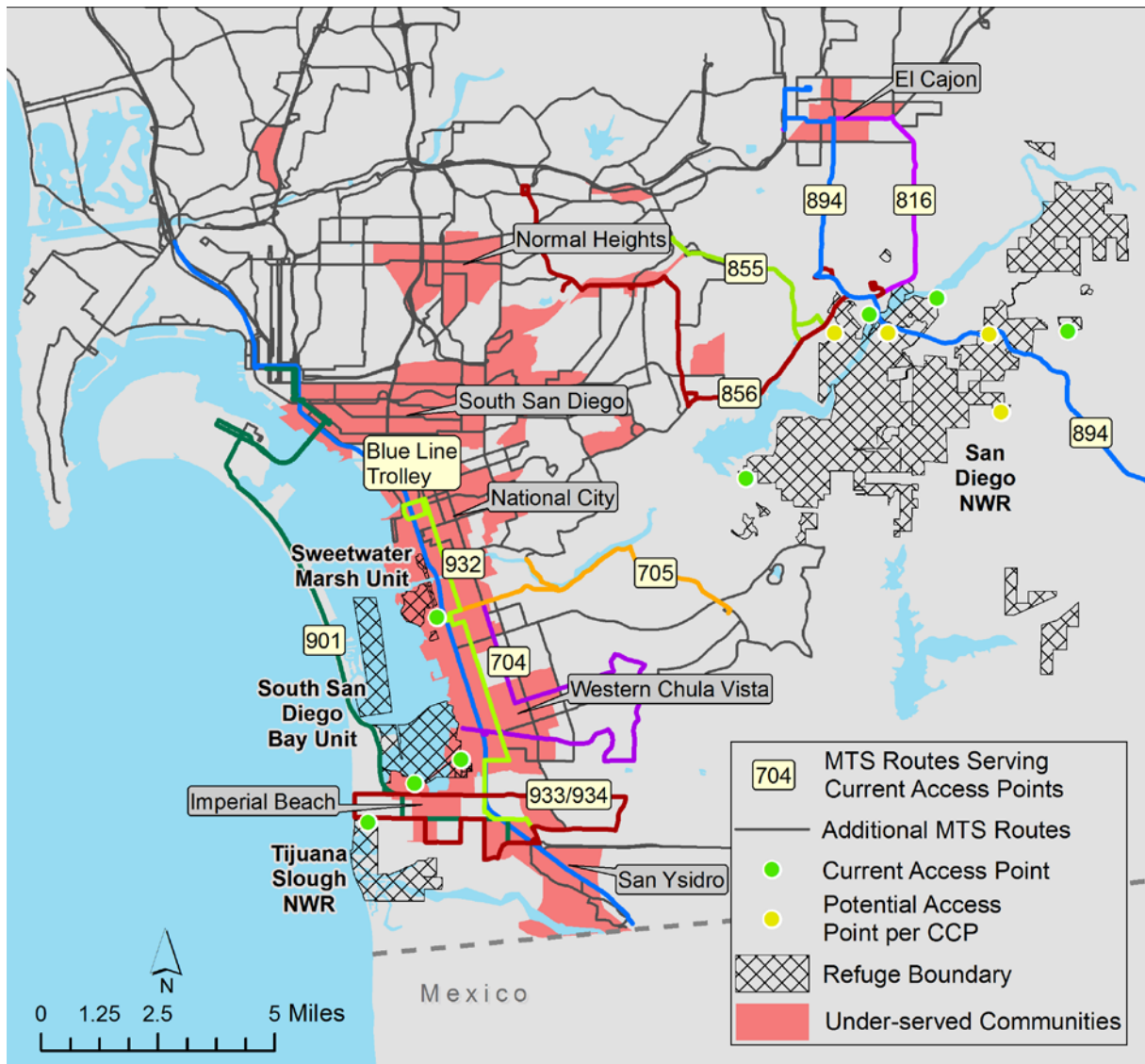


Figure 3. MTS Routes that Serve Refuge Access Points and Under-served/Highest Needs Communities
 Data sources: US Census Bureau (2010), SANGIS (2012), USFWS (2014)

Bicycle System

The Scholar was able to go out on his bicycle to understand the quality of facilities that are in the near vicinity of Refuge access points, and the facilities that connect the Refuges. Each of the municipalities bordering the Refuges has a bicycle transportation plan and is actively developing its bicycle infrastructure.

As shown in Figure 4, existing bike lanes and routes serve each of the current access points for the SMU, the SSDBU, and the TSNWR. The two main off-street bikeways that are within the area are the Bayshore Bikeway and the Sweetwater Bikeway, as identified

in Figure 4. The San Diego NWR, on the other hand, is located in a much more rural area, with fewer bicycle facilities serving the access points.

The Bayshore Bikeway is a 24-mile bikeway route around San Diego Bay. Planning efforts for the bikeway began in 1976 and the most recent update to the Bayshore Bikeway Plan was completed in 2006. Per the Bayshore Bikeway Plan, the main goal is to complete an entirely off-street bikeway around San Diego Bay (Alta Planning + Design, 2006). Currently the bikeway consists of approximately 12 miles of off road bike paths and 12 miles of bike lanes or bike routes.

The Sweetwater Bikeway is a 3.3 mile Class I facility that runs east-west on the north side of the Sweetwater Channel. It connects with the Bayshore Bikeway at the junction of I-5 and SR-54 in the City of National City, just north of the entrance to the SMU. From there it runs east, where it currently terminates at the intersection of Plaza Bonita Road and Bonita Road.

The major concerns identified with the bicycle facilities are gaps that make riding between home and the Refuge difficult for inexperienced riders. Although the Bayshore Bikeway is complete directly north of the Sweetwater Marsh Unit, there are gaps north and south of the access point that make accessing the Refuge difficult. Another challenge near the entrance to the SMU is the interaction between bicycles and vehicles where the bikeway crosses the road. The current signage and striping are inadequate to inform all users of the intersection where bicyclists will be present. The Bayshore Bikeway is, however, complete around the SSDBU.

While biking the Sweetwater Bikeway, the Scholar noticed that beyond the bikeway's terminus near the I-805, there are many formal and informal trails that continue east toward the San Diego NWR. The scholar identified the corridor as a potential area to continue the bikeway and connect the coastal Refuges with the SDNWR.

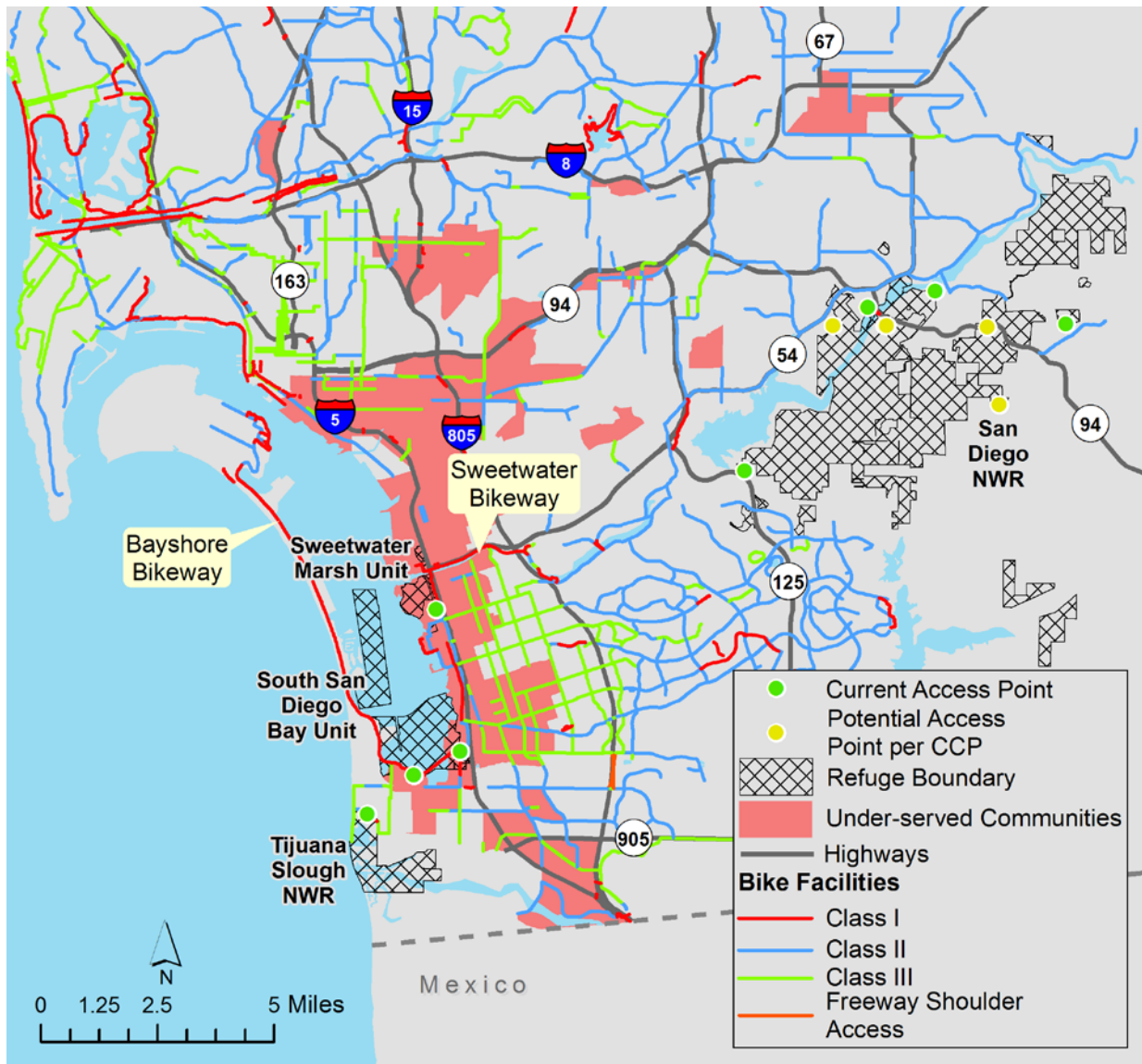


Figure 4. Current Bike Facilities and Under-served Communities, 2014

Data sources: U.S. Census Bureau (2010), SANGIS (2014), USFWS (2014)

In addition to identifying gaps in facilities, the Scholar also noticed that there is no signage along bicycle facilities that indicates that there are NWR's in the area. This observation helped inform both directional and informational signage recommendations included in the MMTP.

Lastly, the Scholar identified the locations of bicycle parking on and around the NWR's. In some cases there was sufficient parking available, while in other cases, the Scholar identified specific locations that bicycle parking would be necessary to have a comprehensive bicycle transportation system.

Non-Motorized Regional and State Trails

There are many non-motorized regional and state trails that are in close proximity to, or provide access to, the three Refuges in San Diego County. Included in the MMTP (Appendix I) is an analysis of each of the following trails:

- Sweetwater River and Loop Trail
- Otay River Valley Regional Trail
- Tijuana River Valley Regional Park
- California Coastal Trail
- California Riding and Hiking Trail

During field observations, the scholar took note of the quality and type of the surface material; any gaps in the trail systems; and, the presence of directional and informational signage.

In general, the scholar found that many of the trails in the area are earth or decomposed granite, allowing use for horse-back riding, hiking, and mountain biking. Most of the trails are not ideal for road bikes.

Although some of the trails do provide access to the Refuges, the scholar noticed many opportunities where there were gaps that could be filled to improve accessibility to the trail systems on the Refuges. For example, the Sweetwater River and Loop Trail (SRLT) runs along the Sweetwater River, and crosses onto the San Diego NWR. In some areas the trail has many informal spurs making it confusing for a visitor to know which direction to go to access the Refuge. The Scholar identified a formal routing that could help make the connection between the neighboring communities and the Refuge more clear.

Lastly, many of the maps and information in the regional trail kiosks are outdated or simply do not include the Refuges. They also lack comprehensive directional signage to inform users of how to access the Refuges while out on the trails.

Pedestrian System

The three Refuges in San Diego County are among the most urban Refuges in the entire National Wildlife Refuge System. The Refuges are surrounded by low- to high-density development, and are in walking distance for many residents, and many visitors to the Refuges are from the surrounding communities.

Each of these Refuges has a varying quality of pedestrian facilities that approach Refuge access points. In some areas there are sidewalks complete with curb-cuts (smooth surface between the sidewalk and the street) and crosswalks, allowing safe access to all

visitors, including those that are mobility impaired. In other areas there are currently no pedestrian facilities.

Most importantly, the Scholar analyzed the condition of pedestrian facilities between transit stops and Refuge access points. These observations informed specific recommendations to improve safety and accessibility to visitors arriving by foot, including mobility impaired visitors.

For example, the distance between the E Street Trolley Station and the access point for the Sweetwater Marsh Unit is only 0.25 miles. Although the distance is short, there are many obstacles that make walking to the Refuge unsafe. Visitors must cross train tracks, un-signalized intersections, and intersections without curb-cuts. These observations led the Scholar to write a letter to the City of Chula Vista to ask the city to address the safety concerns and work with the Refuge and other partners to enhance the safety of this corridor for all users.

Literature Review

The final investigatory method used to inform the MMTP was a literature review of existing plans that may affect the recommendations developed in the MMTP. The Scholar read both internal and external plans relating to alternative transportation facilities in the adjacent municipalities and unincorporated areas of San Diego County. Following is an explanation of each plan and a summary of potential projects that may impact the Refuges.

Tijuana Slough NWR Comprehensive Management Plan (2010)

The Tijuana River Comprehensive Management Plan (CMP) is the management plan for both the Tijuana Slough NWR and the Tijuana River National Estuarine Research Reserve (TRNERR), a research partner that studies the Tijuana River watershed (including the land occupied by the Refuge). The CMP was approved by the USFWS in 2000. In 2010, the plan was updated to guide TRNERR in fulfilling its mission of estuarine resource protection over the period 2010 – 2015. Planning issues relevant to the Refuge are still guided by the proposals presented in the 2000 version of the plan.

In addition to biological resource management, the 2010 CMP also includes accessibility related recommendations:

- Maintain a “seamless Reserve” across ownership boundaries;
- Cooperate with adjacent land management agencies to connect trails to provide improved public access; and

- Increase the number of school programs each year through partnerships with South Bay Union Elementary District and the High School program, and commit to providing programs that actively reach out to all ethnic groups.

Additionally, chapter 10 of the CMP addresses public access, involvement, and use; however, the focus is on providing improved public access within the Refuge rather than access to the Refuge. It recommends visitor amenities, facilities, and services that will enhance the visitors' experience. As visitation is expected to increase, "Signage, trail coordination and maintenance, communication with equestrians and stables, coordination with Border Patrol, interpretive elements, and user facilities are in need of improvement, replacement, or expansion . . ." (NOAA, 2010, page 188).

San Diego Bay NWR Comprehensive Conservation Plan - Sweetwater Marsh Unit and South San Diego Bay Unit (2006)

The San Diego Bay NWR CCP was prepared to guide management actions on both units of the Refuge. For each unit, the CCP recommends enhanced public use opportunities.

For the Sweetwater Marsh Unit, the CCP recommends altering the configuration of trails on the Refuge to create a loop for improved interpretation opportunities. The trails are all within the Refuge and do not connect to external trails or roads.

For the South San Diego Bay Unit, the CCP recommends the development of interpretive trails along the southern and eastern edges of the Unit. One trail would run parallel to the existing Bayshore Bikeway, providing pedestrian access along the edge of the Bay. This trail and the Bayshore Bikeway are components of the California Coastal Trail. Another interpretive trail is proposed to extend around salt pond 28 in the future when salt is no longer being produced at the site. The CCP also recommends increasing the number of guided birding tours conducted along the salt pond levees. These tours are only conducted outside of the breeding season.

San Diego NWR Comprehensive Conservation Plan (Draft) (2014)

The Complex is currently reviewing public input provided for the draft San Diego NWR CCP. The preferred alternative plans to optimize species protection while providing opportunities for compatible public uses. The SDNWR is the newest Refuge in the Complex and therefore the least formalized.

The CCP recommends formalizing access points and trails; the trails plan is still being developed. It also recommends the development of a parking area and visitor contact station near the corner of SR-94 and Millar Ranch Road.

Regional Plans

- Riding to 2050: San Diego Regional Bicycle Plan (SANDAG, 2010)
 - Identifies preferred regional bicycle corridor facilities that connect communities throughout the region.
- SANDAG 2050 Regional Transportation Plan (SANDAG, 2011)
 - Proposes a more diversified suite of transit services, including additional Bus Rapid Transit and local circulator buses.

San Diego County Plans

- County of San Diego Bicycle Transportation Plan (County of San Diego, 2008)
 - Identifies preferred bicycle facilities by community area in unincorporated San Diego County; includes programs to promote bicycling and make it safer.
- Community Trails Master Plan Update (County of San Diego, 2009)
 - Identifies plans for completing the County's regional trail system, as well as connecting these regional trails to State trails that extent through the County.

City of San Diego Plans

- City of San Diego Bicycle Master Plan (City of San Diego, 2013)
 - Identifies bicycle facilities and programs to serve the community, as well as connections to bicycle facilities in neighboring municipalities.

City of National City Plans

- National City Bicycle Master Plan (National City, 2011)
 - Identifies bicycle facilities and programs to serve the community, as well as connections to bicycle facilities in neighboring municipalities.

City of Chula Vista Plans

- Chula Vista Bayfront Master Plan - Public Access Program (2011)
 - Identifies future land uses along the Chula Vista Bayfront, generally the area between E Street and Palomar Street on lands managed by the City of Chula Vista or the San Diego Unified Port District; and includes new transportation objectives for the area including proposals for new motorized and non-motorized facilities.
- City of Chula Vista Bikeway Master Plan (City of Chula Vista, 2011)
 - Establishes the types of bicycle facilities that should be implemented within the City and identifies the need to integrate these facilities with the existing system of regional bikeways.
- Chula Vista Greenbelt Master Plan (City of Chula Vista, 2003)

- Includes an open space and trails concept for the City of Chula Vista that includes the Sweetwater River Valley and Otay River Valley and connects Otay Lakes on the east and San Diego Bay on the west; the primary trail system will consist of multi-use and rural paths that, when connected, will extend for approximately 28 miles around the City, providing potential future connections to one or more of the Refuges.
- Chula Vista Vision 2020 General Plan: Land Use and Transportation Element (City of Chula Vista, 2005)
 - Primarily focuses on land use, roads, and goods movements, but also plans for increased transit including new Bus Rapid Transit service for Chula Vista residents.

City of Imperial Beach Plans

- City of Imperial Beach Bicycle Transportation Plan (City of Imperial Beach, 2008)
 - Identifies bicycle facilities and programs to serve the community and connect it to facilities in neighboring municipalities.
- Urban Waterfront & Ecotourism Study for Imperial Beach (Keyser Marston Associates, Inc. et al., 2005)
 - Identifies birdwatching, bicycling, and surfing as potential markets and presents recommendations for attracting these users to the city; the Bayshore Bikeway, Tijuana Slough NWR, and South San Diego Bay Unit are all identified as assets for generating tourism in the city.
- Palm Avenue Commercial Corridor Master Plan (Moore Iacofano Goltsman, Inc., 2009)
 - Proposes improvements to Palm Avenue that will calm traffic and improve safety for users of all modes of transportation.

City of Coronado Plans

- City of Coronado Bicycle Master Plan (City of Coronado, 2011)
 - Recommends bicycle facility enhancements to better serve the community with an emphasis placed on connections to the Bayshore Bikeway.

Other Plans

- Bayshore Bikeway Plan (Alta Planning + Design, 2006)
 - Proposes the completion of an entirely off-street bikeway around San Diego Bay.
- Chollas Creek Enhancement Program (City of San Diego, 2002)
 - Guides the development of the Chollas Creek area, a natural drainage system running from Lemon Grove southwest to San Diego Bay in south San Diego City; proposes on- and off-streets facilities along the length of

the creek and tributaries that reach the Bayshore Bikeway, providing access to San Diego Bay NWR.

- I-5 South Multi-Modal Corridor Study (AECOM, 2010)
 - Analyzes potential alternatives for transportation facilities adjacent to and including I-5 from SR-54 to Main Street; the preferred alternative for the study, which makes recommendations for the 2050 Regional Transportation Plan, include:
 - Increased local bus frequency;
 - Rail grade separation at E Street; and
 - A new E Street overcrossing which accommodates six lanes of traffic, including two left turn lanes, and 6-foot-wide sidewalks with barriers on each side of the overcrossing (a total width of 102 feet).

CONSTITUENCIES

Development of the MMTP could not be done by the scholar alone. The scholar coordinated with many different partners and stakeholders to develop the plan, and implementation of potential future projects will require continued partnership with many government and non-government organizations. For example, projects could require access across other public lands or permitting from outside agencies.

Listed below are the jurisdictions, agencies, partners, and stakeholders that were key participants in the development of the recommendations outlined in the MMTP. The Scholar also worked with some of these organizations as he began working toward implementation of some of the recommendations in the MMTP.

California State Parks

Borderfield State Park lies directly south of the TSNWR. The Refuge staff and the State Park staff share office space located on the Refuge. The Scholar worked with park staff and the Friends of the San Diego Refuges to develop the Community Gateway Deck Project. The potential project would implement many recommendations included in the MMTP by creating an accessible gateway between the bus stop on the corner of Imperial Beach Boulevard and 3rd Street in Imperial Beach, and the trails located on the Refuge. The project includes construction of a new deck that serves as a welcoming meeting area, and an accessible trail that connects the bus stop and the already existing accessible trail on the Refuge.

Together, the three agencies applied for the Opening the Outdoors Grant, funded by the San Diego Foundation, but the project was not recommended for funding. The application is included in Appendix II.

Friends of the San Diego Refuges

The Friends of the San Diego Refuges is a non-profit organization that works to advance the mission and goals of the SDNWRC. They participate in a range of activities from managing and administering private donations, grants and other funds, to participating in events. The Scholar worked with the Friends of the San Diego Refuges on the Opening the Outdoors grant application. Please see the previous section on California State Parks for details.

City of Chula Vista

The Scholar worked extensively with staff from the City of Chula. The Scholar identified a potential project to improve the Sweetwater Bikeway that would connect the SMU to

SDNWR. The Scholar met with engineering staff from the city to discuss potentially applying for a Federal Lands Access Program (FLAP) grant to fund the project. The city expressed interest in the project and offered to take the lead on developing it further.

Staff from the Complex, the City of Chula Vista, and the County of San Diego met in the field, along the potential route of the proposed bikeway, to discuss the feasibility of applying for the 2015 round of FLAP funding. Ultimately, the team decided that it was too early to apply for funding, and that both the city and the county would continue to work together beyond the scholar's tenure to study the feasibility of the bikeway and apply for funding in the future. The project description is included in Appendix III.

County of San Diego

The Scholar worked with the County of San Diego on a potential FLAP application. Please see the previous section on the City of Chula Vista for details.

City of Imperial Beach

The Scholar met with engineering and planning staff from the City of Imperial Beach early in his assignment. The Scholar scheduled the meeting to learn about the recent and future projects the city had planned in the area. The main contact for the City of Imperial Beach kept the Scholar informed on local projects including: the Palm Avenue Commercial Corridor Master Plan, the Bikeway Village, and the Imperial Beach Ecoroute.

San Diego Association of Governments (SANDAG)

SANDAG is the Metropolitan Planning Organization for the region. It houses the Bayshore Bikeway Working Group, the leading advocacy group for the Bayshore Bikeway. The scholar attended one working group meeting to give input on the alignment of the bikeway near the entrance to the SMU. He also shared copies of an informational tri-fold made for the Refuge Complex entitled: "A Guide for Arriving by Bikes and Transit."

The Scholar also worked with SANDAG GIS staff to retrieve the latest shapefiles that were used for mapping and analyzing transportation facilities.

California Department of Transportation (Caltrans)

The Scholar contributed to an already on-going effort to construct a parking area for the SDNWR near the intersection of SR-94 and Millar Ranch Road in El Cajon. The Scholar conducted vehicle counts for several different time periods, recommended adding multi-modal facilities to the Volpe Center's engineering design of the parking area, and attended meetings with Refuge staff and Caltrans to discuss applying for a FLAP grant

for the parking area. Caltrans agreed to be the applicant for the grant, and the application is still under review.

John A. Volpe National Transportation Systems Center (Volpe Center)

In addition to the project described above, the Scholar worked with staff from the Volpe Center to learn how to do the demographic analysis used to identify the under-served communities in the area. Once the Scholar completed the analysis for the San Diego region, he also did the same analysis for the entire state of California and Nevada to be used by the Volpe Center for the CAR-LESS California study and the Regional Alternative Transportation Evaluation (RATE) for Region 8.

Metropolitan Transit System (MTS)

Toward the end of his assignment, the Scholar began to work with MTS on a potential project that would implement a recommendation in the MMTP. The project would build an informational kiosk at the E Street Trolley Station that would inform passers-by of the SMU and the Living Coast Discovery Center (LCDC) located 0.25 miles west on E Street. The kiosk would also inform visitors to either call the LCDC shuttle for a ride onto the Refuge or to walk along E Street to the entrance (walking directions would only be included once safety enhancements were made to E Street).

Fish and Wildlife Service Region 8 Office

Staff from the Region 8 office were very helpful in developing a cost estimate for the Community Gateway Deck Project described above. They also helped develop the Sweetwater Bikeway Project, and assisted the Scholar in finding funding sources for the project.

Furthermore, the Scholar contributed to the Region 8 Regional Alternative Transportation Evaluation (RATE). Along with the RATE team, he visited several NWR's within the region to speak with staff and analyze the existing alternative transportation facilities. He also conducted a demographic analysis for the region that was included in the RATE.

Additional Constituents

The scholar also identified additional groups that may be instrumental in implementation of potential projects contained in the MMTP. These entities, and others, could be involved as partners, decision makers, funding partners, or project supporters:

- Federal - Bureau of Land Management, National Park Service, U.S. Navy, NOAA (Tijuana River National Estuarine Research Reserve)

- Tribal - Sycuan Band of the Kumeyaay Nation
- State - California State Parks, California Department of Fish and Wildlife, California Coastal Conservancy, California Coastal Commission
- Local Municipalities - Cities of San Diego, National City, and Coronado
- Community Planning Groups – Crest/Dehesa, Jamul/Dulzura, Otay, Valle de Oro, Spring Valley, Sweetwater
- Utilities - Otay Water District, Sweetwater Authority, San Diego Gas & Electric, San Diego County Water Authority
- Non-Governmental Organizations – The Nature Conservancy, Trust for Public Lands, Kumeyaay Diegueno Land Conservancy, Coastwalk California, San Diego County Bicycle Coalition, Ocean Connectors, Friends of the Otay Valley Regional Park

RECOMMENDATIONS

The MMTP is organized to provide recommendations in two different ways. First, general recommendations are presented by transportation system: transit, bicycle, non-motorized regional and state trails, and pedestrian systems. Each of these sections provide broad recommendtaions that staff at the Complex can reference as the transportation systems develop around the Refuges.

Secondly, the MMTP has a separate section for each Refuge that gives specific recommendations for current transportation related issues. It also provides recommendations that will improve access to the refuges based on anticipated growth. The SDNWR in particlur is still acquiring land, and opportunities to connect to alternative transportation systems will arise as the Refuge boundaries change.

The following summarizes the key facility recommendations that the Scholar made in the MMTP. For detailed recommendations, refer to the MMTP, Appendix I.

- Work with partners to support the development of bikeways and regional trail facilities that connect and provide access to the Refuges, including: the Bayshore Bikeway, Sweetwater Bikeway, and Otay Valley Regional Park
- Provide safe, comfortable, and accessible gateway experiences, enhanced with decorative and interpretive elements, along corridors that connect transit stops to Refuge access points
- Enhance directional, informational, welcoming, and trail signage to ensure that Refuge visitors can locate Refuge access points and feel welcome and informed when they arrive
- Keep current on transit routes and bicycle facilities as they develop and consider the establishment of new access points when a new connection can be made

In addition to facility enhancements, the Scholar also researched ways for the Complex to engage new communities through marketing and informational initiatives. The previously discussed demographic analysis of under-served communities also informed the marketing recommendations by identifying the target under-served communities that are located along transit routes.

The marketing chapter, of the MMTP, provides examples of programs and events, print, and multi-media marketing strategies that apply to the urban nature of the Complex.

As the Scholar and staff from the Complex analyzed the current conditions of the alternative transportation systems, they decided that many of the current options were not yet safe enough to invite visitors to use.

Therefore, the Scholar did not engage in as many marketing strategies as originally anticipated. He did, however, begin work on several strategies to invite the public to the Refuges by alternative modes of transportation.

First, he created a tri-fold that describes how to arrive to each Refuge by transit and bicycle. In addition to directions, the tri-fold includes some tips and tricks for riding transit and bicycles that some visitors may not know. The tri-fold is being distributed at the Complex headquarters and events and meetings held with the public and partners.

The Scholar also worked with Complex staff to update the maps and driving directions on each Refuge's website to include alternative transportation facilities. The Scholar wrote the directions and worked with the Refuge Complex GIS Specialist to create attractive and informative maps.

In addition to the internal methods described above, the Scholar identified external websites that had inaccurate or insufficient directions or maps used to access the Refuges. The Refuge Complex Public Information & Outreach Specialist then worked with the external partners to update their websites. Examples include the San Diego Tourism Authority and the San Diego County Parks and Recreation websites (more examples are included in the MMTP, Appendix I).

Lastly, the Scholar began work on developing a video that would invite visitors to arrive at the Refuges by alternative modes of transportation. The Scholar was unable to film the video during his assignment; however, he did hold brainstorming meetings with several Complex staff and was able to write a script that could be used in the future.

NEXT STEPS/IMPLEMENTATION

Implementing the MMTP is unique in that there is no budget allocated toward implementation. Rather than addressing an obvious transportation issue, the MMTP is a resource that can be used to take advantage of future opportunities to connect to alternative transportation facilities. Therefore, rather than providing cost estimates, or establishing a timeline, the MMTP provides resources and guidance such as project prioritization, partnership opportunities, potential funding sources, and the need for future permits, applications and/or reviews. The Complex staff can utilize these resources as future funding opportunities becomes available, or project opportunities arise. These topics are addressed briefly below and elaborated on more in the MMTP Planning Implementation Chapter.

Project Prioritization

There are many external factors that make prioritizing projects within the MMTP particularly difficult within the planning process. Without an allocation of funds already designated to implement projects within the MMTP, prioritization will rely on funding/grant opportunities as they become available in the future. Because the qualification criteria for grants tend to change every year, the Complex must prioritize projects based on their likeliness to meet the evaluation criteria for each available grant opportunity individually.

Once a funding source is identified, the Complex should select a project based on the relative degree to which the project satisfies the following criteria:

- Improves access by all modes of transportation within corridors between transportation hubs and Refuge access points;
- Improves access to under-served communities;
- Improves safety;
- Completes a gap in the transportation system;
- Completes a last mile connection to an access point; and
- Markets the Refuges to under-served communities and additional new markets.

Partnership Opportunities

As mentioned previously, implementation of recommended projects within the MMTP will require coordination between many different agencies. Because many of the recommendations involve projects that would take place in public rights-of-way, the Complex could not implement the MMTP without its partners.

The MMTP lists key partnerships that should be pursued by project type.

Potential Funding Sources

Funding will need to be sought out strategically on a project-by-project basis. In some cases, internal funding may be provided in the future to pay for projects that qualify for inclusion in the annual budget. In other cases the Complex or its partners will need to apply for grants, as they become available, to fund projects. The MMTP summarize potential internal and external funding sources.

Need for Future Permits, Approvals, and/or Reviews

The implementation of some actions described in the MMTP may require additional analysis and review under NEPA. Additionally, prior to implementation of the specific action, the NWR may be required to obtain local, State, or Federal permits or approvals. The MMTP includes details on potential permits, approvals, or reviews that may be required.

Implementing any transportation project generally takes years of work. The scholar began work toward implementation of some of the recommendations, but continued work will need to be done to see projects through to completion. As described in previous sections the Complex will continue work on the following projects initiated by the Scholar:

- Potential development of the Sweetwater Bikeway between the SMU and SDNWR;
- The Community Gateway Deck Project at the TSNWR;
- An information kiosk at the E Street Trolley Station;
- Updated directions and information on internal and external websites;
- A video to invite guests to the refuges by alternative modes of transportation; and
- Safety and accessibility enhancements between the E Street Trolley Station and the entrance to the SMU.

CONNECTION TO WIDER TRANSPORTATION COMMUNITY

Improving access to the Refuges within the Complex requires connecting to the wider transportation community on many different levels: local transportation systems, region 8 FWS transportation initiatives, and national FWS transportation initiatives. The program is set up to provide the most direct communication between the land unit and the regional and national transportation representatives.

Locally, the Scholar worked with many partners to explore ways the Complex can better connect itself to the existing alternative transportation facilities. One of the main issues the Complex faces is the “last mile” connection between transit stops and the Refuge access points. Addressing this concern will involve counterparts from transit service providers, municipalities, and other organizations that maintain roads. Improvements will require coordination to develop and fund projects that improve access.

On a regional level, it’s important for the scholar and the land unit to document and communicate all transportation ideas to the FWS Regional Transportation Program Coordinator. Because all of the Refuges in the region have transportation needs, it’s important to establish a connection with the regional office and communicate the efforts under way on the ground so the regional office can support the local efforts.

The SDNWRC is often used as a case study for urban Refuges. There are a lot of opportunities the Complex has to connect to local transportation systems that other Refuges do not have. Through consistent documentation, as urban development continues to get closer to other Refuges in the region and nation, other land units can learn from the experiences at the SDNWRC.

Throughout his term, the Scholar looked at how other urban Refuges are working with the wider transportation communities. The Scholar was able to use the Valle de Oro FLAP application for a bikeway as a guide for his work on the development of the potential Sweetwater Bikeway Project. He was also able to look to the work of the Scholar at the San Francisco Bay NWRC (SFBNWRC) for inspiration. The assignment at the SFBNWRC was very similar as it involved connecting many Refuges to existing facilities.

THE PUBLIC LANDS TRANSPORTATION LANDSCAPE

I think the most important thing to remember when working as a transportation professional for a public land agency is that transportation is part of the visitors' experience. It's important to have safe, efficient, reliable, and accessible transportation options, but it is also important to make them comfortable, enjoyable, and educational whenever possible. I know from my own experience that visiting public lands, especially the larger and more congested units, includes a lot of movement along transportation systems and visitors will remember if those systems were of a high quality or not. This makes transportation planning in public lands exciting as you get to think of your projects as education and recreation, not just movement of people.

The working environment is quite unique. Working in public land units involves a lot of communication up and down levels of the federal government. It can be a challenge when coordinating with counterparts in different time zones, or remote locations. A lot of communication is done electronically rather than face to face. Also, projects can move a little more slowly than you are accustomed to when needing all of the approvals that come with development on public lands.

Additionally, budgets are always tight. My project had a zero budget, which means that funding any recommendations would require partnerships and grants, which may not be the case in other work environments.

Specific to my Complex was the issue that the Refuges had very little transportation infrastructure, and in many cases the Refuge boundary did not touch the road. This made inviting people to visit challenging, as many access points were not fully developed. Working with neighboring municipalities, transit service providers, metropolitan planning organizations, and many other partners is crucial to developing facilities and reaching out to the public.

CASE STUDY FOR FUTURE PUBLIC LANDS TRANSPORTATION SCHOLARS

Upon starting the program as a Public Lands Transportation Scholar (PLTS), I had no idea what to expect. I knew I would be working on transportation related issues on a public land, and that's about it. I understood through experience that many National Parks experience congestion, but I had no idea how transportation projects were developed on and adjacent to public lands to solve their issues.

The orientation in Colorado was my first exposure to learning about the organizational structure of the land management agencies and how federal, state, local, and non-governmental agencies all had to work together to solve complex transportation issues. Touring public land units with the entire group at orientation really helped me sharpen my vision to see safety and accessibility issues, and to see how different experienced transportation professionals would address them.

I was delighted to find that everyone I met during the orientation was extremely approachable and always willing to help when I had questions. My advice to future Scholars would be to get to know all of the mentors and professionals on the orientation as well as possible, as they can help you feel comfortable and informed once at your land unit.

My mentor was unable to attend the orientation, but she scheduled a weekly call with me, which was very helpful. Even if I did not have any specific questions, talking with my mentor weekly helped keep me on track, and make sure that I was making progress and not going down the wrong path. I scheduled my mentor's visit to the Complex several months after beginning my assignment. To future scholars, I would recommend inviting your mentor out to your unit earlier, maybe one or two months after arriving, so your mentor is more familiar with your unit and can provide more specific support.

Upon arriving to the Complex for the first time, my supervisor and all of the Complex staff were very welcoming and willing to help out any time I needed it. I did notice over time, however, that since most Scholars are assigned to public lands that have never had a Scholar before, there is some confusion regarding the Scholar's role. I originally anticipated being assigned projects by the Complex to complete. While this was the case sometimes, I realized later that the program is really what the Scholar makes of it. The Scholars are given the freedom to really develop any projects that they think are going to benefit the public land unit. The scholar really is considered the professional, and must own that role, if s/he wants to accomplish a variety of projects during the assignment.

At times I felt that I was taking up people's time by requesting meetings, but I think it's important for future scholars to schedule regular meetings between his/her mentor,

director supervisor, and project lead to assure that the scholar is meeting all of their expectations. I felt at times there was a disconnect between what I thought was expected and what I learned was actually expected later on. The scholar must take it upon his/herself to ask what is expected.

It seemed to me that other Scholar's scopes of work were narrower, and their projects focused on addressing a specific and definable problem. My assignment was unique in that the scope included several Refuges, and the MMTP was to address opportunities that the Complex could take advantage of in the future. Also, since the San Diego NWR Complex has very few roads or other transportation assets within the Refuge boundaries, my focus was mainly on transportation systems outside of the Complex. This required a lot of research on the region and communication with counterparts at many other agencies.

PROFESSIONAL DEVELOPMENT

As a PLTS, you are truly given the freedom and ability to develop any transportation project individually and with partners. I have not experienced this level of freedom and high level of responsibility in any other school project or internship. I really developed confidence to own my projects, and the ability to look beyond what was assigned to me, and develop projects that I thought would benefit the Complex.

In addition to the hard skills I learned in the projects I've described throughout this report (grant writing, plan writing, GIS analysis, graphic design, etc.), I was able to develop many soft skills, and general understanding of the transportation planning environment. I learned that there are many approaches to solve any problem, and that there is not a single path to a solution. Every problem needs to be addressed with flexibility, and understanding that nothing is certain is key to advancing in the planning field.

I developed my communication skills by working with the Complex staff, regional and national FWS employees, partners, stakeholders, and many other individuals and groups. I will take with me to my next job the confidence to reach out and ask questions and provide my opinion on any topic.

The program also provided me incredible opportunities to attend several conferences that helped inform the MMTP. I was able to attend the Region 8 Alternative Transportation Evaluation site visits to see how other Refuges are experiencing similar issues as the SDNWRC. I was also invited to the Transportation Research Board conference held in Washington D.C. There I presented a poster on my assignment, my first time presenting at a conference. Although, I was nervous, I gained confidence, and will take that skill with me to my future jobs.

APPENDIX I: SDNWRC MULTI-MODAL TRANSPORTATION PLAN (MMTP)



San Diego National Wildlife Refuge Complex



Multi-Modal Transportation Plan



March 2015

San Diego National Wildlife Refuge Complex Multi-Modal Transportation Plan

Prepared for
U.S. Fish and Wildlife Service
San Diego National Wildlife Refuge Complex
P.O. Box 2358, Chula Vista, CA 91912

Prepared by
Jacob K. Connor, Public Lands Transportation Scholar
March 2015

Jacob K. Connor is a Public Lands Transportation Scholar for the U.S. Fish and Wildlife Service, San Diego National Wildlife Refuge Complex, P.O. Box 2358, Chula Vista, CA 91912.

The Public Lands Transportation Scholars program, funded through the U.S. Fish and Wildlife Service, gives recent masters and doctoral graduates in a transportation-related engineering or planning field a unique opportunity for career development and public service. Successful applicants are placed at a federal land unit facing a transportation issue to facilitate an alternative transportation planning or implementation project.

Executive Summary

The San Diego National Wildlife Refuge Complex Multi-Modal Transportation Plan (MMTP) is an internal plan intended to guide the strategic implementation of coordinated and cooperative transportation partnerships for the purpose of improving accessibility to and between three of the four Refuges within the San Diego National Wildlife Refuge Complex (SDNWRC or Complex) using multiple modes of transportation.

The MMTP describes the existing transportation systems and facilities that serve the Refuges; analyzes each Refuge's needs; and makes facilities and marketing recommendations that serve as a guide to assist current and future Complex staff in the development of transportation projects that work toward the Plan's goals to:

- Improve safety, quality, and equitability of alternative transportation systems to provide better access to and between the three San Diego County National Wildlife Refuges; and
- Through equitable access opportunities, attract more visitors and have visitation more closely reflect the demographics of neighboring communities.

The San Diego Bay (SDBNWR), Tijuana Slough (TSNWR), and San Diego National Wildlife Refuges (SDNWR) are located in southwestern San Diego County. These Refuges are bordered by, or in close proximity to, under-served, urban communities that traditionally have not had equitable access to National Wildlife Refuges. Under-served is defined by a number of demographic categories including race, income, and vehicle ownership. Through demographic analysis, the communities of San Ysidro, Imperial Beach, western Chula Vista, National City, and south San Diego have been identified as the target communities for improving access by multiple modes of transportation.

Currently there are driving, transit, and non-motorized transportation facilities that provide access to the Refuges from these under-served communities. Multiple bus routes and the Blue Line Trolley provide transit service, and the Bayshore Bikeway and other bicycle facilities provide the opportunity to access the Refuges by bike.

Although alternative transportation facilities are present, there are some gaps and "last-mile" concerns that need to be addressed to improve the visitor experience and ensure safe and efficient access to the Refuges. The Complex will have a better opportunity to engage these communities through implementation of the following key recommendations:

- Work with partners to support the development of bikeways and regional trail facilities that connect and provide access to the Refuges, including: the Bayshore Bikeway, Sweetwater Bikeway, and Otay Valley Regional Park;
- Provide safe, comfortable, and accessible gateway experiences, enhanced with decorative and interpretive elements, along corridors that connect transit stops to Refuge access points;

- Enhance directional, informational, welcoming, and trail signage to ensure that Refuge visitors can locate Refuge access points and feel welcome and informed when they arrive;
- Keep current on transit routes and bicycle facilities as they develop and consider the establishment of new access points when a new connection can be made; and
- Distribute marketing materials in strategic locations to traditionally under-served communities along transit routes that serve the Refuges.

More detailed recommendations for each of the Refuges can be found within the body of the document, including: recommended locations for bicycle racks; intersections identified for installing accessible crosswalks; recommendations for filling gaps in specific bicycle facilities; and, target locations for marketing to under-served communities.

There are some limitations and considerations that are outside of the scope of the MMTP. Although preservation of the environment and conservation of plants and wildlife are the Complex's main priorities, environmental impact analysis was not conducted for the MMTP. Therefore, as future potential projects are developed, Complex staff will consider the potential for impacts to the environment and comply with the National Environmental Policy Act (NEPA).

Finally, because no funding is currently targeted for implementation of the MMTP, it is difficult to prioritize individual projects or create a timeline for project implementation. Instead, the MMTP gives guidance on how to prioritize projects in the future, identifies partnership opportunities, summarizes potential funding sources, and lists some of the permits, approvals, and reviews that may be necessary as part of project development.

Some recommendations could be funded by future budget allocation; but, for most, the Complex will need to seek grant funding through strategic partnerships with the County, local municipalities, the San Diego Association of Governments, the Metropolitan Transit System, and other government and non-government organizations.

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1. Introduction

The San Diego National Wildlife Refuge Complex Multi-Modal Transportation Plan (MMTP) is intended to guide the strategic implementation of coordinated and cooperative transportation partnerships for the purpose of improving accessibility to and between three of the four Refuges within the San Diego National Wildlife Refuge Complex (SDNWRC or Complex) using multiple modes of transportation. Implementation of the MMTP will support the mission of the U.S. Fish and Wildlife Service (USFWS or Service) by connecting people to fish, wildlife, and their habitats.

The MMTP, prepared by means of the Public Lands Transportation Scholar Program, is an adaptable document that examines the range of transportation systems that currently serve the Complex's three San Diego County Refuges. The MMTP also identifies potential upgrades to existing transportation systems that would enhance accessibility to and from the Refuges; suggests priorities for implementation, including potential funding sources for proposed upgrades; and includes marketing strategies and visitor experience programs to promote visiting the Refuges using alternative modes of transportation.

Implementation of the components presented in the MMTP will be dependent upon available funding and the level of support provided by various partners and agencies. The recommendations of the MMTP are intended to assist the Complex in meeting a variety of mandates, including the mission of the National Wildlife Refuge System, connecting people with nature, and engaging urban audiences in meaningful, collaborative ways to build sustainable, broad-based support for Refuges and the resources they conserve. Encouraging access to the San Diego Refuges by alternative modes of transportation will also result in reductions in greenhouse gas emissions as visitors leave their cars at home and walk, bike, or take transit to the Refuges. These actions will further our effort to achieve the Federal government goal of reducing greenhouse gas emissions by 28% by 2020.

1.1 Project Background

The SDNWRC is a collection of four Refuges within the National Wildlife Refuge System, which includes over 560 Refuges. These four Refuges are administered by the U.S. Fish and Wildlife Service (USFWS or the Service). The mission of the USFWS is: "Working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

While the main goal of the Service is to protect wildlife and habitat, it also works to improve the visitor experience through many methods, including improved access to the Refuges, so long as they do not have a negative net impact on the environment. The Service also provides compatible wildlife-dependent recreation (i.e., hunting, fishing, wildlife observation and photography, and environmental education and interpretation), where appropriate. This MMTP works to improve visitors' access to the wildlife-dependent recreational opportunities available on three of the four National Wildlife Refuges (NWR) within the Complex: San Diego Bay NWR, Tijuana Slough NWR, and San Diego NWR.

1.2 Purpose, Intended Audiences, and Organization

The MMTP is primarily intended as an internal document to assist Complex staff in decision making on transportation related issues. Some sections of this Plan are organized by Refuge to make it easier for the staff of each Refuge to locate information. Other sections are organized by transportation system, to paint a broader picture of how each transportation system serves the Refuges. Because facilities outside of the Refuges' boundaries are out of the Complex's control, the Complex must coordinate with many partners to seek funding and implement the plan.

The MMTP also serves to inform the Region 8 and National Federal Lands Transportation Program staff of the Complex's existing accessibility conditions and planned improvements.

1.3 Setting and Scope

The four Refuges in the SDNWRC are located in southwestern California. They are organized as a Complex for management and financial purposes; however, they are not geographically adjacent and in many ways operate independently. Please see Figure 1 and Figure 2 for a context map and organizational structure, respectively.



Figure 1. Complex Setting Context Map

Data sources: SANGIS (2014), USFWS (2014)

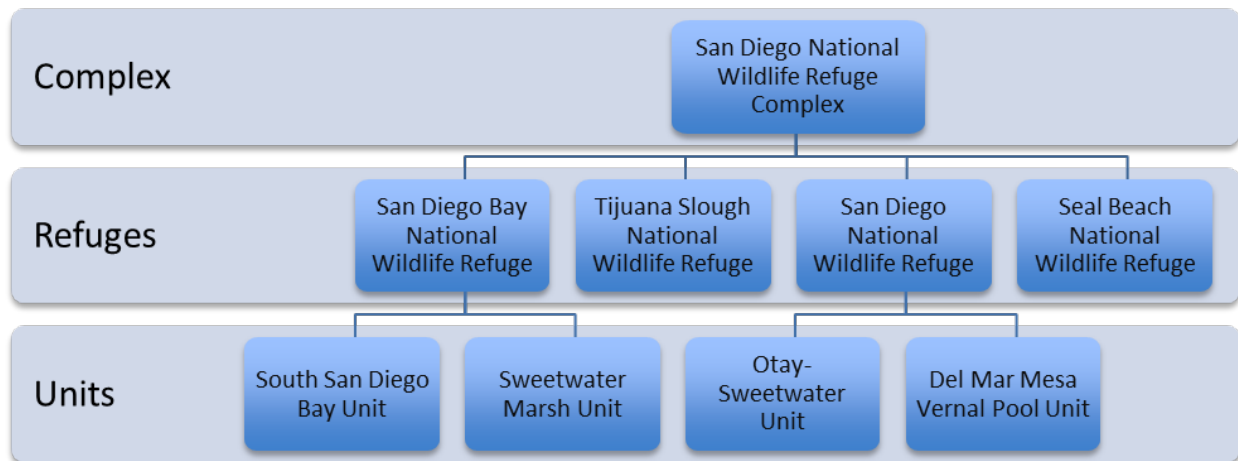


Figure 2. Management Structure of the San Diego National Wildlife Refuge Complex

- **San Diego Bay National Wildlife Refuge (SDBNWR)** consists of two units located within and adjacent to San Diego Bay in southwest San Diego County. Both units are addressed in the MMTP. Although managed as part of the same Refuge, they are geographically separated and will be referred to individually throughout the MMTP.
 - **Sweetwater Marsh Unit** (316 acres) is located on the east side of San Diego Bay, bordered by the City of Chula Vista to the east and south and the City of National City to the north.
 - **South San Diego Bay Unit** (1,350 acres) is located at the south end of San Diego Bay, bordered by the City of Imperial Beach to the south, the City of Coronado to the west, and the cities of San Diego and Chula Vista to the east.
- **Tijuana Slough National Wildlife Refuge (TSNWR)** (1,072 acres) is located in the southwest corner of San Diego County bordered to the south by Border Field State Park, to the west by the Pacific Ocean, and to the north and east by the cities of Imperial Beach and San Diego.
- **San Diego National Wildlife Refuge (SDNWR)**, the largest of the Refuges (about 11,600 acres), includes the Otay-Sweetwater Unit and Del Mar Mesa Vernal Pool Unit. The Otay-Sweetwater Unit is located in southwestern San Diego County along the eastern edge of the greater San Diego metropolitan area. It is bordered to the southwest by the City of Chula Vista. The remainder is bordered by unincorporated communities in San Diego County. Land acquisition efforts for the Refuge are ongoing; therefore, this Refuge is likely to continue to grow. (The Del Mar Mesa Vernal Pool Unit (about 60 acres) is included within the Del Mar Mesa Preserve area at the northern edge of the City of San Diego and *is not* addressed in this MTTP).
- **Seal Beach National Wildlife Refuge (SBNWR)** (965 acres) is located within Naval Weapons Station Seal Beach in Orange County, California, and is therefore subject to strict access limitations. As a result, this Refuge is *not included* in the MMTP.

The geographic scope of the MMTP is the area that can access the Refuges within one hour of travel on transit. This includes areas in the incorporated municipalities of the cities of San Diego, National City, Chula Vista, Imperial Beach, and Coronado, and many unincorporated communities in San Diego County.

The MMTP focuses on alternative modes of transportation, including transit and non-motorized transportation systems as they serve the Refuges. Access by vehicles is also examined as it interacts with the alternative transportation systems; however, privately owned vehicle access is not a main component of this plan.

Although impact on the environment was considered in the writing of this plan, the MMTP does not formally assess the impact of the recommendations on Refuge resources. Implementation of any of the recommendations on Refuge lands will require compliance with the National Environmental Policy Act (NEPA).

1.4 Vision Statement

By supporting and promoting the availability of equitable access to the San Diego Refuges through various modes of transportation, the Complex can introduce a wider sector of the community to the lands and resources conserved within the boundaries of these Refuges. By implementing the recommendations presented in the MMTP, we can realize this vision for the San Diego Refuges:

The three National Wildlife Refuges in San Diego County are well-known and visited regularly by diverse communities. Refuge access points are clearly defined and welcoming to the public. The Refuges are integrated into the urban context and easily accessed by multiple modes of transportation.

1.5 Goals

The San Diego National Wildlife Refuge Complex Multi-Modal Transportation Plan is intended to guide the Refuges' facilities design and development as it relates to public access. More specifically the goals of the MMTP are as follows:

- Improve safety, quality, and equitability of alternative transportation systems to provide better access to and between the three San Diego County National Wildlife Refuges, and
- Through equitable access opportunities, attract more visitors and have visitation more closely reflect the demographics of neighboring communities.

1.6 Coordination with Jurisdictions, Agencies, Partners, and Stakeholders

Due to the multijurisdictional nature of many of the recommendations within the MMTP, meeting the goals of the MTTP and implementing its recommendations will require coordination with many partners, including multiple government and non-governmental organizations. Input from stakeholder groups will also help shape the ideal network of transportation systems and trails that serve the Refuges.

Implementing a multi-modal transportation project could require access across other public lands or require coordination to provide a connection between two distinct locations. In some cases, agreements or approvals could be required from a transportation agency. Finally, to fund recommended transportation projects is likely to require accessing multiple pots of money from a range of partners. Listed below are the jurisdictions, agencies, partners, and stakeholders likely to be key participants in the design, development, and implementation of the recommendations outlined in the MMTP. These entities, and there are likely many others, could be involved as affected land managers, decision makers, funding partners, or project supporters.

- Federal - Bureau of Land Management, National Park Service, U.S. Navy, NOAA (Tijuana River National Estuarine Research Reserve)
- Tribal - Sycuan Band of the Kumeyaay Nation
- State - California State Parks, California Department of Fish and Wildlife, California Coastal Conservancy, California Coastal Commission
- Local Municipalities - Cities of San Diego, Chula Vista, National City, Imperial Beach, Coronado
- Community Planning Groups – County of San Diego (Crest/Dehesa, Jamul/Dulzura, Otay, Valle de Oro, Spring Valley, Sweetwater)
- Regional Governments – San Diego Association of Governments (SANDAG)
- Utilities - Otay Water District, Sweetwater Authority, San Diego Gas & Electric, San Diego County Water Authority
- Transportation Agencies - Caltrans, Metropolitan Transit System
- Non-Governmental Organizations – Friends of the San Diego Refuges, The Nature Conservancy, Trust for Public Lands, Kumeyaay Diegueno Land Conservancy, Coastwalk California, San Diego County Bicycle Coalition, Ocean Connectors, Friends of the Otay Valley Regional Park

1.7 Analysis of Under-Served Communities

A primary goal of the MMTP is to improve connectivity between traditionally under-served communities in San Diego County and the Refuges in an effort to make these Refuges more accessible to a larger segment of the surrounding population. Traditionally under-served communities are those that have had the least access to public lands. To understand where those communities are, the MMTP used a needs analysis tool developed by the US Department of Transportation Volpe Center for the CAR-LESS California Report.

Through demographic research, the CAR-LESS California report identifies the traditionally under-served communities (those with the highest need for improved access) as those that have: a high minority representation, high percentage of households receiving food stamps, low vehicle ownership, and low median household income (Roberts, 2012).

The needs index tool assigns a value between one and five to each census tract in the region based on the demographic criteria explained above. The most under-served communities are those census tracts with the highest value on the needs index. In Figure 3, the red census tracts represent the highest need communities in proximity to the San Diego refuges. In addition to targeting these communities for improved access, the MMTP also recommends increasing marketing and outreach to these communities to increase awareness of the experiences available to them on the Refuges.

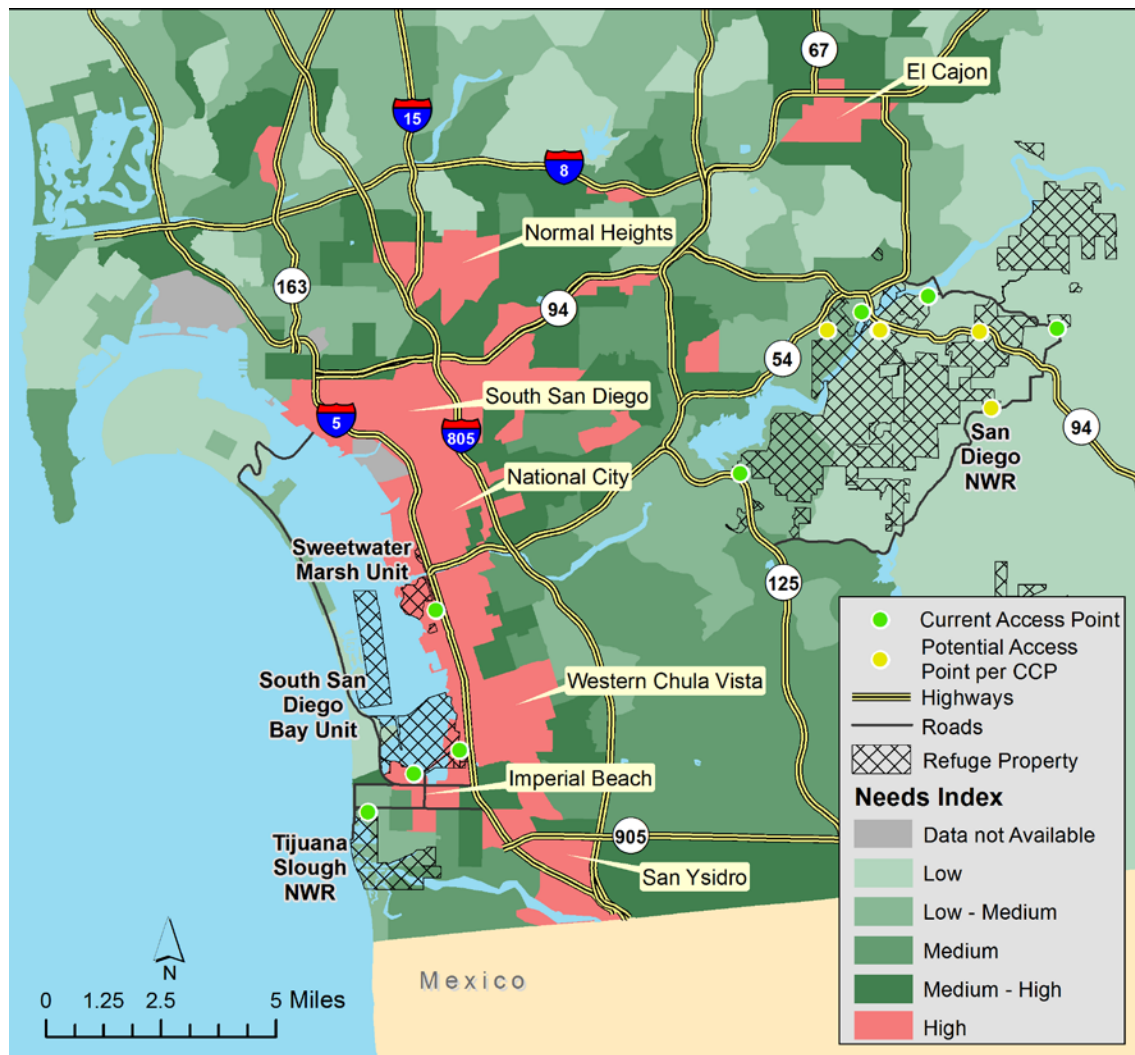


Figure 3. Analysis of Under-served/Highest Needs Communities, 2010

Data sources: US Census Bureau (2010), SANGIS (2012), USFWS (2014)

It should be noted that only 10 other census tracts in San Diego County are categorized as “High Need,” all of which are located approximately 40 miles north of the Refuges, near Oceanside, CA. The time on transit necessary to access the Refuges from these areas is over two hours; therefore, they are not addressed in this report.

2. Planning Context

Internal and external plans contributed to the development of the recommendations within the MMTP. The following documents were reviewed in the planning process.

2.1 Existing Internal Plans

Each of the Refuges has its own Comprehensive Conservation Plan (CCP) or Comprehensive Management Plan (CMP), a document that provides long-term guidance for management decisions and sets forth goals, objectives, and strategies needed to accomplish refuge purposes and identify the Service's best estimate of future needs. This section summarizes access as it is addressed in each CCP.

2.1.1 Tijuana Slough NWR Comprehensive Management Plan (2010)

The Tijuana River Comprehensive Management Plan (CMP) is the management plan for both the Tijuana Slough NWR and the Tijuana River National Estuarine Research Reserve (TRNERR), a research partner that studies the Tijuana River watershed (including the land occupied by the Refuge). The CMP was approved by the USFWS in 2000. In 2010, the plan was updated to guide TRNERR in fulfilling its mission of estuarine resource protection over the period 2010 – 2015. Planning issues relevant to the Refuge are still guided by the proposals presented in the 2000 version of the plan.

In addition to biological resource management, the 2010 CMP also includes accessibility related recommendations:

- Maintain a “seamless Reserve” across ownership boundaries;
- Cooperate with adjacent land management agencies to connect trails to provide improved public access; and
- Increase the number of school programs each year through partnerships with South Bay Union Elementary District and the High School program, and commit to actively providing programs that actively reach out to all ethnic groups.

Additionally, chapter 10 of the CMP addresses public access, involvement, and use; however, the focus is on providing improved public access within the Refuge rather than access to the Refuge. It recommends visitor amenities, facilities, and services that will enhance the visitors' experience. As visitation is expected to increase, “Signage, trail coordination and maintenance, communication with equestrians and stables, coordination with Border Patrol, interpretive elements, and user facilities are in need of improvement, replacement, or expansion . . .” (NOAA, 2010, page 188).

2.1.2 San Diego Bay NWR Comprehensive Conservation Plan - Sweetwater Marsh Unit and South San Diego Bay Unit (2006)

The San Diego Bay NWR CCP was prepared to guide management actions on both units of the Refuge. For each unit, the CCP recommends enhanced public use opportunities.

For the Sweetwater Marsh Unit, the CCP recommends altering the configuration of trails on the Refuge to create a loop for improved interpretation opportunities. The trails are all within the Refuge and do not connect to external trails or roads.

For the South San Diego Bay Unit, the CCP recommends the development of interpretive trails along the southern and eastern edges of the Unit. One trail would run parallel to the existing Bayshore Bikeway, providing pedestrian access along the edge of the Bay. This trail and the Bayshore Bikeway are components of the California Coastal Trail. Another interpretive trail is proposed to extend around salt pond 28 in the future when salt is no longer being produced at the site. The CCP also recommends increasing the number of guided birding tours conducted along the salt pond levees. These tours are only conducted outside of the breeding season.

2.1.3 San Diego NWR Comprehensive Conservation Plan (Draft) (2014)

The Complex is currently reviewing public input provided for the draft San Diego NWR CCP. The preferred alternative plans to optimize species protection while providing opportunities for compatible public uses. The SDNWR is the newest Refuge in the Complex and therefore the least formalized.

The CCP recommends formalizing access points and trails; the trails plan is still being developed. It also recommends the development of a parking area and visitor contact station near the corner of SR-94 and Millar Ranch Road.

2.2 Existing External Transportation-related Plans, Reports, or Studies

Neighboring municipalities, San Diego County, SANDAG, and other entities each have their own transportation planning efforts. The MMTP makes recommendations to support projects that have a positive impact on accessing the Refuges. It also makes additional recommendations that are not addressed in previous plans. The external plans listed below were reviewed to help shape the recommendations in this MMTP; relevant specific projects will be addressed in chapters 3 and 4. The Complex should continue to review updates to these documents to remain informed about current regional transportation plans and policies.

Regional

- Riding to 2050: San Diego Regional Bicycle Plan (SANDAG, 2010)
 - Identifies preferred regional bicycle corridor facilities that connect communities throughout the region.
- SANDAG 2050 Regional Transportation Plan (SANDAG, 2011)
 - Proposes a more diversified suite of transit services, including additional Bus Rapid Transit and local circulator buses.

San Diego County

- County of San Diego Bicycle Transportation Plan (County of San Diego, 2008)

- Identifies preferred bicycle facilities by community area in unincorporated San Diego County; includes programs to promote bicycling and make it safer.
- Community Trails Master Plan Update (County of San Diego, 2009)
 - Identifies plans for completing the County's regional trail system, as well as connecting these regional trails to State trails that extent through the County.

City of San Diego

- City of San Diego Bicycle Master Plan (City of San Diego, 2013)
 - Identifies bicycle facilities and programs to serve the community, as well as connections to bicycle facilities in neighboring municipalities.

City of National City

- National City Bicycle Master Plan (National City, 2011)
 - Identifies bicycle facilities and programs to serve the community, as well as connections to bicycle facilities in neighboring municipalities.

City of Chula Vista

- Chula Vista Bayfront Master Plan - Public Access Program (2011)
 - Identifies future land uses along the Chula Vista Bayfront, generally the area between E Street and Palomar Street on lands managed by the City of Chula Vista or the San Diego Unified Port District; and includes new transportation objectives for the area including proposals for new motorized and non-motorized facilities.
- City of Chula Vista Bikeway Master Plan (City of Chula Vista, 2011)
 - Establishes the types of bicycle facilities that should be implemented within the City and identifies the need to integrate these facilities with the existing system of regional bikeways.
- Chula Vista Greenbelt Master Plan (City of Chula Vista, 2003)
 - Includes an open space and trails concept for the City of Chula Vista that includes the Sweetwater River Valley and Otay River Valley and connects Otay Lakes on the east and San Diego Bay on the west; the primary trail system will consist of multi-use and rural paths that, when connected, will extend for approximately 28 miles around the City, providing potential future connections to one or more of the Refuges.
- Chula Vista Vision 2020 General Plan: Land Use and Transportation Element (City of Chula Vista, 2005)
 - Primarily focuses on land use, roads, and goods movements, but also plans for increased transit including new Bus Rapid Transit service for Chula Vista residents.

City of Imperial Beach

- City of Imperial Beach Bicycle Transportation Plan (City of Imperial Beach, 2008)
 - Identifies bicycle facilities and programs to serve the community and connect it to facilities in neighboring municipalities.
- Urban Waterfront & Ecotourism Study for Imperial Beach (Keyser Marston Associates, Inc. et al., 2005)
 - Identifies birdwatching, bicycling, and surfing as potential markets and presents recommendations for attracting these users to the city; the Bayshore Bikeway, Tijuana Slough NWR, and South San Diego Bay Unit are all identified as assets for generating tourism in the city.
- Palm Avenue Commercial Corridor Master Plan (Moore Iacofano Goltsman, Inc., 2009)
 - Proposes improvements to Palm Avenue that will calm traffic and improve safety for users of all modes of transportation.

City of Coronado

- City of Coronado Bicycle Master Plan (City of Coronado, 2011)
 - Recommends bicycle facility enhancements to better serve the community with an emphasis placed on connections to the Bayshore Bikeway.

Other Efforts

- Bayshore Bikeway Plan (Alta Planning + Design, 2006)
 - Proposes the completion of an entirely off-street bikeway around San Diego Bay.
- Chollas Creek Enhancement Program (City of San Diego, 2002)
 - Guides the development of the Chollas Creek area, a natural drainage system running from Lemon Grove southwest to San Diego Bay in south San Diego City; proposes on- and off-streets facilities along the length of the creek and tributaries that reach the Bayshore Bikeway, providing access to San Diego Bay NWR.
- I-5 South Multi-Modal Corridor Study (AECOM, 2010)
 - Analyzes potential alternatives for transportation facilities adjacent to and including I-5 from SR-54 to Main Street; the preferred alternative for the study, which makes recommendations for the 2050 Regional Transportation Plan, include:
 - Increased local bus frequency;
 - Rail grade separation at E Street; and
 - A new E Street overcrossing which accommodates six lanes of traffic, including two left turn lanes, and 6-foot-wide sidewalks with barriers on each side of the overcrossing (a total width of 102 feet).

3. Transportation Systems - Existing Conditions, Needs, and Recommendations

This chapter analyzes each alternative transportation system in the region: transit, bicycle, non-motorized trails, and pedestrian transportation systems. For each, the MMTP summarizes existing conditions (including existing plans, if any), provides an analysis of the needs related to that transportation system, and provides recommendations that, if implemented, will work toward the goals of the MMTP.

3.1 Transit System

The Metropolitan Transit System (MTS) is the transit service provider for the San Diego region. It serves approximately three million people in a region of 570 square miles. As of 2015, the system operates 91 bus routes and three light-rail trolley lines (Blue, Green, and Orange Lines). MTS reached a record high ridership in FY 2014, with over 95 million trips (Metropolitan Transit System, 2014).

MTS is also striving to improve its multi-modal connectivity by providing bike parking at its transit stations and bus stops. Some transit stations are even equipped with bike lockers, which offer the highest level of security for riders' bicycles. Bike lockers are provided on a first come, first served basis. Use of the lockers requires a registration with iCommute (www.icommutesd.com), a program managed by the SANDAG to provide assistance and tools to commuters and employers.

All MTS buses and trolleys are also equipped to carry bicycles. Buses have a bike rack on the front that holds a maximum of two bikes. MTS allows one bike per trolley car 6:00-9:00 am and 3:00-6:00 pm, and two bikes per car at all other times. Passengers with bikes are asked to bring them into the trolley and hold them in place.

As of 1215, one-way fare for buses is \$2.25 and for trolleys it is \$2.50. Transfers are not allowed; however, unlimited daily passes are \$5.00 and monthly passes are \$72.00. There are exceptions to these fares, please see <http://www.sdmts.com/fares.asp> for a complete description of fares.

3.1.1 Existing Conditions

Several transit routes have stops near the access points of the Refuges offering a variety of opportunities to reach them by transit. Figure 4 shows the MTS routes that serve the current access points within 0.75 miles, and includes an overlay of the highest need (under-served) communities. Table 1 summarizes their service, including nearest transit stop, distance to nearest access point, days of operation, hours of service, and frequency of trips. The frequency (how often the bus passes) varies throughout the day, and some trips deviate from the normal route over the course of the day.

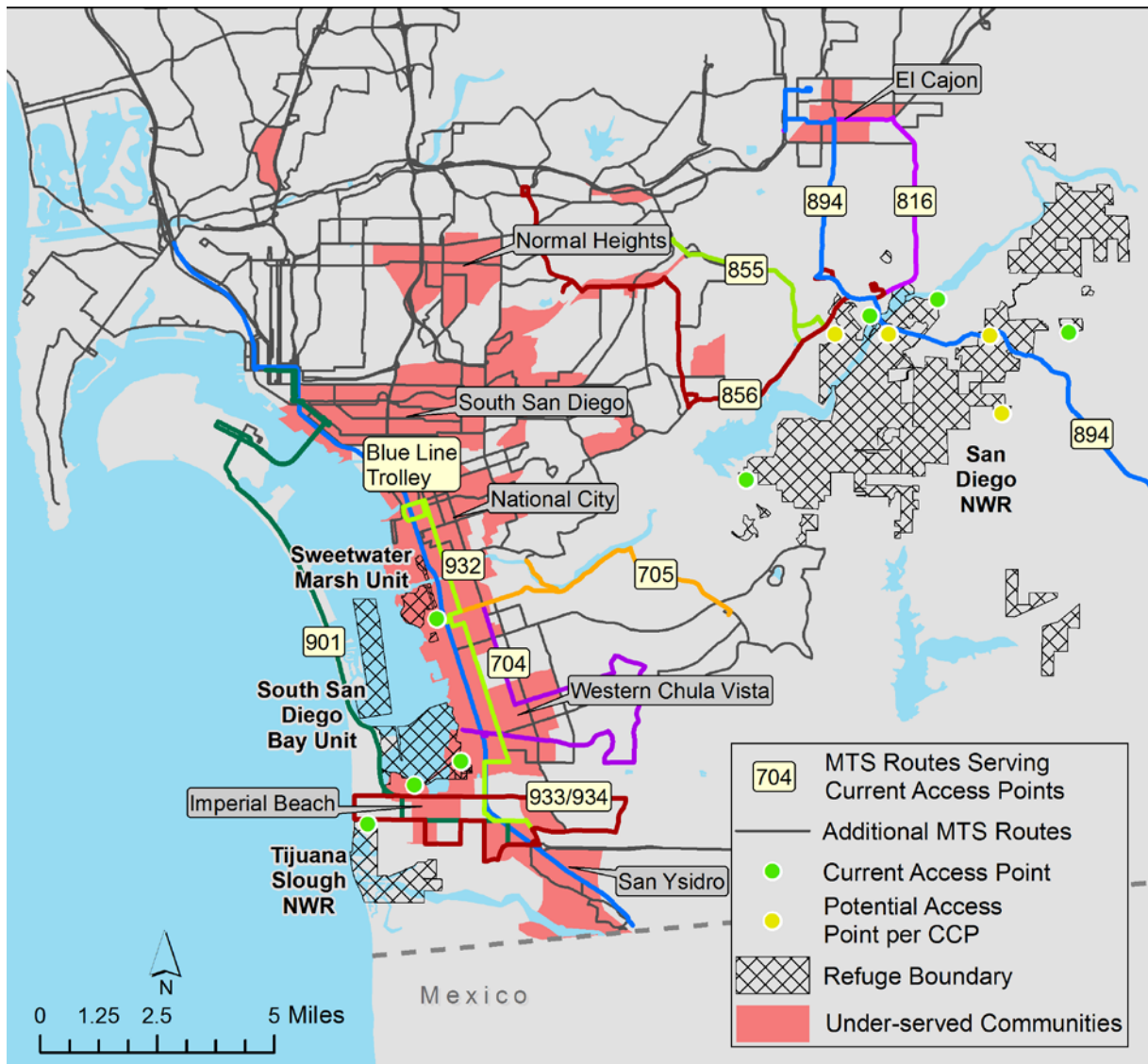


Figure 4. MTS Routes that Serve Refuge Access Points and Under-served/Highest Needs Communities
 Data sources: US Census Bureau (2010), SANGIS (2012), USFWS (2014)

Note: Figure 4 and Table 1 were created in March, 2015. Route alignments and schedules can change over time. For up-to-date schedules and maps please see the MTS website: <http://www.sdmts.com/mtscr/BusRoutes.aspx>.

Table 1. MTS Routes Serving Access Points, 2015

				Weekday		Saturday		Sunday	
Route	Nearest Transit/Bus Stop	Refuge Access Point	Distance to Access Point (mi)	Hours of Operation	Frequency (minutes)	Hours of Operation	Frequency (minutes)	Hours of Operation	Frequency (minutes)
Sweetwater Marsh Unit									
Blue Line Trolley	E Street Transit Station	Visitor Parking Lot	0.25	4:00 am to 1:45 am	7 - 15	4:30 am to 1:45 am	15	4:30 am to 1:45 am	15
704	E Street Transit Station	Visitor Parking Lot	0.25	5:30 am to 10:00 pm	30	6:00 am to 9:15 am	60	N/A	N/A
705	E Street Transit Station	Visitor Parking Lot	0.25	6:00 am to 10:00 pm	30	7:00 am to 7:30 pm	30	N/A	N/A
932	E Street Transit Station	Visitor Parking Lot	0.25	4:30 am to 12:30 am	15	4:30 am to 12:30 am	20	5:30 am to 8:30 pm	30
South San Diego Bay Unit									
901	7th St and Palm Ave	7th St and Bayshore Bikeway	0.5	4:30 am to 2:30 am	15 - 30	5:00 am to 2:30 am	30	5:00 am to 12:00 am	60
932	Main St and Industrial Blvd	Main St and Frontage Rd	0.4	4:30 am to 12:30 am	15	4:30 am to 12:30 am	20	5:30 am to 8:30 pm	30
933/934	13th St and Palm Ave	13th St and Bayshore Bikeway	0.25	4:30 am to 1:00 am	15	5:00 am to 1:00 am	20 - 30	5:00 am to 9:00 pm	30
Tijuana Slough NWR									
901	9th St and Imperial Beach Blvd	Visitor Center	0.75	4:30 am to 2:30 am	15 - 30	5:00 am to 2:30 am	30	5:00 am to 12:00 am	60
933/934	3rd St and Imperial Beach Blvd	Imperial Beach Blvd	0	4:30 am to 1:00 am	15	5:00 am to 1:00 am	20 - 30	5:00 am to 9:00 pm	30
San Diego NWR									
816	College Dr and Jamacha Rd	Singer Ln and SR-94	0.6	5:00 am to 7:30 pm	30	N/A	N/A	N/A	N/A
855	Trace Rd and Jamacha Blvd	East end of Trace Rd	0.3	5:00 am to 11:00 pm	30	6:30 am to 9:30 pm	60	7:00 am to 6:00 pm	45
856	Trace Rd and Jamacha Blvd	East end of Trace Rd	0.3	4:30 am to 11:00 pm	30	5:30 am to 10:00 pm	60	6:00 am to 7:00 pm	60
894	Diego Towne Center	Singer Ln and SR-94	0.3	5:40 am to 7:30 pm	180	N/A	N/A	N/A	N/A

Note: Route alignment and schedules are subject to change.

Source: <http://www.sdmts.com/mtscr/BusRoutes.aspx>

Sweetwater Marsh Unit (SMU)

The Sweetwater Marsh Unit is served by the Blue Line Trolley and three bus routes (704, 705, and 932). They all serve the E Street Transit Station, approximately 0.25 miles from the SMU visitor parking lot, the only access point to the SMU. Therefore, visitors will have the same experience upon arrival, no matter which MTS Route they arrive on.

The Blue Line Trolley runs from the San Ysidro Transit Center at the border with Mexico to America Plaza in downtown San Diego. The Blue Line Trolley connects to both other trolley lines and at least 30 bus routes, making the SMU the most accessible by transit. All three bus routes that serve the Refuge (704, 705, and 932) are local routes serving Chula Vista and a small portion of western National City.

Bus Routes 704 and 705 only operate Monday through Saturday, while the Blue Line Trolley and Bus Route 932 operate seven days a week.

South San Diego Bay Unit (SSDU)

The South San Diego Bay Unit is served by three bus routes (901, 933/934, and 932), all of which operate seven days a week. Route 901 runs from the San Ysidro Transit Center to downtown San Diego along the Silver Strand. Route 933/934 loops around Imperial Beach and serves the Iris Avenue and Palm Avenue Transit Centers. Route 932 serves western Chula Vista and National City, running parallel to the Blue Line Trolley and serving many trolley stations.

Tijuana Slough National Wildlife Refuge (TSNWR)

The TSNWR is served by two Bus Routes (901 and 933/934). Both run seven days a week and serve the Visitor Center and the gateway at the intersection of 3rd Street and Imperial Beach Boulevard. Route 901 runs from the San Ysidro Transit Center to downtown San Diego along the Silver Strand. Route 933/934 loops around Imperial Beach and serves the Iris Avenue (at Iris Avenue and Beyer Boulevard) and Palm Avenue (at Palm Avenue and Hollister Street) Transit Centers.

San Diego National Wildlife Refuge

The SDNWR is currently served by four MTS Bus Routes. Two of them (816 and 894) serve the access point at Singer Lane and SR-94. Route 816 runs from Cuyamaca College to the El Cajon Transit Center (at the intersection of West Palm Avenue and South Marshall Avenue) Monday through Friday. Route 894 (refer to Figure 4) only operates four trips per day in each direction, running from the El Cajon Transit Center to Campo/Morena Village.

Two routes (855 and 856) have a bus stop located 0.3 miles from the southern end of Trace Road, an informal access point which is identified as a potential access point in the Comprehensive Conservation Plan (CCP). Route 855 runs between the Spring Street Transit Center and Doubletree Road, and Route 856 runs between the SDSU Transit Center and Cuyamaca College.

3.1.2 Needs

Each of the Refuges in San Diego County is served by multiple MTS routes which connect to a large number of additional routes. The number of routes serving the Refuges is not as important as the area that those routes cover and the quality of service provided. MTS does actually connect the Refuges with much of the metropolitan area, especially those communities that are traditionally under-served. In fact, almost all of the under-served communities have a connection to one of the Refuges within an hour of travel on transit.

The need, therefore, is to improve the quality of service, inform the public of how they can reach the Refuges by transit, reduce the cost barrier, and improve the connection between transit stops and the access points (typically called the “last mile”).

3.1.3 Recommendations

The recommendations presented below can be pursued in coordination with MTS to enhance the transit experience, making transit a more desirable, reliable, and accessible mode of transportation for visiting the Refuges. Some recommendations also promote transit to incentivize people to use it over driving. Lastly, this section also includes recommendations to promote and incentivize transit usage by supplying accurate information and breaking down cost and perception barriers.

This MMTP was written at a time when visitation was relatively low and congestion was not a large concern for the Complex. As visitation changes, the Complex should continue to monitor transit routes and stops for congestion or safety issues.

Recommendations related to transit include:

Increase Frequency, Days of Service, and Reliability of Transit Service

Most MTS routes are scheduled to provide service during weekday business hours for commuting and other activities generally scheduled during the work week such as doctor appointments. Adding weekend service may be difficult if there is not additional demand for the service.

In order to attract visitation via transit, visitors must have confidence that they can get to the Refuge and back home without any lapses in services. The Complex should work with MTS to:

- Increase the frequency of routes serving the Refuges so bus or trolley access is available every 15-30 minutes or less;
- Provide service on all these routes seven days per week; and
- Ensure that routes are running on-time.

Changing transit service can be complicated and involves consideration of a number of factors. Ultimately, any change in service will either cost more money or remove/reduce service in another area. It should be noted that requesting any adjustment in service will be most successful if the Complex:

- Demonstrates support for service improvements from the surrounding community and possibly nearby businesses;
- Justifies the need based on current visitation and projected demand;
- Identifies potential supplemental funding sources; and
- Provides strong evidence that expansion of service is likely to result in increased ridership along the entire route.

When prioritizing routes for which the Complex wishes to improve service, staff should consider routes that:

- Connect to many other routes, and ultimately provide access to the largest number of traditionally under-served residents and/or provide service to a different community/market;

- Have the shortest, most direct connection between the transit stop and Refuge access points; and
- Provide access to the Refuges with the highest visitation or largest number of amenities available to the visitors.

Create New Access Points Where Transit Service is Already Available

If new transit service is provided near the Refuges, the Complex should consider adding additional access points as close as possible to the transit stops. Also, if any of the Refuges expand to incorporate new land area, the Complex should check the latest MTS Route Map and consider establishing access points near transit stops.

Improve the Quality of Transit Stops

Offering a safe, pleasant, and accessible location for visitors to wait for the bus or trolley is important to transit riders, especially when service is infrequent. This section provides general recommendations to improve the quality of transit stops and the connection to pedestrian facilities; specific recommendations are available by Refuge in chapter 4.

The Complex should work with local municipalities, Caltrans, and MTS to ensure that each transit stop:

- Is located on a sidewalk (or at least a cement landing pad);
- Has curb cuts if people will need to transition from the sidewalk to the street;
- Has shelter to protect people from the sun and rain;
- Has comfortable seating;
- Has a trash receptacle to prevent littering;
- Is well lit;
- Has a map and schedule posted for the route;
- Provides real-time information about the next arriving trolley or bus;
- Provides information about the nearest Refuge and the Complex as a whole; and
- Has secure bicycle parking.

Improve Connection to Bicycle and Pedestrian Facilities

In order for a transportation network to work properly and provide the best range of options to access the Refuges, connections between modes of transportation must be seamless. Bicycle facilities must be available for people who choose to take their bikes on transit and then ride them to the Refuges or on the Refuges. Also, pedestrian facilities must be safe and comfortable for visitors who arrive at the nearest transit stop and walk to the Refuge access points.

The Complex should work with local municipalities to ensure that bicycle and pedestrian facilities are available between all transit stops and Refuge access points. When requesting a new bus stop, the Complex should also consider locating the new stop along segments of roadway with existing high quality bicycle and pedestrian facilities.

Promote Transit Access to Visitors and Break-down Cost Barriers

Even with the best transit system in place, cost can still be a barrier for some visitors. The fact is driving can be cheaper than taking transit, especially with a large group of people. The Complex should explore ways to incentivize taking transit over driving.

Potential programs may include working with other agencies and/or organizations to develop a reduced fare program on certain days to allow new visitors to explore the natural areas available for public access within the region that are accessible via transit. Another option is to partner with organizations that already subsidize transit to include the Refuges in their programs.

The most common way of incentivizing taking transit would be a reduced cost of admission upon proof of arriving by transit. Since the Refuges are all free of charge, this is not an option. The Complex can, however, work with its partners to provide a reduced cost for their services, like reduced entry fees at the Living Coast Discovery Center, Border Field State Park, or the Cabrillo National Monument. This promotes transit ridership and visitation to additional public lands and education opportunities.

Make Transit Information Available at the Refuges

MTS Route map and schedule pamphlets for those routes that serve the Refuge should be provided at each of the Refuges. The pamphlets are available from MTS and should be displayed in the following locations:

- Tijuana Slough Visitor Center;
- SDNWRC Headquarters office at the SMU;
- The visitor parking lot at the SMU; and
- Any kiosk on Refuge property or kiosk along trails that lead to Refuge property.

In addition to the MTS maps, the Complex should provide its “Guide for Arriving by Bike and Transit” in the same locations.

Promote Transit Access to Employees

The Department of the Interior provides employees with transit benefits of up to \$130 dollars if they commute by transit to work. Information on the program can be found here: http://www.doi.gov/ofas/support_services/transportation_subsidy.cfm. Promoting the program and providing additional benefits could entice employees to leave their cars at home and take transit instead.

The Complex must consider the quality of the connection between the transit stop and the employee’s actual place of work. For example, employees who work in the Complex Headquarters Office at the SMU are required to take the shuttle into the office. Therefore, for employees to take advantage of this opportunity, they would have to arrive or leave during the operating hours of the shuttle or make arrangements with other Refuge staff to be picked up at the Refuge entrance.

3.2 Bicycle System

Bicycling is an affordable, environmentally conscious, and fun way to access the Refuges in the Complex. Adequate bicycle facilities provide a great opportunity for neighboring residents to visit the Refuges without the need for a privately owned vehicle. Bicycling also helps contribute to protection of wildlife and habitat by reducing the need for parking on Refuge property.

It is a goal of the Complex to improve its connection to neighboring under-served communities. Bicycle facilities provide the most equitable opportunity for people to access the Refuges. This section will look at the existing regional bicycle facilities, including on-street and off-street paved facilities, and provide recommendations the Complex can pursue in partnership with SANDAG, Caltrans, San Diego County, and the neighboring municipalities to better connect the Refuges with their neighboring communities by bike facilities. Specific bicycle facilities on Refuge property are addressed in chapter 4.

Bicycle Definitions

Bicycle facilities are generally referred to by three different classes. Classifications can vary slightly depending on the municipality, but generally, the three classes can be described as:

- *Class I – Bike Paths:* Also called multi-use paths, shared-use paths, or bikeways, bike paths are paved rights-of-way for bikes, pedestrians, and other non-motorized forms of transportation. They are completely separated from vehicle traffic and are generally developed at a regional scale, ideally providing connections between different communities within the region.
- *Class II – Bike Lanes:* Bike lanes are striped and signed facilities within the roadway. They are designated exclusively for bicycles and may or may not be separated from vehicle travel lanes by a buffer. Bike lanes can be on either side of vehicle parking and may be one-way or bi-directional.
- *Class III – Bike Routes:* Bike routes are signed facilities that share the lane with vehicles on the roadway. They are signed and have decals on the pavement to remind all users that the lane is shared (sharrows). Bike routes are usually provided on slower, local streets to connect to bike paths or bike lanes.
- *Unpaved Trails:* Off-street facilities that are either earth, crushed stone, decomposed granite, or any other material that is not pavement or cement.

It should also be noted that not all bikes can be ridden on all facilities. Some bikes can easily be ridden on unpaved, hilly, or obstructed paths, while others can only be ridden on smooth, paved surfaces. There are many different types of bikes, but for simplicity, in this document, only mountain bikes and road bikes will be used:

- *Mountain Bikes:* Intended to be ridden on unpaved off-street facilities, mountain bikes have wide tires, suspension, lower gears, and other components that make them safe for riding on various surfaces and topography, and
- *Road Bikes:* Intended to be ridden on paved facilities, road bikes have narrow tires, no suspension, and higher gears intended for higher speed.

3.2.1 Existing Conditions

In its most recent Regional Bike Plan, *Riding to 2050*, SANDAG has placed an increased importance on providing bicycle facilities and programs to increase bicycle mode share in the San Diego region. According to the plan, there were 1,340 miles of regional bicycle facilities in 2010. The network of bicycle facilities proposed in the plan would increase that number by 515 miles. Those 515 miles are the region's priority corridors that cross community boundaries, creating a comprehensive bicycle transportation network (not including local facilities) (SANDAG, 2010).

In addition to the regional corridors, SANDAG also provides funding through competitive grants to the region's municipalities and the County, to pursue their own bike plans and projects.

The quality and quantity of bicycle facilities adjacent to the Refuges varies greatly. The construction and maintenance of facilities are mostly the responsibility of the municipalities that own the roads. Most of the municipalities in the scope of the MMTP and the County also have their own bike plans, showing that providing safe, convenient, and enjoyable bicycle facilities is a priority in the region.

This section looks at the regional bikeways that provide access to the Refuges, the local on-street bike facilities by jurisdiction, and the relationship between bike facilities and other modes of transportation. See Figure 5 for a map of the current bicycle facilities in the region.

Regional Bikeways

As mentioned before, both on-street and off-street bike facilities currently provide access to the Refuges. Figure 5 represents the existing bike facilities as of December 2014. There are two Class I, off-street bikeways in the area that provide access to the Refuges: the Bayshore Bikeway and the Sweetwater Bikeway.

Bayshore Bikeway. The Bayshore Bikeway is a 24-mile bikeway route around San Diego Bay (shown in Figure 6). Planning efforts for the bikeway began in 1976 and the most recent update to the Bayshore Bikeway Plan was completed in 2006. Per the Bayshore Bikeway Plan, the main goal is to complete an entirely off-street bikeway around San Diego Bay (Alta Planning + Design, 2006). Currently the bikeway consists of approximately 12 miles of off road bike paths and 12 miles of bike lanes or bike routes. To complete the circuit between Coronado and downtown San Diego, the Bikeway users can take the San Diego-Coronado Ferry across the north end of the Bay, as indicated in Figure 6.

Most of the Class I facilities are on the west and south side of San Diego Bay. The east side of the Bay has several miles of Class I facilities, but most of the route is on-street, either as Class II bike lanes or simply a recommended route on roadways. The Bayshore Bikeway Working Group (a SANDAG committee) and all of its partners continue to work on planning and constructing off-street facilities on the east side of the Bay.

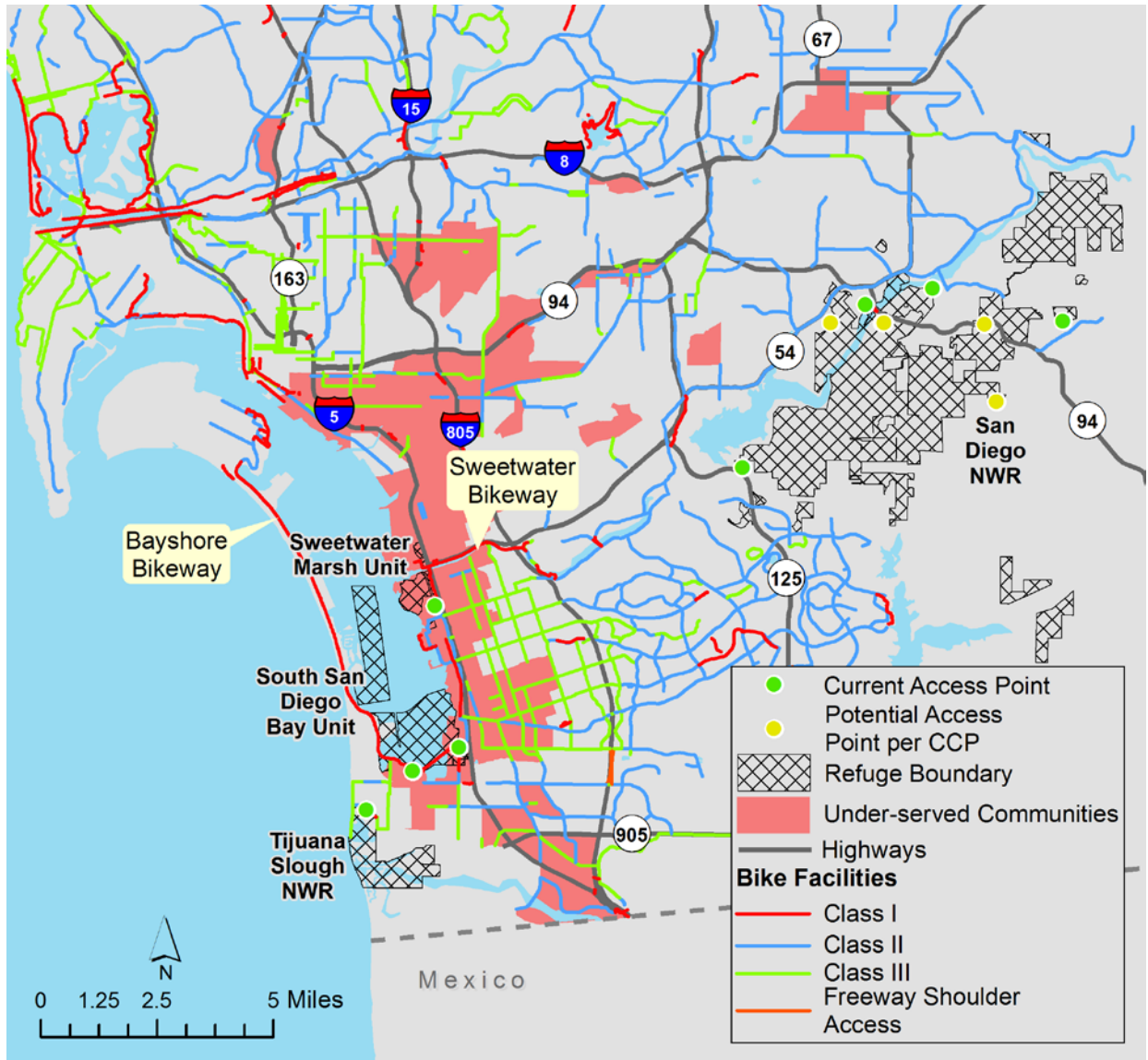




Figure 6. Bayshore Bikeway Map of Existing and Planned Facilities, 2014

Source: SANDAG: http://www.sandag.org/uploads/projectid/projectid_63_17456.pdf

Much of the Bikeway is built on historical train tracks with additional planning efforts underway to convert more of the unused rail to trail. Another significant development of the Bikeway is being planned just south of the E Street entrance to the Sweetwater Marsh Unit of the San Diego Bay NWR, between J and E streets.

The Bikeway is constructed using Federal, State, and local funds, including the regional TransNet half-cent sales tax administered by SANDAG, and collaboration from private and public landowners (SANDAG, 2014).

The Bayshore Bikeway Plan contains design standards to improve safety, continuity, and recognition of the Bikeway, but many areas on the east side of the Bay do not yet meet the standards.

Sweetwater Bikeway. The Sweetwater Bikeway is a 3.3 mile Class I facility that runs east-west on the north side of the Sweetwater Channel. It connects with the Bayshore Bikeway at the junction of I-5 and SR-54 in the City of National City, just north of the entrance to the Sweetwater Marsh Unit. From there it runs east, where it currently terminates at the intersection of Plaza Bonita Road and Bonita Road. See Figure 5 for a map of the Sweetwater Bikeway.

The SANDAG Regional Bike Plan, *Riding to 2050*, identifies the Sweetwater corridor as a regional priority. The “corridor” includes a Class II facility that runs east-west on Bonita Road from the intersection of Plaza Bonita Road and Bonita Road to the I-125 and onto the SR-54 (SANDAG, 2010). There appears to be support at the City of Chula Vista and the County for evaluating the potential for a Class I facility through this corridor. Refuge staff should continue to coordinate with the City and County as they move forward with their evaluation.

Bicycle Facilities by Jurisdiction

As with the regional bikeways, each municipality is responsible for the bike facilities within its borders and the County is responsible for other bike facilities in the unincorporated areas. This section summarizes the existing bike facilities in neighboring municipalities and adjacent unincorporated areas.

National City. National City completed its *National City Bicycle Master Plan* in 2011. Currently, there are only 4.7 miles of bicycle facilities in the city, which consist primarily of the Sweetwater Bikeway (Alta Planning + Design, 2011). The city has planned an additional 33.9 miles of facilities that will connect the community to the Bayshore Bikeway and Sweetwater Bikeway, the two bicycle facilities that best connect to the Refuges (Alta Planning + Design, 2011). For a map of National City’s planned bike facilities, please see Appendix A.

Chula Vista. Chula Vista currently has approximately 140 miles of bicycle facilities, some of which provide access to one or more of the Refuges. The 2011 Bikeway Master Plan Update calls for an additional 6.77 miles of Class I, 11.25 miles of Class II, and 33.43 miles of Class III throughout the City (KTU+A Planning and Landscape Architecture, 2011). The current and planned bike facilities are spread throughout the city; however,

west of the I-805 the facilities consist primarily of Class III bike lanes and east of the I-805, they are primarily Class II facilities. The city also has plans to complete its section of the Bayshore Bikeway along the western portion of the city, and a north-south Class I bikeway that runs parallel to I-805 between Bonita Road and Telegraph Canyon Road. For a map of Chula Vista's planned bike facilities, please see Appendix B.

The city has an additional plan to develop bicycle and trail facilities that connect the city's outdoor green spaces, including parts of the Refuges. Please see Appendix C for a map of the Chula Vista Greenbelt Master Plan.

Imperial Beach. The City of Imperial Beach currently has approximately 1.4 miles of Class I, 0.7 miles of Class II, and 3.9 miles of Class III bike facilities. The City of Imperial Beach Bicycle Master Plan, released in 2008, calls for a total of 2.15 miles of Class I, 4.86 miles of Class II, and 7.75 miles of Class III (KTU+A Planning and Landscape Architecture, 2008).

The city has already completed its section of the Bayshore Bikeway. Additional planned Class II bike lanes include east-west facilities on Palm Avenue and Imperial Beach Boulevard, and a north-south bike lane on 13th Street. For a map of Imperial Beach's planned bike facilities, please see Appendix D.

The city is also working to complete the Imperial Beach Ecoroute, a designated bike route that connects the ecological assets of the city. Currently, all of the bike facilities are installed, but the city has not yet finished its wayfinding signage, interpretation element, or the green pavement stripping along the route, as indicated in its bicycle plan. The alignment of the Ecoroute is shown in yellow on map of recommended bicycle facilities for the Imperial Beach provided as Appendix D.

City of San Diego. The City of San Diego currently has approximately 81 miles of Class I, 326 miles of Class II, and 131 miles of Class III bike facilities. The City of San Diego Bicycle Master Plan calls for a total of 166 miles of Class I, 450 miles of Class II, and 284 miles of Class III facilities (Alta Planning + Design, 2013). See Appendix E for a map of planned bicycle facilities in San Diego.

The completion of the Bayshore Bikeway is the most important bike facility that connects residents in the City of San Diego to the Refuges. There is a small segment of additional bikeway that runs between the Bayshore Bikeway, at the intersection of Main Street and Frontage Road, and the north end of Saturn Boulevard. This is a vital link that connects the under-served communities in Imperial Beach and south San Diego to the Bay.

Unincorporated San Diego County. The Board of Supervisors adopted the San Diego County Bicycle Transportation Plan in 2008. The plan was written to serve as a policy document to guide the development and maintenance of a bicycle network, support facilities and other programs for the unincorporated portions of San Diego County (Alta Planning + Design, 2008). The county is divided into "Community Plan Areas," each of which has their own section in the County Bicycle Transportation Plan.

The following Community Plan Areas border the San Diego NWR (neither of the other Refuges border unincorporated county):

- Sweetwater
- Spring Valley
- Valle de Oro
- Crest-Dehesa
- Jamul-Dulzura

The County Bicycle Transportation Plan recommends implementation of many bicycle facilities in each of the Community Plan Areas.

3.2.2 Needs

As municipalities in the region continue to enhance their bicycle facilities, it is important for the Complex to establish a connection with the bicycle network, prioritizing connections to Class I facilities. On a regional scale, the Complex would benefit from better connections to the Class I Bikeways that act as corridors providing access to visitors further away. On the local scale, the biggest need is to provide adequate last-mile and end-of-trip facilities, like bike racks, water bottle refill stations, and bike repair tools.

In addition to the bicycle facilities themselves, there is also a need for enhanced safety measures. Signs, fences, lighting, striping, and ongoing bikeway maintenance contribute to the safety and quality of a visitor's experience if arriving by bike.

3.2.3 Recommendations

The following recommendations can be pursued in coordination with partners to enhance the quality of bicycle facilities that provide access to the Refuges. Providing safe, comfortable, and highly visible bicycle facilities will show visitors that arriving by bike is an option worth considering.

Increase and Improve Bicycle Parking

Secure bicycle parking is a critical piece to a functioning bicycle network. It allows people to arrive by bike with minimal concern for the security of their bicycle while they are enjoying the resources present on the Refuge. Fear of theft is likely to reduce a visitor's willingness to access a Refuge by bicycle. Bicycle parking also shows people that arriving by bike is an option, and that the Refuge staff support that mode choice. The Complex does have a few bike racks installed, but creating a seamless bicycle network would require additional bike racks. The two most important things to consider when installing bike racks are the location and the type of bike rack. See Figure 7 for examples of good and bad bike racks.



Figure 7. Bike Rack Styles

Listed below are items that should be considered when choosing a location for installing bike racks:

- Avoid forcing cyclists to ride through parking lots, which could be dangerous;
- Locate racks near, but out of the way of, the bicycle facility that provides access;
- Make sure bike racks are visible from the bicycle facility that provides access;
- Locate racks in highly visible areas to lessen chance of theft;
- Locate racks near the final destination (e.g., trailheads, visitor centers), as people will be looking for parking there;
- Include way finding signage to the bike rack and at the bike rack;
- Make sure that accessing the bike rack does not require riding over difficult surfaces or jumping a curb; riders should be able to ride directly to the bike rack from the existing bicycle facility; and
- Locate rack in locations that are well lit.

Listed below are items that should be considered when choosing a style of bike rack:

- The rack design can accommodate a U-lock to secure the bike (the rack tubes should not be too thick);
- The bike frame and at least one wheel can be locked onto the bike rack;
- The rack can be secured to the ground;
- The rack is made of a strong material that cannot be easily broken or disassembled, square, as opposed to round, tubing is safer;
- The rack should have no sharp edges or bolts that might scratch a bike;
- The rack design should not allow bikes to touch one another in order to prevent broken spokes, bent wheels, or otherwise damage;
- A wheel cradle is provided to prevent bikes from falling; and
- Where salinity can result in rack corrosion, the rack should be coated in plastisol.

High Priority Locations. Presented below are the highest priority locations for providing bike racks on the Refuges. Included on this list are sites where high quality racks already exist and where existing bike racks should be improved.

San Diego Bay NWR - Sweetwater Marsh Unit

- Visitor Parking Lot (current bike rack does not support locking the bike frame to the rack with a U-lock)
- Shuttle drop off area in front of Living Coast Discovery Center (current bike rack is not attached to the ground and does not support locking the bike frame to the rack with a U-lock)

San Diego Bay NWR - South San Diego Bay Unit

- Staging area at Main Street and Frontage Road (existing)
- North end of 7th Street in Imperial Beach
- North end of 10th Street in Imperial Beach (current bike rack does not support locking the bike frame to the rack with a U-lock)
- North end of 12th Street in Imperial Beach (existing)
- North end of 13th Street in Imperial Beach

Tijuana Slough NWR

- South end of Seacoast Drive
- 3rd Street and Imperial Beach Boulevard
- Tijuana River Estuary Visitor Center (current bike rack does not support locking the bike frame to the rack with a U-lock)
- West end of Grove Avenue in Imperial Beach

- West end of Iris Avenue in Imperial Beach
- Parking lot for Border Field State Park

San Diego NWR

- County parking lot near the old steel bridge on SR-94
- Parking lot on Jamul Drive
- Trailhead at Par 4 Drive
- Trailhead off of Proctor Valley Road
- All future trail heads and access points

Improve Access to the Refuges by Supporting Regional Bicycle Facilities

As neighboring municipalities and the County continue to develop their bicycle infrastructure, Refuge staff should stay informed of their progress and provide support for the development and/or improvement of bicycle facilities that provide access to existing access points on the Refuges. For example, the Sweetwater Bikeway (also known as the Sweetwater River corridor) is identified as a priority bicycle facility and corridor to connect east county with San Diego Bay in three bicycle plans: the Riding to 2050: San Diego Regional Bicycle Plan, the San Diego County Bicycle Transportation Plan, and the City of Chula Vista Bikeway Master Plan. The Complex also considers the facility and corridor as the best way to connect the San Diego Bay NWR with the San Diego NWR by bicycle. The Complex supports a paved facility along the entire corridor, connecting the two Refuges, to provide a bicycle transportation facility that is accessible to riders of all skill levels on any type of bicycle.

The Complex has already begun working with the County of San Diego and the City of Chula Vista to identify the feasibility for and potential alignment of this facility. Together, the three agencies considered applying for a Federal Lands Access Program Grant for the 2015 cycle, but decided not to move forward this year as more time is needed to develop a design and receive public input. A brief description of this project is included as Appendix F. The Complex should continue to work with the County and the City of Chula Vista to study the feasibility of extending the Sweetwater Bikeway east to the SDNWR. The Complex should also assist in seeking potential ways to fund the project, if it moves forward.

Implement a Bike Share Program

A bike share program in the region and on the Refuge would increase the potential for residents and visitors to travel to, and where bicycling is a compatible use of a Refuge travel on, the Refuges in San Diego County.

DECOBIKE. In fall of 2014, the City of San Diego launched its first bike share program, DECOBIKE. The main purpose of the program is for bicycle transportation, and could be a great way for the Complex to promote arriving by bicycle, especially to tourists or other individuals who may not have a bicycle. Having a DECOBIKE station could also benefit Refuge staff, who would be able to use bikes for work related activities (e.g., attending meetings, site visits, visitor contact).

Although this is a City of San Diego program, and stations are currently limited to downtown and communities surrounding Balboa Park, the Complex should consider requesting stations if the program expands into areas near the Refuges. DECOBIKE will likely only consider stations that are within a half hour ride of other stations, and along routes that are highly used by bicyclists.

If DECOBIKE denies a request for a station on Refuge property, the Complex can choose to partner with adjacent land owners to request bikes in locations that will still serve the Refuges. Examples could include the E Street Trolley Station, any location along the Bayshore Bikeway, and commercial/tourism areas in Chula Vista, National City, and Imperial Beach.

Refuge-owned Bicycle Share Program. The Complex should also consider running its own bike share programs on Refuges that have a high demand for bicycle riding. For example, if the SDNWR develops a visitor contact station, it could implement a bike share program that would be managed out of the visitor contact station.

Create New Access Points Where Bicycle Facilities Already Exist

In some cases, it may be easier to create a new access point to a Refuge where high quality bicycle infrastructure already exists, rather than working to develop new bicycle infrastructure to access an existing entry point. The Complex should continue to analyze bicycle facilities as they are developed, and consider the creation of new access points, as these facilities reach the boundaries of the Refuges.

Improve Connection to Transit and Pedestrian Facilities

A superior transportation network is one in which people can transition between modes of transportation seamlessly. People arriving by bike may make part of their trip by transit and the remainder by bike. In these cases, it is important to provide facilities that make the transition between modes as easy as possible. The following items should be pursued to provide the best connections:

- Provide bike racks at all transit stations and bus stops;
- Provide bike racks on all transit vehicles;
- Provide bike racks where one is expected to leave their bike and start walking;
- Provide curb-cuts where bicycle facilities transition to sidewalks; and
- Minimize the need to carry a bicycle by providing at-grade transitions (or elevators/escalators at major transit facilities, if necessary).

Promote Bicycle Use by Visitors to Access the Refuges

Maps, brochures, and posters should be prepared to encourage Refuge visitors to arrive by bike. In addition, individual Refuge websites should provide links to regional bicycle maps allowing visitors to identify the best bicycle routes for accessing the Refuge.

These maps include:

- SANDAG Regional Bike Map:
 - To order print version - <http://www.icommutesd.com/Commuters/OrderForm.aspx>
 - For PDF - <http://cisl.edu/downloads/san-diego-bike-map.pdf>
- Imperial Beach Ecoroute:
 - http://www.imperialbeachca.gov/index.asp?Type=B_PR&SEC=%7B70AE3D7F-AE06-4F3C-B3E3-0A0362B126DE%7D&DE=%7BBCC719A4-A2B1-409E-B9E4-1877918DE25D%7D
- Chula Vista:
 - <http://www.chulavistaca.gov/departments/public-works/environmental-fiscal-sustainability/conservation/bicycling-alternative-transportation>

Information about the location of bicycle racks that can be used while visiting specific areas of a Refuge should be included on the website and in brochures.

Special guided bicycle tours that travel within or around the Refuges and include stops for viewing and interpreting plants and wildlife could be offered to encourage access to the Refuge via bicycle. Tour routes might include other nature related stops such as the Living Coast Discovery Center, Border Field State Park, or Cabrillo National Monument, where reduced entry fees could be applied to those accessing these areas by bicycle.

Promote Bicycle Access to Employees

The Department of the Interior provides employees with the opportunity to join the Bicycle Subsidy Benefit Program. This Program reimburses employees for bicycle expenses if they commute 50% of the time by bicycle. Information about the program can be found here: <http://www.doi.gov/ofas/bicycle-subsidy-benefit-program.cfm>. Promoting the program and identifying additional benefits of riding to work could lead to more staff commuting by bicycle.

Inform the Public of Opportunities to Bike on the Refuges

Where bicycling is a compatible use on a Refuge, the Complex should develop a map of those trails open to bicycles, along with general rules of conduct to follow when biking on the Refuge. The Complex should make printed maps available at visitor centers and/or trailheads, as well as provide them electronically on the Refuge websites.

3.3 Non-Motorized Regional and State Trails

The three National Wildlife Refuges in San Diego County are located in proximity to many regional non-motorized trails. Also referred to as multi-use trails, these unpaved, off-street trails are intended primarily for recreation purposes, including hiking, biking, and horseback riding. Many are near, or extend onto, Refuge property, providing an opportunity for the Refuges to become a part of the larger network of recreational trails and public lands.

3.3.1 Existing Conditions

There are three regional trails and two state trails located in the vicinity of the Refuges. The following sub-sections explain the existing conditions of each trail.

Sweetwater River and Loop Trail

The Sweetwater River and Loop Trail (SRLT), a County regional trail, runs along the Sweetwater River from the intersection of Plaza Bonita Road and Bonita Road to the intersection of Jamacha Road and Willow Glen Drive, a distance of approximately 11 miles. The trail runs through the City of Chula Vista and unincorporated communities of San Diego County, and extends through the San Diego NWR within a route that parallels the Sweetwater River. A map of the Sweetwater River and Loop Trail is available at the Sweetwater Summit Regional Park website (<http://www.sandiegocounty.gov/parks/Camping/sweetwater.html>).

The western end of the SRLT connects with the Sweetwater Bikeway, which continues west toward the Bayshore Bikeway and the entrance of the SMU. The SRLT is the principal access route into the southwestern portion of the San Diego NWR.

The eastern end of the SRLT currently terminates at the intersection of Jamacha Road and Willow Glen Drive, but the County's Community Trails Master Plan proposes that the trail continue along the Sweetwater River to the point where it intersects with the California Riding and Hiking Trail. A final alignment for this portion of the trail is still being studied by the County. The trail could extend along Dehesa Road, where the River bends to the east, and ultimately up Sloane Canyon Road to its connection with California Riding and Hiking Trail (San Diego County Department of Parks and Recreation, 2009). There is some potential for a portion of the SRLT to extend through the SDNWR in the vicinity of McGinty Mountain.

This trail is well-used, especially in the area around the Chula Vista Golf Course. Many people run and walk around the loop that circles the golf course. It is also a very popular trail among the equestrian community, especially in the area around the Sweetwater Summit Park. The conditions along the SRLT vary greatly. In some areas, the trail is compact earth or crushed stone. In other areas, particularly in the riverbed west of the San Diego NWR, the trail is sandy and difficult to pass on bike. Although the trail does have some directional signage along its 11-mile route, much of it does not. There are many formal and informal trails that spur off of the main trail without any signage. It is very easy to lose your way if you are not familiar with the area.

There are several staging/parking areas along the trail that provide free parking to trail users during operating hours. Some are equipped with toilets. The Sweetwater Summit Campground, located to the southwest of the San Diego NWR, provides camp sites and other recreational facilities. The County parking area at Singer Lane, off of Highway 94, provides access to the portion of the trail that extends through the San Diego NWR.

Otay River Valley Regional Trail

The Otay Valley Regional Trail (OVRT) is an unpaved, multi-use trail that runs east/west along the Otay River between the Bayshore Bikeway (at the Main Street access point to the SSDBU) and the I-805, approximately 3.5 miles in length. The trail crosses through the City of Chula Vista, the City of San Diego, and unincorporated communities of San Diego County. Maps of the existing and proposed trail system are provided as Appendix G.

The western end of the OVRT connects with the Bayshore Bikeway, providing an opportunity for trail users to reach both the SSDBU and the SMU. The eastern end of the trail currently ends at I-805. The County plans to extend the trail eastward to the Otay Lake County Park, and ultimately to the California Hiking and Riding Trail. The trail passes through under-served communities in southern Chula Vista and the southern portion of the City of San Diego, and provides direct access onto the SSDBU at the trail's western terminus.

The trail is made of compact crushed stone, and although it provides a good surface for hiking and mountain biking, it is not ideal for road bikes. Several staging areas, including two located just west of I-5 adjacent to the SSDBU, are provided along the length of the trail that offer free parking to trail users.

Tijuana River Valley Regional Park

The Tijuana River Valley Regional Park is a 1,698-acre county park that lies just east of the TRNWR. It contains 22.5 miles of trails, offering several loops within the park. To the west, the trails connect to the trail system in Border Field State Park and the southern portion of the TSNWR. To the east, the trails terminate on residential streets in the under-served communities of Nestor and San Ysidro. Go to the TRVRP website for more information and a map: <http://www.sandiegocounty.gov/parks/openspace/tjrv.html>.

The trail treads consist of compact crushed stone, and although it provides a good surface for hiking and mountain biking, it is not ideal for road bikes. Several staging areas provide free parking to all trail users during operating hours.

California Coastal Trail

The California Coastal Trail (CCT) is a network of public trails for walkers, bikers, equestrians, and others along the 1,200-mile California coastline. Per its website, the trail is about half complete. In some areas, the trail is a unique facility; in other places the trail overlaps local facilities, utilizing existing trails, sidewalks, and beaches.

Although the trail is not yet complete, its importance has been recognized and a resolution passed by the State legislature in 2000 (ACR20). The legislation declared that the CCT is an official State trail, and mandated its completion (California Coastal Trail Fact Sheet, 2008). Also in 2000, the CCT was declared a Millennium Heritage Trail by President Clinton.

Coastwalk California, the primary non-profit organization that advocates the completion of the trail, works closely with the California Coastal Conservancy, California State Parks, California Coastal Commission, and many other partners to turn the vision of a completed California Coastal Trail into a reality.

Through San Diego County, the trail runs south along the coast and into downtown San Diego. Here hikers take the Ferry to Coronado. From Coronado the trail designation is along the beach and/or the Bayshore Bikeway, as it crosses the Silver Strand. Once it enters Imperial Beach, the CCT follows the beach south, onto the Tijuana Slough NWR.

The CCT is essentially complete in the region, but because crossing the inlet between the ocean and the Tijuana River is generally impassable, for users to reach the last 1.3 miles located between the Tijuana River and the international border, they would have to hike around the entire Refuge, enter Border Field State Park to the south of the Refuge, and then continue south along the beach to the border.

The portion of the Bayshore Bikeway that extends around the south end of San Diego Bay is also considered a segment of the CCT and when completed, the Bayside Birding and Walking Trail will also be designated as a part of the CCT.

California Riding and Hiking Trail

In 1945, the State Legislature passed the California Riding and Hiking Trail Act, which called for a 3,000-mile trail loop that would run from the border of Mexico, north to Oregon, and then south again. Although much of the trail was never completed, and many segments have been paved or built over, San Diego County is still working to restore historic portions and complete new sections of this trail. The Community Trails Master Plan states that this trail “represents the best opportunity to connect the incorporated southwest with the unincorporated northeast portions of San Diego County” (San Diego County Department of Parks and Recreation, 2009).

Segments of the trail are present between Otay Lakes and Cuyamaca Rancho State Park. The trail runs several miles east of the San Diego NWR. At this time, the County of San Diego is the main agency working on completing sections of the CRHT in the region.

3.3.2 Needs

The Refuges in San Diego County can benefit from the opportunity to be connected to a diverse and interconnected system of regional trails; however, facilities and signage enhancements need to be made to improve the connection between the Refuges and the existing trail systems. In other locations, existing facilities need to be extended to make these connections.

3.3.3 Recommendations

The following recommendations should be pursued in coordination with partners to ensure that the Refuges are connected to the region's non-motorized regional and State trail system. These are general recommendations intended to address connectivity to the non-motorized trails. Specific recommendations on the Refuge/Unit level are found in chapter 4.

Connect Refuges to Regional and State Trails

Each Refuge should work with the respective partners detailed above to ensure that the regional trails connect to the Refuges. This may require building connecting trails on Refuge land, other public land, or via easements obtained by the County through private property.

In some cases, informal trails provide connections to the Refuges, but these connections must be evaluated to determine how their formal extension into a Refuge could affect refuge resources, as well as the effect they may have on the adjacent parcels. Before establishing formal connections to lands outside a Refuge, coordination and agreements with adjacent landowners and the entities responsible for the long term maintenance of the trails must occur.

Connect Under-served Communities to Regional and State Trail Systems

The Complex should encourage the County and local municipalities to establish non-motorized trail connections between under-served communities and existing and propose regional and State trail systems. This may involve constructing trail spurs from existing facilities to that make the connections. For example, when completed, the Chollas Creek Trail will provide a connection between existing under-served communities and the Bayshore Bikeway. This connection would enable residents to travel to the Sweetwater Marsh and South San Diego Bay Units via an established interconnected trail system.

Trail Identification and Directional Signage

The Refuges should work with partners to ensure that trail signage is uniform and allows for a seamless experience for trails users. Regional and State trails that extend through a Refuge should include the Refuge name and logos on sign posts and provide distances to trail intersections and points of interest within the Refuge and beyond. At each trailhead, a map of Refuge trails and connecting trails should be provided.

Regularly Update Trail Maps

Refuge printed trail maps and websites should be regularly updated to reflect the establishment of any new segments of trail connecting to or occurring within a Refuge or any necessary trail closures. The website should also be updated as necessary to reflect changing conditions on a trail or trail segment. The Complex should also work with partners to ensure that their trail maps and promotional materials accurately reflect appropriate access onto the Refuge, including accurate representation of where Refuge trails connect to regional and State trails.

3.4 Pedestrian System

Whether arriving by bus, vehicle, bicycle, or directly on foot, every visitor to a Refuge will use pedestrian facilities, and providing safe facilities that improve access to visitors is a priority of the Complex. Providing this “last-mile” connection to all other transportation systems is a key component to improving access to the Refuges.

This section provides an overview of the existing pedestrian conditions approaching each Refuge, assesses the pedestrian needs, and provides recommendations to meet them.

3.4.1 Existing Conditions

The three Refuges in San Diego County are among the most urban Refuges in the entire National Wildlife Refuge System. The Refuges are surrounded by low to high density development, and are in walking distance for many residents. Many visitors to the Refuges are from within surrounding communities.

Each of these Refuges has a varying quality of pedestrian facilities that approach Refuge access points. In some areas there are sidewalks complete with curb-cuts and crosswalks, allowing safe access to all visitors, including those that are mobility impaired. In other areas there are currently no pedestrian facilities.

The following sub-sections give an overview of pedestrian accessibility to each Refuge. Each section focuses on existing residential development within a 0.5 mile radius, because most visitors will be coming from residential areas. Each section also focuses on the pedestrian connection between transit stops and Refuge access points.

Sweetwater Marsh Unit

The only access point for the SMU is at the intersection of E Street and Bay Boulevard. There is very little residential development within a half-mile radius. While E Street does have sidewalks, several intersections do not have crosswalks, and some do not have curb-cuts, making conditions unsafe and inaccessible for some visitors. The most important connection is between the E Street Trolley Station and the visitor parking lot at the current western terminus of E Street. This corridor is where most visitors arriving by foot will enter.

South San Diego Bay Unit

Currently, the SSDBU is only accessible to pedestrians along the southern edge (viewing opportunities along the Bayshore Bikeway), and the access point at Main Street and Frontage Road. Most of the development within a half-mile radius is residential, especially along the southern end of the Refuge. Most of the streets within the residential areas have sidewalks and crosswalks, but some areas are less developed than others. The Main Street access point accommodates pedestrian access to the Refuge via the Bayshore Bikeway, the bike path that extends south along the Refuge to Saturn Boulevard, and the western terminus of the Otay River Valley Trail.

The most important pedestrian access onto the Refuge from transit stops include:

- The connection between bus routes that run along Palm Avenue (933/934 and 901), and the viewing areas along the Bayshore Bikeway;
- The connection between bus route 932, which runs along Main Street, and the access point on the western end of Main Street;
- The connection between the Palm Avenue Trolley Station and the Otay Valley Regional Trail that intersects Hollister Avenue north of the trolley station; and
- The connection between the Palm Avenue Trolley Station and the access point at the northern end of Saturn Boulevard.

Tijuana Slough NWR

Currently, the northern portion of the TSNWR is accessible to pedestrians around all three sides north of the Tijuana River. The area within a half-mile radius of the northern portion of the Refuge consists primarily of residential development.

Almost all of the streets within a half-mile of the northern portion of the Refuge have safe and accessible sidewalks and crosswalks; but, in many cases the last connections to the Refuge access points are the weakest (missing curb-cuts or crosswalks).

The most important pedestrian access is between transit stops and access points including the connection between:

- Bus route 933/934 and the southern end of Seacoast Drive;
- Bus route 933/934 and the access points at the intersection of 3rd Street and Imperial Beach Boulevard and the Tijuana Estuary Visitor Center; and
- Bus route 901 and the access points at the intersection of 3rd Street and Imperial Beach Boulevard and the Tijuana Estuary Visitor Center.

The southern portion of the Refuge is less developed and the only pedestrian access within a half-mile is the connection to the regional non-motorized trails.

San Diego NWR

The SDNWR is more remote than the other Refuges. There is low-density residential development along the western portions of the Refuge, while the eastern areas consist primarily of undeveloped lands. Currently, pedestrians access the Refuge from many informal access points in residential communities bordering the Refuge.

The only transit service within a half-mile of a formal access point is MTS Bus Route 894, which has a bus stop in the Rancho San Diego Town Center. At present, there are no complete sidewalks or crosswalks between the bus stop and the access point on Singer Lane.

3.4.2 Needs

The most important need for the Refuges is to provide pedestrian facilities that are safe enough for visitors to comfortably access the Refuge by foot. This includes ensuring that the Refuges are accessible to visitors with mobility limitations. In order to provide improved access by foot, each Refuge should connect to its neighboring communities within a half-mile, as well as any transit stops within a half-mile.

3.4.3 Recommendations

The following recommendations should be pursued in coordination with partners to ensure that the Refuges are connected to the pedestrian transportation system. These are general recommendations intended to address overall connectivity; specific recommendations on the Refuge/Unit level are found in chapter 4.

Provide Pedestrian Facilities within a Half-mile Radius of Access Points

Studies have shown people are willing to walk between 0.25 and 0.5 miles to a destination. Whether walking directly from home, or from a transit stop, it is important to provide safe, accessible pedestrian facilities within that radius. These facilities should include complete sidewalks, crosswalks, and a seamless connection between facilities on and off Refuge property. The Refuges should also include directional signage and enhanced interpretive and decorative elements in these areas.

Separate Pedestrian Access from Other Transportation Modes

In locations where multiple modes of transportation may be used to access an amenity, the Complex should ensure that pedestrian facilities are separated from other transportation modes to increase pedestrian safety. For example, a sidewalk or trail should be provided around parking areas to avoid conflict between pedestrians and vehicles and automated pedestrian crossing gates should be provided at rail crossings.

Another item to consider in designing pedestrian access is the length and direction of the path. People generally prefer to walk in a straight line when they can see their destination. Providing the shortest, most direct route will reduce the likeliness that visitors will create redundant paths that disturb habitat.

Improve Crosswalks

These items should be considered for all crosswalks to improve access and safety:

- Curb bulb-outs to reduce distance in street;
- Curb-cuts to transition between different sidewalk/pavement heights;
- Signalized vs. non-signalized intersections;
- Approaching crosswalk warning signage for pedestrians, drivers, and all users of the intersection;
- Striping across the pavement;
- Tactile paving to alert visually impaired pedestrians of the intersection; and
- Equestrian push-button signal actuators at intersections (where appropriate).

4. Refuges – Existing Conditions, Needs, and Recommendations

Because access to each Refuge/Unit is unique, this chapter examines facilities adjacent to the Refuges and facilities on Refuge property. For each Refuge/Unit, the MMTP presents the existing conditions, describes individual needs, and makes recommendations to improve safety, accessibility, and the visitors' experience.

4.1 San Diego Bay National Wildlife Refuge - Sweetwater Marsh Unit

The SMU is the smallest unit in the Complex with a total of 316 acres (Figure 8). It consists of multiple noncontiguous pieces of property on the east side of San Diego Bay near the junction of SR-54 and I-5. Paradise Marsh, north of the Sweetwater River flood control channel, is within National City, while the rest of the Refuge is within the City of Chula Vista.

4.1.1 Existing Conditions

Shown in Figure 9 is Gunpowder Point, the area of the SMU open to the public. This area includes several visitor amenities including the Complex headquarters, walking trails, interpretive panels, a bird blind, and an education room. From this point forward, the collection of visitor amenities will be referred to as "amenities." Also located on Gunpowder Point adjacent to the Refuge Complex headquarters building is the Living Coast Discovery Center, a non-profit aquarium and zoo with interactive exhibits and programs that "inspire care and exploration of the living Earth by connecting people with coastal animals, plants and habitats" (The Living Coast Discovery Center, 2015).

Gunpowder Point is an area of natural upland surrounded by coastal salt marsh; essentially an island which can only be accessed by a single lane road that connections the uplands to the east to the SMU via small bridges and a levee. To minimize disturbance to shorebirds and waterfowl that forage within the marsh, visitors are not allowed to walk, bike, or drive on the Refuge access road. Instead, visitor access to the amenities on Gunpowder Point is provided by a shuttle, operated by the Living Coast Discovery Center, which runs between the visitor parking lot at the intersection of E Street and Bay Boulevard and the entrance to the Living Coast Discovery Center. From the shuttle drop-off point, visitors are welcome to explore the Refuge and view the upland, salt marsh, and open bay habitats via an existing system of trails. The shuttle operates between the hours of 10 am to 5 pm seven days week, except certain holidays. Public access to the amenities on Gunpowder Point is only permitted when the shuttle is operating. Vehicle access other than the shuttle on Gunpowder Point Drive is restricted to authorized vehicles only, including vehicles of LCDC and USFWS employees and designated volunteers.



Figure 8. Sweetwater Marsh Unit - Refuge Boundary

Source: San Diego Bay Comprehensive Conservation Plan (USFWS 2006)



Figure 9. Gunpowder Point in the SMU – Current Access and Transportation Systems

Imagery source: USDA National Agriculture Imagery Program, 2014

The visitor parking lot at E Street has space for approximately 60 vehicles and a bike rack that can accommodate about seven bikes. The current bike rack only allows locking the wheel to the rack; it is not secure enough to avoid theft and some bike thefts have been reported. The visitor parking lot is not lit, which can be an issue in the winter when the sun sets before the last bus arrives in the parking lot.

There is a MTS transit station 0.25 miles east of the visitor parking lot. Although the station is close, pedestrian access between the E Street Station and the visitor parking lot is less than desirable. To walk to the Refuge, a visitor must cross the trolley tracks, walk across the E Street/I-5 bridge via a narrow sidewalk, and cross several uncontrolled intersections. Upon request, the shuttle will pick up visitors at the E Street Transit Station but, time added per trip to the station can be as much as 15 minutes, greatly reducing the quality of service.

The Bayshore Bikeway crosses E Street at the entrance to the visitor parking lot. North of the parking lot, the Bayshore Bikeway is an off-street, Class I facility. South of the parking lot, along Bay Boulevard, it is a Class II bike lane. E Street, the only other street that leads to the parking lot, does not have any bicycle facilities.

4.1.2 Existing Plans for Potential Projects

The following plans for potential projects in the area may impact accessibility to the SMU, if implemented. Therefore, the Complex and LCDC should continue to coordinate with the project proponents to achieve a seamless transition between current access conditions and future changes to access that could result from these projects.

Chula Vista Bayfront Master Plan

The City of Chula Vista and the Unified Port of San Diego are in the process of developing site plans for the area directly east and south of the Refuge. The area proposed for redevelopment includes all the area east of the Refuge boundary to the E Street/I-5 off-ramp and south of the Refuge boundary along the eastern shore of San Diego Bay. Implementation of these redevelopment plans would require relocation of the current visitor parking lot.

Plans propose an extension of E Street west of Bay Boulevard. The new roadway would extend west towards the Refuge then curve south and terminate at H Street. The plan also proposes a bayshore loop, a Class I bike facility, that will circulate through the development and connect to the Bayshore Bikeway at the north and south ends of the development. One of the main goals of the project is to allow maximum pedestrian access to the Bay, so the plan includes many enhanced pedestrian facilities, and a gateway experience from the H Street Trolley Station (San Diego Unified Port District, 2012).

The plan also proposes a shuttle route that will circulate through the development, serving the new parking lot, the E and H Street Blue Line Trolley Stations, several MTS bus routes, and downtown Chula Vista.

Currently, there is no timeline for the development, so it is unknown when the parking lot will be moved. For that reason, the Refuge and the LCDC are hesitant to invest a lot of effort or money into the existing lot and entrance. Current plans are to relocate the lot about 0.25 miles to the southwest of the existing lot, along the future extension of E Street. Although the lot will be relocated, entrance to the Refuge and LCDC will continue to rely on the same single lane levee road, and visitor access to the amenities on Gunpowder Point will continue to be provided by the LCDC shuttle.

Elevated Trolley Line

Included in the SANDAG 2050 Regional Transportation Plan is a potential project to elevate the Blue Line Trolley tracks. The grade separation at E Street will drastically improve traffic flow in the area, as vehicles will no longer have to wait for passing trolleys. It will also improve safety as pedestrians, cyclists, and cars will not have to cross the tracks. There is no timeline available for the completion of the project (SANDAG, 2011).

New Trail Loop

The Refuge plans to redesign the existing trail system on Gunpowder Point, replacing the current out-and-back alignment with a loop trail. The trail experience will be enhanced through the addition of new interpretive elements that focus on the resources in and around San Diego Bay. The new trail will still start and finish at the same location and will provide enhanced accessibility for individuals with special needs.

4.1.3 Needs

Access to the SMU is simple in that there is only one way in and one way out; however, there are still some infrastructural and operational needs that can be addressed to improve the facilities used by visitors to access the Refuge. These include lack of connectivity to the regional transportation systems, safety concerns related to pedestrian and bike access to the shuttle stop, ingress and egress issues within the parking lot, and signage issues that make the entrance to the parking lot uninviting and unintuitive to a new visitor.

4.1.4 Recommendations

The following recommendations should be pursued to make the SMU more accessible by vehicle, bike, transit, and foot. This section is divided into low effort and high effort recommendations.

Lower Effort Recommendations

These recommendations can be implemented with minimal partnerships, at a low cost, and in a short time period. Although the parking lot will be relocated in the near future, these recommendations can be implemented easily to improve the visitor experience in the meantime.

Remove Gate that Crosses the Entrance to the Visitor Parking Lot. The large gate in front of the parking lot entrance is no longer used and in disrepair. It confuses drivers entering the parking lot, and provides a false sense of security for bicyclist on the Bayshore Bikeway that may think that the gate is protecting them from traffic. Removing the gate would improve safety, traffic circulation, and appearance of the entrance.

Replace/Add Welcome Signage. At the entrance to the visitor parking lot, welcoming signage is limited to the LCDC; there is no signage for the SMU. Many of the signs displayed read “Chula Vista Nature Center” (the LCDC’s previous name). The Refuge should work with the LCDC to update and improve signage at the entrance to accurately represent the two organizations. Two approaches could be taken:

- Replace the existing signs with one larger sign that includes the names and logos for both the LCDC and the SMU. Joint signage would showcase the strong partnership between the two organizations. The sign can be relocated when the new lot is constructed; and
- If the Refuge or the LCDC would prefer to have separate signage, the Refuge should consider adding its own welcoming signage that is visible from the street and the Bayshore Bikeway.

Install Directional Signage on Major Streets Approaching Access Points. The Refuge should work with local municipalities and Caltrans to install directional signage on roads and highways that approach the access points. Directional signage should be at an appropriate scale for each transportation mode.

Replace Shuttle Stop Sign. The current sign for the shuttle waiting area reads “Nature Center” and includes an outdated phone number and website for MTS. The Refuge should work with the LCDC to replace the sign to accurately name the LCDC and SMU, and include a relevant phone number/website for visitors to get information. An attractive, branded sign will improve the visitor experience.

Add Striping and Improve Signage for the Bayshore Bikeway. From north to south, the Bayshore Bikeway changes from an off-street facility to an on-street Class II bike lane on Bay Boulevard at E Street. Bicyclists must cross the entrance to the parking lot to continue south. Currently, there is no striping on the pavement to guide cyclists and alert drivers that bikes will be crossing the street. The Bayshore Bikeway Plan includes striping and signage standards for intersections that conform to the California Highway Design Manual and the Manual on Uniform Traffic Control Devices. The Refuge should work with the City of Chula Vista and SANDAG’s Bayshore Bikeway Working Group to make the necessary improvements.

The intersection should have yellow striping in the middle of the path and white striping across the entrance to the parking lot. It should also have a sign indicating that Bikeway users are approaching an intersection where vehicles may be turning right and crossing the bikeway. Figure 10 shows an example of adequate striping at a similar intersection along the Bayshore Bikeway at Silver Strand Boulevard and Attu Avenue. (Note: This example shows adequate striping, but still lacks signage.)



Figure 10. Example Striping at Silver Strand Boulevard and Attu Avenue
Photo: Jacob Connor

Restripe Visitor Parking Lot. The striping for the visitor parking lot has faded making it difficult for drivers to understand the traffic flow and parking arrangement. The Refuge should work with the LCDC and the City of Chula Vista to restripe the lot.

Restriping would include yellow center-line striping, white edge-line striping, white parking space striping, white bar at stop signs, and white directional arrows.

If done in coordination with other recommendations in the MMTP, the Refuge and LCDC could redesign the parking lot to improve traffic flow and safety. This could include a relocated shuttle waiting area, and a reconfigured parking lot that moves all traffic in the same direction, reducing bunching at the entrance and conflict between vehicles travelling in different directions.

Replace Bicycle Racks. There are two bicycle racks on the property. One is located behind the shuttle waiting area in the visitor parking lot and the other near the front door to the LCDC. Neither allows for safely locking both the frame and at least one wheel to the rack with a U-lock. Please see section 3.2.3 for recommendations on choosing a bike rack.

Extend Barrier around the Waiting Area. Whether the shuttle waiting area is kept in the same location or moved, the Refuge and LCDC should extend the barrier around the waiting area to prevent people from standing in the street where vehicles pull into and out of the parking lot.

Add a Stop Sign in Visitor Parking Lot. The Refuge should install a stop sign and white stop striping on the pavement between the visitor parking lot and Gunpowder Point Drive. Vehicles leaving the visitor parking lot and turning left onto Gunpowder Point Drive do not have clear visibility of vehicles driving east on Gunpowder Point Drive. The stop sign will reduce the risk of an accident at this site.

Determine Necessity of Existing Stop Sign. There is stop sign located on eastbound Gunpowder Point Drive, just before the signalized intersection. The Refuge should determine the necessity of this stop sign, and remove it if not necessary.

Higher Effort Recommendations

These higher effort recommendations may require more partners, higher costs, and more time to implement, but will improve accessibility to the Refuge by connecting it to the larger transportation systems that serve the San Diego Region. Although these recommendations require more effort on the part of the Refuge, they should still be considered in the short-term as they would improve safety and reduce the risk of an accident at the intersection of E Street and Bay Boulevard.

All of the recommendations can be implemented at the current parking lot or can be incorporated into the design for the new lot. It is important for the Refuge to work with the City of Chula Vista, the Unified Port of San Diego, and specific developers of the Chula Vista Bayfront to ensure that the Refuge is well connected to the facilities that will be built within the development.

Separate Visitor Entrance from Employee Entrance. With the current configuration, visitors and staff enter in the same area, and then visitors are expected to turn right, while staff continue straight, through a gate, onto the Refuge property. This creates

confusion for new visitors who may not be aware that they have to turn right to park, and that entry is not authorized beyond the gate.

A separate entrance for staff will make it much clearer for visitors to know where to park. Also, the reduction of vehicles into the visitor entrance will make it safer for all vehicles entering the property.

The Refuge should also consider providing a separate staff entrance when reviewing design proposals for the new parking lot.

Move Shuttle Waiting Area. The current waiting area for the shuttle is located at the immediate entry point into the parking lot. This location causes backups into the street when the shuttle is parked, and incoming vehicles have to cautiously go around the shuttle and enter the opposing traffic lane. In addition, the shuttle driver has been observed picking up and dropping off passengers while still in the traffic lane, rather than turning into the waiting area, causing risk for people walking in the traffic lanes to meet the shuttle.

The shuttle waiting area should be relocated to the back of the lot, or another location where the parked shuttle will not block the traffic lane or cause vehicles to have to wait behind it. In choosing a location, the Refuge should also consider visibility from the street. A visible shuttle stop will make visitors feel safer, especially if it is late and the lot is dark.

Construct a Class I Bikeway Facility South of E Street. The Bayshore Bikeway is a Class I bikeway facility north of E Street and a Class II bike lane south of E Street. Included in the Bayshore Bikeway Plan is the extension of the Class I off-street bikeway, crossing E Street and continuing south all the way around the Bay. The current plans would utilize the SDG&E right-of-way from E Street to Moss Street. The plan also recommends a spur that will run through the new Chula Vista Bayfront Development (Alta Planning + Design, 2006).

The Refuge should continue to work with the Bayshore Bikeway Working Group to ensure that the construction of these sections of the Bikeway is a high priority in redevelopment phasing and that the design of both the Bikeway route and the street system incorporates the Refuge's safety and accessibility concerns.

Create a Connection Directly from the Bayshore Bikeway to the Visitor Parking Lot. The Refuge should create a turn from the Bayshore Bikeway that leads directly to the shuttle waiting area and bike rack. This will reduce the potential for conflict between bikes, pedestrians, and vehicles at the current entrance. The design of the turn should include directional signage and striping that conforms to the Bayshore Bikeway Plan Design Standards.

Add a Bike Lane to E Street. Apart from Bay Boulevard, which already has Class II bike lane striping and signage, E Street is the only other street that provides access to the SMU. Although E Street is classified as a four-lane gateway street, it is seven lanes wide at the intersection with Bay Boulevard due to turn lanes and I-5 exit/entrance ramps.

This is a high volume intersection with vehicles entering and exiting the highway at high speeds. According to the Chula Vista Bicycle Plan, the city does not plan to install bike facilities on this section of road. The Refuge should work with the city to have the proposals for bicycle facilities on E Street reassessed as design plans for the Bayfront Redevelopment move forward.

Add Crosswalk at the Intersection of E Street and Bay Boulevard. Currently, there is no pedestrian crosswalk in any direction at the intersection of E Street and Bay Boulevard. The Refuge should work with the City of Chula Vista to install a crosswalk on the south side of E Street, crossing Bay Boulevard. This location provides the best access to/from the trolley station.

The crosswalk should include a push-button to activate the signal, a pedestrian crosswalk signal, striping across the street, and curb-cuts. Any of these elements on their own will improve safety if they cannot all be achieved; but, if the signal is not installed, the Refuge should request that the traffic light be adjusted so it is visible to pedestrians on the street corner (as it is not currently visible).

Install Arms over the Sidewalks that Cross the Trolley Tracks. The E Street Trolley Station was just reconstructed, but the new station does not include a pedestrian crossing gate over the sidewalk to stop pedestrians from crossing the tracks when a trolley is approaching. The Refuge should encourage MTS and the City of Chula Vista to have appropriate pedestrian crossing gates installed at this location.

Create a Gateway Experience from the E Street Trolley Station to the Refuge. In addition to enhanced pedestrian and bicycle facilities recommendations, the Refuge should work to create a gateway experience between the E Street Trolley Station and the Refuge entrance. A gateway will not only make the experience for current visitors safer and more enjoyable, but it is likely to attract new visitors to the area.

A gateway should include a landmark at the trolley station that draws the attention of passersby and informs them of opportunities to visit the Refuge and LCDC. Information should also be provided to show visitors where pedestrian access is available to walk from the trolley station to the visitor shuttle waiting area (less than 0.25 miles away), as well as how to call for the shuttle to pick them up, should they prefer not to walk to the parking lot. The landmark can be a statue, fountain, archway, sign, mural, etching in the pavement, or any other attractive permanent element. The gateway should also include strategically placed directional signage along the sidewalk directing visitors to the shuttle waiting area in the visitor parking lot. It can also include attractive painting on the sidewalks, and other decorative and interpretive elements, to direct visitors to the Refuge.

Improve Shuttle Service. If the shuttle receives increased requests for pick-ups at the Trolley Station, the Complex should work with the LCDC to reevaluate the service. Improvements would include increased frequency by adding another vehicle (especially during the busiest hours), or offering a set schedule, so visitors are aware when the shuttle will arrive at the trolley station.

Additional Recommendations for the Future Parking Lot and Shuttle Waiting Area. In addition to the recommendations listed previously, the Refuge should also consider the following elements when working with the Port, City of Chula Vista, and LCDC to design the new parking lot:

- Location, quantity, and quality of bike racks (see section 3.2.3 for discussion on bike racks);
- Lighting;
- Electrical outlets for staff use, if necessary;
- Water connection for drinking fountains and landscaping;
- Security cameras;
- Separate connection to pedestrian and bicycle facilities to avoid the need for users to walk or bike through the parking lot;
- Ease of connection to external transit routes;
- Accessibility for all, including those who are mobility impaired;
- Comfortable, welcoming waiting area with enjoyable view;
- Restrooms, if not available in the adjacent planned public park;
- Shuttle waiting area out of the way of traffic; and
- Decorative and interpretive elements to increase aesthetics and begin the “Refuge experience” from the shuttle waiting area.

4.2 San Diego Bay National Wildlife Refuge - South San Diego Bay Unit

The SSDB Unit is located within south San Diego Bay; bordered to the west by Coronado, to the south by the cities of Imperial Beach and San Diego, and to the east by the City of Chula Vista. This Unit consists of upland and open water areas. Much of the Refuge is an operating commercial solar salt extraction facility, labeled Salt Works in Figure 11. Due to operations needs and the sensitivity of the wildlife that inhabits the salt ponds, this area of the Refuge is not open to public access (except for occasional guided tours). Excellent viewing opportunities out into the Bay are available from anywhere along the Bayshore Bikeway where it circles around the southern edge of San Diego Bay and along Highway 75 on the Silver Strand (**Figure 12**).

Areas of this Unit that are open to the public include trails within the eastern portion of the Otay River Floodplain and the Habitat Heroes viewing area located along the southern edge of the Otay River channel near the northern terminus of 13th Street in Imperial Beach. The Refuge also plans to construct the Bayside Birding and Walking Trail in the near future which will provide an opportunity for visitors to observe wildlife from a walking trail and elevated platform along the southern edge of San Diego Bay between 7th Street and 10th Street in Imperial Beach.



Figure 11. South San Diego Bay Unit – Refuge Boundaries

Source: San Diego Bay NWR Comprehensive Conservation Plan (USFWS, 2006)



Figure 12. South San Diego Bay Unit Transportation Systems and Visitor Amenities

Imagery source: USDA National Agriculture Imagery Program, 2014

4.2.1 Existing Conditions

Although a very small portion of the SSDBU is open to the public, visitors can enjoy views of the Refuge from various points along about three miles of the southern border of the Refuge. Habitat Heroes is the only area the currently provides visitor amenities, including native plant gardens, walking trails, a binocular telescope, interpretation panels, benches, and a seating area. The Otay River Floodplain includes hiking and biking opportunities via a Class 1 bike path and the Otay Valley Regional Trail system. Staging areas for the western terminus of the Otay Valley Regional Trail are also available immediately adjacent to Refuge lands.

The areas of the SSDBU that support wildlife-dependent recreational uses are well connected to regional transportation facilities and transit service. Visitors have the option to arrive by vehicle, transit, bike, and foot.

There are four parking areas adjacent to Refuge that visitors are welcome to use. Two are provided by the County at the trailheads for the Otay Valley Regional Park and two are provided by the City of Imperial Beach at the north ends of 10th Street and 13th Street. On-street parking is also available on adjacent residential streets in the vicinity of 7th and 8th Streets in Imperial Beach.

The Refuge is served by three MTS bus routes that have stops within 0.5 miles of Refuge amenities. Each operates seven days a week with weekday service every 15-30 minutes and weekend service every 20-60 minutes. The Palm Avenue Blue Line Trolley Station is approximately 0.75 miles away from the nearest Refuge access point at Saturn Boulevard. Visitors arriving by trolley can walk from the trolley station to the Refuge or transfer to MTS bus route 933/934 and ride to 13th Street for the shortest walk to the Refuge.

The Refuge is also integrated into the local and regional bicycle facilities. The Class I Bayshore Bikeway runs along the Refuge boundary and also connects to the Otay Valley Regional Trails in the southeast corner of the property. Cyclists can enter/exit the Bayshore Bikeway at many of the adjacent north/south streets in Imperial Beach. In addition, 7th street has Class III Bike Route striping and signage and is a part of the Imperial Beach Ecoroute (see Appendix D), a designation of bike facilities in Imperial Beach that leads cyclists to the ecological resources in Imperial Beach, including the Tijuana Slough NWR in the southwestern corner of the city, approximately 1.5 miles away.

The Otay Valley Regional Trail is an incomplete unpaved, multi-use trail that currently runs east/west between the Bayshore Bikeway and the I-805, approximately 3.5 miles in length. The trail is made of compact crush stone, and although it provides a good surface for hiking and mountain biking, it is not ideal for road bikes. Several staging areas are provided along the length of the trail. Please see Appendix G for maps of the park and trail.

Bike racks are provided at the north ends of 10th Street, 12th Street, and both Otay Valley Regional Park parking lots/staging areas.

Most of the streets adjacent to the southern edge of the Refuge have sidewalks and crosswalks, providing safe facilities for visitors to arrive by foot, either from home or, if walking, from a nearby bus stop. Sidewalks are available between all transit stops and Refuge access points, except for 150 feet at the western end of Main Street.

4.2.2 Existing Plans for Potential Projects

The following plans for potential projects will likely improve accessibility to the SSDBU if implemented.

Bayside Birding and Walking Trail

The Bayside Birding and Walking Trail will provide walkers with an alternative access route that does not require walking and observing wildlife from the Bayshore Bikeway. Considered part of the California Coastal Trail, this route will extend for 2,060 feet between 7th Street and 10th Street in Imperial Beach just to the north of the Bayshore Bikeway. Consisting of an at-grade trail, elevated viewing decks at 7th, 8th, and 10th Streets, and interpretation panels, this route will support wildlife observation and reduce conflicts between pedestrians and bicyclists on this portion of the Bayshore Bikeway. The trail will be accessible by local bus routes, bike facilities, and the parking area on the north end of 10th Street, which includes a bike rack and other amenities. The Refuge has completed the necessary construction plans and secured funding for the trail and the observation deck at 10th Street, but is still seeking funding for the observation decks at 7th and 8th Streets. Construction is expected to begin in fall 2015.

There is also a proposal to extend a boardwalk from the 8th Street observation deck out to the levee breach at Pond 10 in the future when funding for the project has been secured.

Palm Avenue Reconfiguration

The City of Imperial Beach plans to redesign the Palm Avenue corridor between 13th Street and Rainbow Drive. The new design will provide enhanced pedestrian, bicycle, and transit facilities. There will be formal crosswalks at every intersection, and curb bulb-outs will shorten the distance people are in the roadway, making it safer for pedestrians. Class II bike lanes will run the entire length of the project. All bus stops will remain the same, except for mid-block stops, which will be relocated to the nearest intersection.

The intent of the City of Imperial Beach is to improve the commercial corridor to generate new economic development, increase the safety of pedestrians and bicyclists, more effectively manage vehicular traffic, and improve the overall appearance and urban design of the area. The planning project is funded by a grant from SANDAG, which requires the completion of the plan within 18 months of the notice to proceed, which was issued on January 24, 2014. Construction will occur in segments when funding becomes available (Moore Iacofano Goltsman, Inc., 2009).

All of the measures proposed for the new Palm Avenue will improve access to the Refuge by alternative modes of transportation and are consistent with the vision of the MMTP.

Extension of the Otay Valley Regional Trail to Otay Lake County Park

In its Community Trails Master Plan, San Diego County plans to extend the OVRT east to the Otay Lake County Park. The trail, which will be about 13 miles long once this extension is completed, will connect to the California Riding and Hiking Trail at the east end. The western end of the OVRT meets the Bayshore Bikeway on the border of the SSDBU near the intersection of Main Street and Bay Boulevard. The completed OVRT would provide an alternative way for visitors to access the SSDBU, and would create the opportunity to connect the SSDBU to the SDNWR by trail.

Bikeway Village

Imperial Beach plans to build a “Bikeway Village” at the north end of 13th Street. It will be a commercial space with public restrooms, drinking fountains, bike tools, a café, and other amenities. The goal is to attract cyclists to the area and provide support and facilities for users of the Bayshore Bikeway. It will also benefit the Refuge as it provides services to Refuge visitors, especially those traveling by bike. In 2013, the Coastal Commission approved the Coastal Development Permit for the Bikeway Village (Bikeway Village, 2013) and the Imperial Beach City Council approved final plans for the development in early 2015.

4.2.3 Needs

The SSDBU is already served by transit, bike facilities, pedestrian facilities, and public parking areas. Although it is connected to the transportation systems, there are some safety concerns that need to be addressed to make this Refuge more accessible, welcoming, and enjoyable to visitors. The Refuge also needs improved directional and informational signage to direct visitors to the Refuge and provide information on the resources in the area.

4.2.4 Recommendations

The following recommendations should be pursued to make the SSDBU more accessible by vehicle, bike, transit, and foot. This section is divided into low effort and high effort recommendations.

Low-Effort Recommendations

These recommendations can be implemented with minimal partnerships, at a low cost, and/or in a short time period.

Incorporate the Refuge into the Bikeway Village. The Refuge should work with the City of Imperial Beach to ensure that the Refuge has a presence and is accurately represented in the Bikeway Village. This could include any or all of the following: informational panel, informational pamphlets, a map, interactive activities, or walking/birding tours.

Install Welcome Signs at Access Points. The Refuge should install welcoming signage at major access points to inform people that they are entering and are welcomed on a National Wildlife Refuge. Where the Refuge boundary is not adjacent to streets, trails, or bikeways, the Refuge should work with neighboring property managers to install directional signs in highly visible locations. It is important for visitors to see Refuge signage from a distance as they approach the Refuge to orient themselves. The major access points include:

- The intersection of Main Street and Bay Boulevard;
- The north end of Saturn Boulevard;
- The north end of 13th Street;
- The north end of 10th Street; and
- The north end of 7th Street.

Install Directional Signage on Major Streets Approaching Access Points. The Refuge should work with local municipalities and Caltrans to install directional signage on roads and highways that approach the access points. Directional signage should be at an appropriate scale for each transportation mode.

Include the SSDBU in OVRT Maps and Signage. The Refuge should work with the County to ensure that any maps and signage for the OVRT includes the Refuge name, location, and amenities.

Extend the Imperial Beach Ecoroute to Include the Bikeway Village and SMU. The Refuge should work with the City of Imperial Beach to ensure that the Ecoroute is extended to direct access to Bikeway Village and the SMU. The current Ecoroute designation follows 7th Street north to the Bayshore Bikeway, but does not include the bikeway. Any marketing materials or maps for the Ecoroute should include the ecological resources that are available along the Bayshore Bikeway, including the SMU. Including the Bikeway Village will also enhance the quality of the Ecoroute and provide the opportunity for cyclists to lock up their bikes, use the services, and observe wildlife on the Refuge.

Install Bike Racks at Strategic Locations. Refuge staff should install bike racks at strategic locations to allow visitors to safely secure their bike while walking the Refuge. Although some bicycle racks currently exist, it is important to reconsider locations as the Refuge and surrounding area develops. Most importantly, bike racks should be installed at trailheads, where bikes are not allowed to be ridden, especially either end of the Bayside Birding and Walking Trail. The following locations are identified as current priorities:

- Staging area at Main Street and Frontage Road (existing);
- North end of 7th Street in Imperial Beach;
- North end of 10th Street in Imperial Beach (existing, but current bike rack does not support locking the bike frame to the rack with a U-lock);
- North end of 12th Street in Imperial Beach (existing);
- North end of 13th Street in Imperial Beach; and
- The parking area on Saturn Boulevard (existing).

Some of the existing bike racks could be improved by replacing them with the designs outlined in section 3.2.3. Please also see section x for more specifics on choosing a bike rack location.

Install Safety Signage and Striping at Trail Intersections. The Refuge should work with partners to ensure that any Bayshore Bikeway crossings are signed and striped to alert cyclists and pedestrians of the intersections. This is particularly important in locations where pedestrians will be crossing the Bayshore Bikeway to access the Bayside Birding and Walking Trail (i.e., 7th, 8th, 10th Street).

Higher Effort Recommendations

These higher effort recommendations may require more partners, higher costs, and/or more time to implement, but will improve accessibility to the Refuge by connecting it to the larger transportation systems that serve the San Diego Region. Although these recommendations require more effort on the part of the Refuge, they should still be considered in the short-term as they improve safety and accessibility to the Refuge.

Provide Separate Walking Facilities along the Entire Southern Boundary of the Unit.

Currently, visitors to the Refuge walk along the Bayshore Bikeway to enjoy views of the wildlife in the salt ponds and levees. This creates potential for conflict between different users of the trail, especially fast-moving bicycles and pedestrians. Most of the length of the southern border of the Refuge (7th Street to 10th Street) will have a separate trail for walkers and birders when the Bayside Birding and Walking Trail is completed, but the Refuge should consider constructing an additional separate path between 10th Street and 12th Street to complete the length of the southern boundary.

Install Crossing Arms over the Sidewalks that Cross the Trolley Tracks on Palm Avenue.

The Blue Line Trolley tracks cross Palm Avenue at grade, but no gate is provided to prevent pedestrians from crossing the tracks when a trolley is approaching. The Refuge should work with MTS to install pedestrian gates over the sidewalk to improve safety for visitors who choose to walk to the Refuge from the Palm Avenue Trolley Station.

Install Bike Lanes on Main Street. Included in the City of Chula Vista Bikeway Master Plan is a Class II bike lane on Main Street from the I-5 to Main Court, just east of the I-805. The Refuge should work with the city to ensure that this facility is a high priority and that it transfers smoothly to the Bayshore Bikeway and the Otay Valley Regional Trail. Refer to Appendix B for the map of recommended bicycle facilities in the City of Chula Vista.

Improve the Connection between the Palm Avenue Trolley Station and the Otay Valley Regional Trail. The OVRT crosses Hollister Avenue approximately 0.4 miles north of the Palm Avenue Trolley Station. Heading west on the trail leads to the SSBDU. The Complex should support adding sidewalks to Hollister Avenue between the trolley station and the trail to improve access to the Refuge.

Provide Access to Future Amenities. Included in the San Diego Bay NWR Comprehensive Conservation Plan are several other potential projects for visitor amenities; these include:

- An interpretive trail around pond 28; and
- Rehabilitating the Salt Works building as a visitor contact station.

The Refuge should work with partners to ensure that accessibility is considered in the planning and design of any of these amenities. Emphasis should be given to providing access by all modes of transportation, including vehicle, transit, bike, and pedestrian access. The following elements should be considered at all new access points:

- Quantity and quality of vehicle parking and staging area, if present;
- Accessibility of all elements to mobility restricted visitors;
- Appropriate bike rack;
- Bus stop and route information, if along a transit route;
- Separate connection to pedestrian and bicycle facilities to avoid the need for users to walk or bike through the parking lot;

- Dog waste pick-up station;
- Water and electric connection, when possible;
- Restrooms;
- Information kiosk with Refuge resources information, trail map, rules, regulations, safety tips, and opening hours;
- Printed trail maps;
- A welcome sign with Refuge name, USFWS logo, and any relevant partners names and logos; and
- Seamless connection to existing pedestrian system.

Future proposals for public use could occur near the Salt Works production facility, located on the west side of Bay Boulevard, about 0.25 miles south of Palomar Street. Currently, this area supports active solar salt production and closed to public access, with the exception of guide bird walks outside of the nesting season.

The area is served by alternative transportation facilities. The Palomar Street Trolley Station is located about 0.75 miles from the building, and is served by the Blue Line Trolley and bus routes 701, 704, and 712. Route 704 extends service to the building for four trips, Monday through Friday. The Refuge should work with MTS to request additional transit service to the area, if public use amenities are added in this area.

The Bayshore Bikeway also provides access to this area. Currently, the Class I bike path ends at the western terminus of Main Street and starts again just to the north of Palomar Street. From the SMU, the Bikeway is a Class II facility from E Street south to Marina Parkway and was recently constructed as a Class I bike path from Marina Parkway to Palomar Street along Bay Boulevard. It continues as a Class II facility from Palomar Street along Bay Boulevard, turning east on Stella Street, then south on Frontage Road to Main Street. The Bayshore Bikeway Plan proposes a Class I, separated facility continuing south parallel to Bay Boulevard, running directly in front of the Salt Works, over a levee, and connecting with the existing Class I facility. The Refuge should work with the Bayshore Bikeway Working Group and other partners to ensure that the development of the bikeway and any new visitor amenities is designed and constructed to maximize safety and accessibility.

4.3 Tijuana Slough National Wildlife Refuge

The TSNWR is located at the southwestern-most corner of San Diego County and the continental United States. The Refuge is bordered to the north by development in the City of Imperial Beach, to the east by the Naval Outlying Landing Field and the Tijuana River Valley Regional Park, to the west by the Pacific Ocean, and to the south by Border Field State Park. Just south of Border Field State Park is the international border with Mexico, and the City of Tijuana. Figure 13 presents the TSNWR context map.



Figure 13. Tijuana Slough NWR Boundaries
Imagery source: USDA National Agriculture Imagery Program, 2014

TSNWR and its neighboring public lands (described above) are part of the Tijuana River National Estuarine Research Reserve (TRNERR), a protected area funded by the National Oceanic and Atmospheric Administration (NOAA). TRNERR conducts research and education on the Refuge and other public lands. Together, all of these agencies play a role in the maintenance and management of the area.

TSNWR is divided in two parts by the Tijuana River, referred to here as the northern portion and southern portion of the Refuge. Because there is no bridge crossing the river or any other water features, accessibility to each area of the Refuge is unique. The northern portion has several visitor amenities and is easily accessed at multiple locations from the City of Imperial Beach. The southern portion of the Refuge can only be accessed from trails that enter the Refuge from neighboring public lands.

4.3.1 Existing Conditions

Shown in Figure 14 is the northern portion of the Refuge that can be accessed from the City of Imperial Beach. This area offers several visitor amenities, including observation decks, the Tijuana Estuary Visitor Center (maintained by California State Parks), trails, an amphitheater, staff offices, and meeting rooms.



Figure 14. Tijuana Slough NWR Transportation Systems and Visitor Amenities

Imagery source: USDA National Agriculture Imagery Program, 2014

Apart from the buildings and grounds immediately surrounding the Visitor Center, only the trails and beach are open to wildlife-dependent recreational uses. The beach can be accessed via the southern end of Seacoast Drive, and the trails can be accessed by the:

- Southern end of 2nd Street;
- Southwest corner of 3rd Street and Imperial Beach Boulevard;
- Visitor Center parking lot;
- Western end of Grove Avenue;
- Western end of Oneonta Avenue; and
- Western end of Iris Avenue.

The northern portion of the TSNWR is well connected to the regional transportation systems. Visitors have the option to arrive by vehicle, transit, bike, and foot.

Imperial Beach Boulevard is a main arterial that provides vehicle access to the Refuge from I-5, approximately three miles to the east. There is a Refuge parking lot at the Visitor Center with space for approximately 30 vehicles. This lot is used by staff and visitors. There are two public parking areas provided by the City of Imperial Beach that also serve access points. The southern end of Seacoast Drive has perpendicular street parking for 90 vehicles, and the western end of Iris Avenue has space for three vehicles. All three parking areas have handicap accessible spaces. Also, on-street parking is available along Seacoast Drive, Imperial Beach Boulevard, and most of the residential streets surrounding the Refuge.

There are two MTS bus routes that serve the Refuge. Route 933/934 operates frequent service seven days a week (12-30 minutes Monday-Saturday and 30-60 minutes Sunday). It circulates through Imperial Beach and neighboring communities with transfers to the Blue Line Trolley and six other bus routes. The nearest stop is located directly in front of the trailhead at 3rd Street and Imperial Beach Boulevard.

MTS bus route 901 is further from the Refuge, with the nearest stop at 9th Street and Imperial Beach Boulevard, approximately 0.8 miles from the Visitor Center. Route 901 operates seven days a week with 15-30 minute service Monday-Saturday and 60 minute service on Sunday. It runs between downtown San Diego, Coronado, and the Iris Avenue Blue Line Trolley Station. It connects with most downtown bus routes and eight routes at Iris Avenue.

The Refuge is also served by bicycle facilities. The Imperial Beach Ecoroute runs around and through the northern portion of the Refuge. For a map of the Ecoroute, please see Appendix D. A bicycle rack with space for about eight bikes is available at the Visitor Center.

The Refuge is also accessible to local visitors who plan to arrive by foot. There are sidewalks on all streets that border the northern end of the Refuge; and, there are curb-cuts and crosswalks at most adjacent intersections.

The Visitor Center provides a location for education opportunities and acts as a landmark for visitors. Currently, the operating hours are Wednesday through Sunday from 10:00 am to 5:00 pm. Trails are open every day from sunrise to sunset. Rules for trail usage vary by trail. For a map of trails and rules, please visit the TRNERR website: http://trnerr.org/plan_a_visit/trail-map/.

The southern portion of the Refuge, as shown in Figure 13, is only accessible by the trails that cross into the Refuge from Border Field State Park or the Tijuana River Valley Regional Park. There are several trailheads and parking/staging areas for these trails on adjacent city, County, and State property.

4.3.2 Needs

The northern portion of the TSNWR is already served by all transportation systems, but some improvements are needed to increase safety and convenience for visitors, both local and from outside Imperial Beach. The southern portion of the Refuge is far less formalized, and much is needed to connect it to alternative transportation systems. Lastly, measures need to be taken to connect the two portions of the Refuge.

4.3.3 Recommendations

The following recommendations should be pursued to make the TSNWR more accessible by vehicle, bike, transit, and foot. This section is divided into low effort and high effort recommendations.

Low-Effort Recommendations

These recommendations can be implemented with minimal partnerships, at a low cost, and/or in a short time period.

Formalize Access Point at Western End of Oneonta Avenue and Improve Trail between Grove Avenue and Iris Avenue. The access point on the western end of Oneonta Avenue should be formalized to include parking, welcoming signage, and an accessible trailhead (similar to the access point on Grove Avenue). The Refuge should also consider formalizing the trail that runs between Grove and Iris Avenues. Currently, visitors are hiking and biking between the two streets, disturbing the habitat. A formal trail will better connect the existing trail network, and minimize disturbance to habitat created by the informal usage.

Provide Bicycle Parking. Bicycle parking should be provided at all major access points to allow for safe storage of bicycles if visitors wish to hike the trails. There is already a bike rack provided at the visitor center, but it could be replaced with a more secure one, as described in section 3.2.3.

Additional bicycle parking should be provided at:

- South end of Seacoast Drive;
- 3rd Street and Imperial Beach Boulevard;
- Tijuana Estuary Visitor Center (current bike rack does not support locking the bike frame to the rack with a U-lock);
- West end of Grove Avenue;
- West end of Oneonta Avenue;
- West end of Iris Avenue;
- Parking lot for Border Field State Park; and
- Any future trailheads.

Install Welcome Signs at Access Points. Welcoming signage should be installed at major access points to inform people that they are entering and are welcomed on a National Wildlife Refuge. Signage should include operating hours, rules and regulations, and a map.

Install Directional Signage on Major Streets Approaching Access Points. The Refuge should work with local municipalities and Caltrans to install directional signage on roads and highways that approach the access points. Directional signage should be at an appropriate scale for each transportation mode.

Include the TSNWR on TRVRP and Border Field State Park Maps and Signage. The Refuge should work with adjacent land management agencies to ensure that the Refuge name and location is accurately represented in their brochures and other outreach materials.

High-Effort Recommendations

These higher effort recommendations may require more partners, higher costs, and/or more time to implement, but will improve accessibility to the Refuge by connecting it to the larger transportation systems that serve the San Diego Region. Although these recommendations require more effort on the part of the Refuge, they should still be considered in the short-term as they improve safety and accessibility to the Refuge.

Create a Gateway Experience at the Intersection of 3rd Street and Imperial Beach Boulevard. The access point at the intersection of 3rd Street and Imperial Beach Boulevard is well connected to all transportation systems, and most visible to Imperial Beach residents and visitors, as it is located along a major street. The Refuge should work to create a gateway experience to welcome visitors to the Refuge directly from the street. The intersection already has a newly installed welcome sign, and plans to install a butterfly garden and interpretation panels. The Refuge should continue to seek funding to build an accessible meeting space and vantage point for wildlife observation at this access point.

Create On-Street Bike Connection between Northern and Southern Portions of the Refuge. As mentioned previously, the northern and southern portions of the Refuge are divided by the Tijuana River. The Refuge should work with the City of Imperial Beach, City of San Diego, U.S. Navy, and other partners to provide bicycle access between the Visitor Center in the northern portion, and the trails in Border Field State Park, in the southern portion of the Refuge. The bicycle access could be on-street, on a dedicated bike path, or some combination of the two. Due to environmental concerns, the construction of a bridge over the river is not feasible; therefore, the route would be required to extend around the border of the Refuge to make the connection.

It should be noted that Hollister Street and Monument Road, the only streets that provide access to Border Field State Park, are narrow and winding. Although it is legal to ride a bike on these streets, it may not be feasible to add a Class II bike lane to these facilities.

Improve Crosswalk and Pedestrian Access to the Visitor Center. Caspian Way, the street that leads to the Visitor Center only has a sidewalk on the north side of the street. In order for visitors to walk from the sidewalk to the Visitor Center, they must cross Caspian Way near the roundabout. The Refuge should install a crosswalk just west of the roundabout with curb-cuts, striping, and signage to allow for safe crossing of all visitors, including those with wheelchairs, strollers, and other mobility constraints.

The Refuge should also install a sidewalk between the crosswalk and the existing pedestrian trail that leads from the roundabout to the Visitor Center.

Finalize Trail Plan. Continue to work with partners and stakeholders to complete a trail plan for the Tijuana River Valley that includes trails that connect the northern and southern portions of the Refuge and adjacent public lands to create a seamless experience for visitors. Trails should be well marked with directional signage, trail names, and distances on uniform signage throughout the Valley. Trails should extend to convenient access points that are served by all modes of transportation. Where trails cannot reach surrounding transportation systems, the Refuge should work with partners to extend transportation systems to reach the access points. Wherever feasible, the trail plan should include facilities that are accessible to visitors with mobility limitations.

Provide Access to New Amenities. The Refuge should work with partners to ensure that accessibility is considered in the planning and design of any future amenities or access points. Emphasis should be given to providing access by all modes of transportation, including vehicle, transit, bike, and pedestrian access. The following elements should be considered at all new access points:

- Quantity and quality of vehicle parking and staging area, if present;
- Accessibility of all elements to mobility restricted visitors;
- Appropriate bike rack;
- Bus stop and route information, if along a transit route;

- Separate connection to pedestrian and bicycle facilities to avoid the need for users to walk or bike through the parking lot;
- Dog waste pick-up station;
- Water and electric connection, when possible;
- Restrooms;
- Information kiosk with Refuge resources information, trail map, rules, regulations, safety tips, and opening hours;
- Take-away trail maps;
- A welcome sign with Refuge name, USFWS logo, and any relevant partners names and logos; and
- Seamless connection to existing pedestrian system.

Connect the Southern Portion of the Refuge to Transit. As the Tijuana River Valley develops, the Refuge should work with California State Parks, the County's Parks and Recreation Department, City of San Diego, and MTS to improve the connection between the bus stop (route 933/934) on Hollister Street and Tocayo Avenue and the trails in the Tijuana River Valley. Emphasis should be placed on pedestrian and bicycle safety and connectivity, as described in sections 3.2.3 and 3.4.3.

4.4 San Diego National Wildlife Refuge

The SDNWR, established in 1996, is the largest of the three Refuges in San Diego County, currently consisting of 11,621 acres. The majority of the Refuge consists of several noncontiguous land areas located at the southeastern edge of San Diego County's metropolitan area. This portion of the Refuge is referred to as the Otay-Sweetwater Unit, shown in Figure 15 .

In general, the Otay-Sweetwater Unit is surrounded by unincorporated San Diego County, except for the southwest portion of the Refuge which borders the eastern edge of the City of Chula Vista. The Refuge has suburban residential development along the western and northern edges, and rural private and public (County, State, Federal) land along the eastern and southern edges.

For ease of explanation, the Otay-Sweetwater Unit is further broken up into five management areas:

- McGinty Mountain
- Sweetwater River
- San Miguel Mountain
- Las Montañas
- Otay Mesa and Lakes

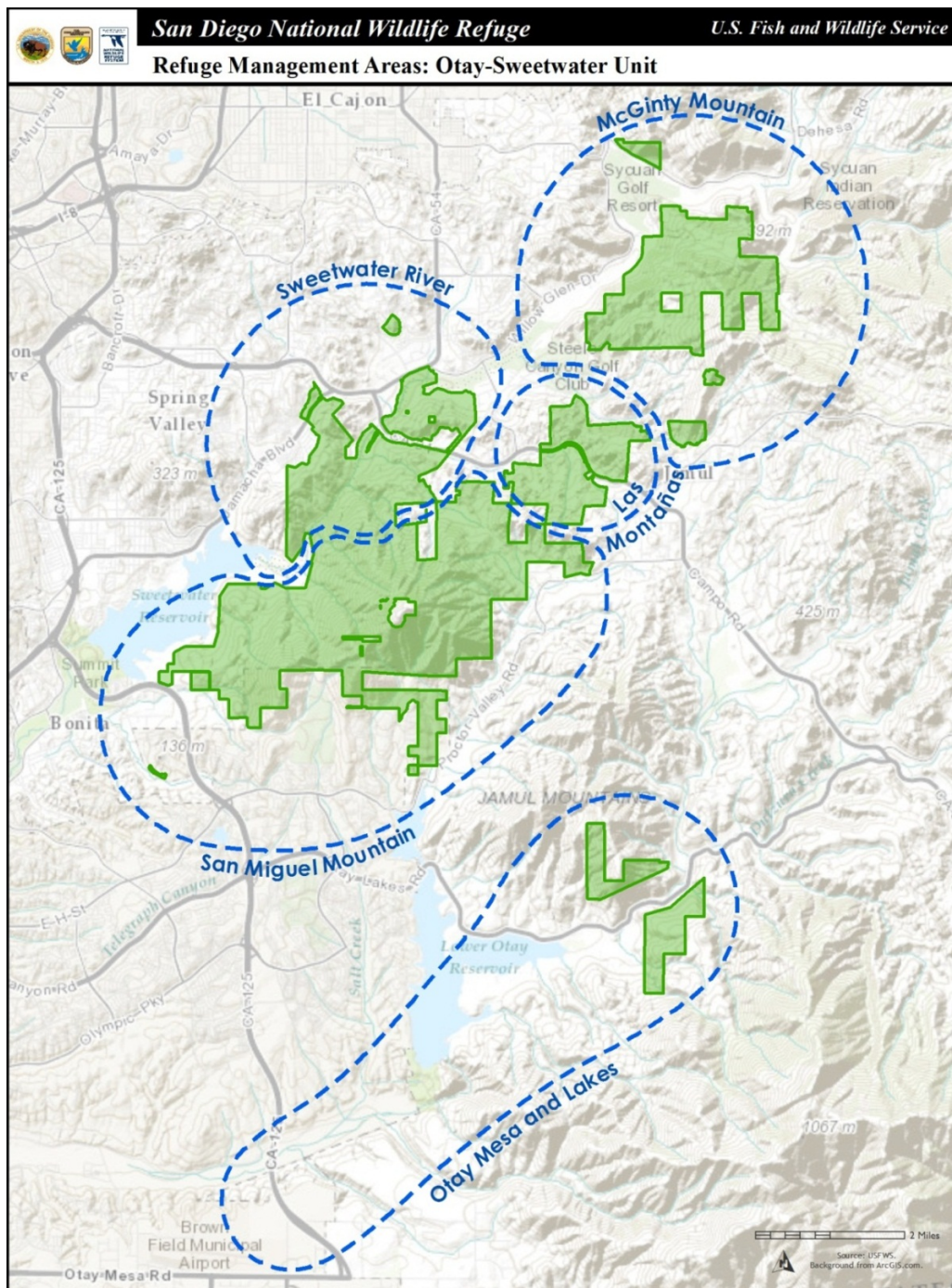


Figure 15. Otay-Sweetwater Unit of the San Diego NWR Boundaries and Management Areas
Source: San Diego NWR Comprehensive Conservation Plan, 2014

In addition to the Otay-Sweetwater Unit, the Refuge manages 60 acres located at the northern edge of the City of San Diego. This area is referred to as the Del Mar Mesa Vernal Pools Unit. Because of its small size and its distant location relative to the rest of the Refuge, it is not included in the MMTP.

The Refuge is in the final stages of developing its Comprehensive Conservation Plan (CCP), which will guide the management of the Refuge over the next 15 years. As part of the CCP process, the Refuge is working on a trail plan that will result in the establishment of a designated trail system that will support wildlife dependent recreational uses such as wildlife observation, photography, interpretation, and environmental education, while minimizing the potential for impacts to the sensitive species and habitats that the Refuge was established to conserve.

Currently, the Refuge has very few visitor amenities, and no contact station for visitors to interact with Refuge staff. The CCP calls for several new amenities, which will be described in following sections.

One of the challenges the SDNWR faces is that only a small portion is adjacent to the public right-of-way; this greatly reduces the opportunity for formal access points. The Refuge is still actively pursuing the acquisition of lands for incorporation into the Refuge; currently the Refuge only owns about a third of the total acquisition boundary; other conservation partners own another third. As land acquisition proceeds, the Refuge will eventually reach public streets and other lands, providing new opportunities for access points.

The existing conditions section will further describe each management area, neighboring properties, existing access and transportation facilities, and existing plans that may impact access to the area. Several areas of the Refuge are closed to the public; therefore, only areas that are open to the public, or planned to be open to the public per the CCP, are addressed in this section.

4.4.1 Existing Conditions

Many visitors to the SDNWR are nearby residents who use the Refuge trails for exercise and recreation. Unfortunately, legal access onto the Refuge is currently limited because much of the Refuge is not located adjacent to the public right-of-way. At present, only a handful of public access points are available to the public. These include existing trail easements and designated trails maintained by the County of San Diego that extend to and in the case of the Sweetwater River and Loop Trail, extend through the Refuge boundary, as well as public streets that terminate at the Refuge boundary. Currently, the Refuge maintains only one official Refuge trail staging and parking area. As mentioned previously, the Refuge is currently in the process of finalizing the CCP and as part of that work, additional access points and locations for trail staging areas are being evaluated.

There are several bus routes that run near the western edge of the Refuge, but most stops are too far from Refuge access points, or the pedestrian conditions between the bus stop and the Refuge are unsafe. Apart from MTS Bus Route 894 that bisects the Refuge along SR-94, there are no transit services east of the Refuge.

There are on-street bike facilities in the area that provide access to the Refuge, however, most are on major streets that would not be recommended for inexperienced riders. There is also a regional non-motorized multiple-use trail that runs along the Sweetwater River and through a portion of the Refuge.

The following sections provide more specific details about each management area. For each, both the existing and planned access points and transportation facilities are described.

McGinty Mountain

The McGinty Mountain area is located in the northeast section of the Refuge. It consists of three noncontiguous parcels connected by an existing trail easement. Access to the trail is available from a Refuge owned and maintained dirt parking area on Jamul Drive, about 0.5 miles west of the intersection of Jamul Drive and Lyons Valley Road. There is space for approximately 17 vehicles, but no bike racks are provided. Jamul Drive is a steep and windy two lane road with no bike lanes, sidewalks, or transit services in the area.

The parking area does not have a visible welcome sign from the street. There is an information kiosk, dog waste pick-up station, and trailhead located at the back of the parking area where the public can access the top of McGinty Mountain. The initial trail starts on Refuge property, crosses on to private property via an existing trail easement, and then back on to Refuge and The Nature Conservancy lands. No trail signage is present in this area.

Sweetwater River

The Sweetwater River area is centrally located within the Refuge acquisition boundary. It is bisected by SR-94, which runs mostly east-west separating the majority of the river valley from the Par 4 area to the north.

This area is surrounded by low- to mid-density suburban development on the west, north, and east sides; the southern edge is adjacent to the San Miguel Mountain area. There are two public access points in this area of the Refuge, one near the intersection of SR-94 and Singer Lane, and the other at the western end of Par 4 Drive, a residential street.

Singer Lane Access Point. There is a public county-maintained parking lot located at the southwest corner of SR-94 and Singer Lane. The lot is half paved and half dirt, and has space for about ten vehicles. There is no welcome sign for the lot, but the Refuge installed and maintains a dog waste pick-up station next to the lot. The lot is accessed off of Singer Lane, a small street that intersects SR-94, but there is no traffic signal.

The nearest transit service is MTS Bus Route 894, which has a stop in the Rancho San Diego Shopping Center, about 0.3 miles from the access point. Bus route 856 is also nearby; it runs along SR-54, about 0.4 miles from the access point.

There is a sidewalk for pedestrians along the opposite side of SR-94 that runs to both bus stops, but there is not a crosswalk at Singer Lane; the nearest crosswalk is to the west at the traffic signal on SR-94 and the shopping center driveway.

There are Class II bike lanes along SR-94 and SR-54, connecting this access point to the larger bicycle transportation system. However, there is no bicycle rack provided at the parking lot.

From the parking lot, visitors must walk across a historic steel bridge, the former SR-94 crossing of the Sweetwater River, to access the Refuge. Across the bridge, a connector trail runs south for one mile and connects to the County's Sweetwater River and Loop Trail (SRLT). The SRLT continues south on the Refuge, crossing the San Miguel Mountain management area, and then continues to the Sweetwater Summit Campground. Where the connector trail meets the SRLT, the SRLT crosses the Sweetwater River utilizing a bridge that is on Refuge property, then continues north on the west side of the river.

There is no visible signage at the trailhead near the steel bridge, but there is an information kiosk at the Refuge property line several hundred feet from the trailhead. Spurring off of the connector trail is also a 1-mile loop with interpretive elements.

The CCP includes a proposal to construct a parking area and visitor contact station near the intersection of SR-94 and Millar Ranch Road, approximately 0.3 miles southeast of the access point on Singer Lane. The planned staging area would consist of a gravel lot, accessed from Millar Ranch Road. The plans include space for approximately 40 vehicles and five pull-through spaces to accommodate horse trailers and buses. Included in the design are facility proposals intended to maximize connections to alternative transportation facilities, including a bus stop on SR-94, a pedestrian walk from the bus stop to the visitor contact station, and a bike rack. The plans would also incorporate improvements on SR-94 to accommodate safe site ingress and egress. For the design plans, please see Appendix H.

At this time, the parking area, and access to it, is fully designed; but, the Refuge is in the process of seeking funding for construction. The visitor contact station is not yet funded or designed.

Par 4 Drive. Par 4 Drive is a residential street in a suburban development. It is a paved, two-lane, dead-end street with room for parallel street parking on either side. There is no additional parking in the area. A very short section of County trail easement connects from the street to the Refuge boundary. Although there is no welcome sign visible from the street, there is an information kiosk at the Refuge trailhead.

There is no transit service in the immediate vicinity; the nearest transit service is MTS Bus Route 816, which runs along SR-54. The bus stop is on the corner of Willow Glen Drive and SR-54, approximately 1.5 miles away. Pedestrian access to the site requires users to walk on the shoulder or in the street as there are no sidewalks available along the roads that lead to the access point including along Par 4 Drive and Steele Canyon Road.

Visitors can access this area by bike. There are Class II bike lanes on Steele Canyon Road, Willow Glen Drive, and SR-54, connecting this access point to the larger bicycle transportation system. But, there is no bicycle parking available at the trailhead.

From the access point, there is a trail that runs 1.5 miles southwest toward the SR-94 bridge that crosses the Sweetwater River. There is currently no formal trail connecting this area to the Refuge area south of SR-94.

San Miguel Mountain

The San Miguel Mountain area is centrally located in the Refuge acquisition boundary. It is bordered by the Sweetwater River and Las Montañas areas to the north, the Sweetwater Reservoir to the west, and other public and private lands to the south and east.

There are three public access points to this part of the Refuge. Two are by trails that lead onto the Refuge from neighboring property, and one is a trailhead at the dead-end of a residential street. Each is described below:

Trail from Sweetwater Summit County Campground. The Sweetwater Summit County Campground is located adjacent to the Refuge, just to the south of the Sweetwater Reservoir and west of the Refuge in Bonita. Access to the campground is via a driveway that turns off of San Miguel Road, passing under SR-125. The campground has paid campsites and free parking for day use. It is particularly appealing to the equestrian community, because of its many facilities to accommodate horses. The Sweetwater River and Loop Trail runs through the campground, then east onto the Refuge. Visitors to the Refuge can park at the campground and use the multi-use trail to access the Refuge.

The Sweetwater River and Loop Trail also runs west, over SR-125, following the Sweetwater River. It is unpaved until it reaches the Sweetwater Bikeway. The Sweetwater Bikeway then continues west to the Bayshore Bikeway, providing a link to the SMU.

There is no transit service or additional bicycle facilities in the area.

The draft CCP proposes an interpretive boardwalk trail at the vernal pool restoration site that will be located near San Miguel Road, just north and east of the SR-125.

Trail from Mount San Miguel Community Park. Mount San Miguel Community Park is located on Paseo Veracruz, a small residential street off of Mountain Miguel Road. There is parking provided in the park and along the residential streets in the area. There is a trailhead at the north end of Paseo Veracruz where a County trail easement provides access across land owned by SDG&E and connects to a trail on Refuge property.

There are two bus routes that run near the area. MTS Bus Routes 707 and 709 have a bus stop at the intersection of Mount Miguel Road and Proctor Valley Road, 0.8 miles from the Paseo Veracruz access point. This access point is also well connected to bicycle facilities. There are Class II bike lanes along Mount Miguel Road, connecting it to the larger bicycle transportation system in Chula Vista.

West End of Echo Valley Road. Echo Valley Road is a dead-end street in the small community of Echo Valley, in Jamul, on the eastern edge of the San Miguel Mountain area. It is a two-lane, paved rural residential street. It is accessed by Proctor Valley Road, a paved, rural, two-lane road with no shoulder or sidewalks. There are no transit services or bike facilities in the area.

At the west end of Echo Valley Road there is a locked access gate that can be opened by Refuge staff for vehicle access when necessary. There is also a horse accessible gate to allow access to equestrian, bicycle, and hiking use, but restricts access by motorized vehicles. This access point provides a trail connection that may connect to the designated trail system on the Refuge, including to the Sweetwater Loop and River Trail, depending upon the final trail alignments included in the Final CCP.

One mile east, on Proctor Valley Road there is another horse accessible gate that will also provide access to the Refuge's designated trail system. Included in the CCP is a proposal to build a formal trail staging area at this location. The staging area would include a parking area, information kiosk, and trailhead.

Las Montañas

Las Montañas, which is currently closed to the public, is bisected by SR-94. There is currently no development on the property, but it is surrounded on three sides by low-density development. The southwestern edges are either the San Miguel Mountain Management area, privately owned, or owned by other public agencies.

The area has very limited bus service. MTS Bus Route 894 runs along SR-94 and passes this area four times a day in each direction. The road does allow bicycling on its shared shoulder/bike lane, however, this is a high-speed road and riding here is not recommended for cyclists inexperienced with these conditions.

The draft CCP includes a proposal for the future development of a parking area to accommodate trail use in this area, however, no official plans or timeline has been established for this project.

Otay Mesa and Lakes

The Otay Mesa and Lakes area is closed to all public access, although limited future use of the area for hunting is proposed in the draft CCP. This area consists of two pieces of property in the southeast area of the Refuge that are on either side, but not adjacent to, Otay Lakes Road, a paved two-lane street with narrow shoulders. There is currently no development on the property, and all adjacent properties are also undeveloped.

There are no bicycle facilities or transit service in the area and the CCP does not call for any facilities to be provided at this location.

4.4.2 Needs

Some areas of the Refuge have alternative transportation facilities that provide access to the Refuge by multiple modes of transportation, but many of the access points are only accessible by vehicle. There are safety concerns that need to be addressed, and facility enhancements that need to be made to provide equitable access by all modes of transportation.

Furthermore, this Refuge will continue to grow as new properties are acquired for inclusion in the Refuge, and staff will need to continually analyze accessibility as new acquisitions are completed.

4.4.3 Recommendations

The following recommendations should be pursued to make the SDNWR more accessible by vehicle, bike, transit, and foot. This section is subdivided into general recommendations and recommendations specific to each management area.

General

These general recommendations apply to all management areas.

Factors to Consider when Selecting Access Points. Because the SDNWR is still growing, staff should consider new access points as new property is acquired. The following list contains items to consider that will create a more accessible entrance to the Refuge:

- Accessible public parking to serve all users (e.g., hikers, bicyclists, equestrians);
- Proximity to existing transit routes (especially routes that run frequently, operate early/late and all days of the week, connect with many other routes, and run through under-served communities);
- Proximity to existing on and off-street bicycle facilities and multi-use trails (especially regional trails that connect with the bicycle transportation system);
- Adequate turn lanes and signalization into access points;
- Equitable access to the Refuge to all demographics; and
- Area with existing safe pedestrian and equestrian crosswalks (signalized preferred) or if not currently existing, there is the potential for working with partners to provide these facilities.

Consider the following items to Include at New Access Points. Refuge staff should consider the following items for every existing and future access point to ensure that it is safe, visible, welcoming, and accessible by all modes of transportation:

- Demand for vehicle parking;
- Construct all elements to be accessible to mobility restricted visitors;
- Install a bike rack (see description of preferred models in section 3.2.3);
- Provide bus stop and route information, if along a transit route;

- Provide a separate connection to pedestrian and bicycle facilities, so people are not forced to walk or bike through parking areas;
- Where appropriate, include a horse accessible gate to prevent motorized vehicles from entering;
- Provide a dog waste pick-up station;
- Where possible, provide water and electric connection;
- Consider the need for restrooms;
- Provide an information kiosk with Refuge resources information, trail map, rules, regulations, safety tips, and open hours;
- Provide take-away trail maps;
- Include a welcome sign with Refuge name, USFWS logo, and any relevant partners names and logos near the entrance or at the trailhead; and
- Strive for a seamless connection to the existing pedestrian system.

Install Directional Signage on Major Streets Approaching Access Points. The Refuge should work with local municipalities and Caltrans to install directional signage on roads and highways that approach major Refuge access points. Directional signage should be at an appropriate scale for each transportation mode.

Create Gateways to the Refuge from Transportation Hubs. The Refuge should work with partners to create welcoming gateways in areas that have access by all modes of transportation. These gateways should include all of the elements listed above in “items to consider at new access points,” but also include enhanced interpretive elements, native plantings, and landmarks that make the entrance welcoming and unique. An example of this is present at the TSNWR, at the intersection of 3rd Street and Imperial Beach Boulevard in Imperial Beach.

Where Refuge property is not adjacent to the public right-of-way, the Refuge should consider working with adjacent landowners to obtain a trail easement to establish a connection to the right-of-way and transportation hubs.

Finish Trail Plan. Continue to work with partners and stakeholders to complete the trail plan that is a component of the CCP. Where possible, the trail plan should connect the different management areas and the adjacent public lands to create a seamless experience for visitors. Trails should extend to convenient access points that are served by all modes of transportation. Wherever feasible, the trail plan should include facilities that are accessible to visitors with mobility limitations.

Include the SDNWR on Neighboring Public Lands Maps and Signage. The Refuge should work with adjacent land management agencies to ensure that the Refuge name and location is accurately represented in their material. At this time the Sweetwater Summit Campground is the only neighboring public land with visitor services, but the Refuge is not included in their map.

Install Trail Signage. The Refuge should install uniform trail signage along all trails on Refuge property. Trails should be well marked with directional signage, trail names, and distances on uniform signage throughout the Refuge. Distances to points of interest should also be provided, as appropriate. The Refuge should work with adjacent public land owners to implement shared signage that is recognizable across boundaries.

Enhance Sweetwater River and Loop Trail. The Refuge should work with the County of San Diego and City of Chula Vista to continue to enhance the Sweetwater River and Loop Trail. Although the trail already provides a connection between the SMU and the SDNWR, many areas could be improved to enhance safety and accessibility. This recommendation is discussed in more detail in the Bicycle System section, section 3.2.1.

McGinty Mountain

Enhance Parking Area on Jamul Drive. The Refuge should consider the previously addressed “Items to Include at New Access Points.” Specifically, this area could benefit from a welcome sign, portable restrooms, and a bike rack.

Sweetwater River

Install a Welcome Sign at the County Parking Area. Although the parking area is not on Refuge property, the Refuge should work with the County to install a welcome sign visible from the street to help visitors who are looking for the parking lot. The sign would be temporary, only until the staging area is constructed off of Millar Ranch Road.

Install Directional Signage from County Parking Area to Trailhead. The Refuge should work with the County to install directional signage from the parking lot, across the bridge, and to the trailhead. Without signage, new visitors do not know where the trail begins.

Create a Trail Underpass under SR-94. The Refuge should work with Caltrans and the County to create an underpass near the potential new parking area off of Millar Ranch Road. Currently, users of the Sweetwater River and Loop Trail must cross a non-signalized intersection to cross SR-94 and continue north. The underpass will improve safety for all users, including equestrians from the Bright Valley Farms across SR-94.

Complete Construction of Staging Area and Integrate into Transportation Systems. As described in the Existing Conditions sections, the Refuge has already designed staging area, but is still looking for funding for construction. The Refuge has not yet begun the design for the visitor contact station, and it is unknown when work will begin.

Many elements of the design make this future staging area accessible by multiple modes of transportation, but Caltrans did not approve a signal or a crosswalk at this intersection due to low volumes projected to turn at this intersection. The Refuge should continue to measure the volume of traffic in this area periodically, and as traffic volumes increase, revisit with Caltrans the need for a signal and crosswalk at the intersection of Millar Ranch Road and SR-94.

San Miguel Mountain

Connect to the Sweetwater River and Loop Trail. The Refuge should provide a seamless connection between the Sweetwater River and Loop Trail and other Refuge trails. Wherever the trails connect, the Refuge should include directional signage including arrows and distances to points of interest.

Las Montañas

No recommendations, as this area is not planned to be open to the public in the near future.

Otay Mesa and Lakes

Work with adjacent landowners to create an access point for a potential future hunting program. Included in the CCP is a potential hunting program on the Otay Mesa and Lakes management area. Adjacent lands already allow hunting. If the Refuge implements the hunting program, it should work with neighboring land management agencies to ensure that the area is accessible.

5. Marketing

Another element to increasing equitable accessibility to the Refuges is to increase the public's awareness of the Refuges through marketing efforts, particularly directed at traditionally under-served communities, that emphasize accessing the Refuges by alternative modes of transportation. This chapter explains the Complex's current marketing strategies, summarizes the marketing needs, describes items to consider, and provides additional marketing opportunities.

5.1 Current Marketing Strategies

The Complex markets its Refuges and events in several different ways:

- Email blasts - internally, through the Friends of San Diego Wildlife Refuges, and through partner agencies for Refuge events;
- Updating websites to include events and information about the Refuges;
- Media coverage of significant happenings on the Refuge;
- YouTube - the Complex displays videos on its YouTube page that relate to the Refuges, most of which have been produced externally;
- Facebook posts - the Complex posts pictures taken on the Refuges, invites followers to join Refuge events, and reposts news articles relating to the National Wildlife Refuge System;
- Twitter posts - the Complex posts pictures taken on the Refuges, invites followers to join Refuge events, and reposts news articles relating to the National Wildlife Refuge System;
- Bulletin boards at Starbucks;
- Handouts available at the Tijuana Estuary Visitor Center and the Complex Headquarters at the SMU;

- Staffing tables at external events; and
- Hosting events on the Refuges.

In general, intentional marketing is limited to two umbrellas. First are small print and social media pushes for events, hikes, or other happenings on the Refuges, and coordination with the media for larger events. The second is general information and material available at the Tijuana Estuary Visitor Center, the Complex Headquarters, and the Refuge websites.

The Complex is also working on developing its Discover Nature App for the San Diego Bay NWR; a GPS based smartphone game that asks visitors questions about what they might see at different locations on the Refuge. The app provides the Refuge with the opportunity to engage a younger, technology-dependent audience. Although not direct marketing, the Refuge's name may be visible to users of the app at other Refuges.

5.2 Needs

The Refuge Complex wishes increase visitation to the Refuges, as well as increase participation in Refuge activities by residents in neighboring under-served communities, but to do this, there are a few needs that must be met through marketing. First, people need to know that the Refuges exist. Many people who live within a short distance of any of the Refuges do not know that the Refuges are there, or if they know of the area, they are unaware that the lands are managed as National Wildlife Refuges. Second, people need to be made aware of how to get to the Refuges. Although most people drive to get to the Refuges, there are options to ride bike, take transit, or walk, and potential visitors should be aware of those options.

The main goal of this marketing plan for the Complex Refuge is to get people out to the Refuges for the first time. Once on the Refuge, they can learn about the many opportunities available to connect with nature, and become interested enough to not only return for a second visit, but also become active members of the Refuge community.

5.3 Additional Marketing Considerations and Opportunities

Explained below are several items that the Refuge should consider when implementing a marketing strategy and a list of potential marketing opportunities that the Refuge could utilize.

5.3.1 Items to Consider

The Refuges should consider the following items when narrowing down marketing strategies: location, goal, topic, scale, active versus passive, partnerships, and safety. Each is described briefly below.

Location

As indicated in previous sections, many neighboring communities are traditionally under-served. Figure 16 represents the under-served communities in the region along with the MTS transit routes.

Traditionally under-served is defined as low median household income, low vehicle ownership, high racial minority, and high percentage of households receiving food stamps. The census tracts indicating high need (red) are those that have the highest proportion of traditionally under-served residents. The colored lines are the transit routes that serve current public access points and the gray lines are the additional transit routes in the MTS system.

The Refuge should focus its marketing to the nearest, most accessible under-served communities. As shown by the map, those would be the areas in red that are along the colored transit routes.

Goal

Although the over-arching goal is to invite neighboring under-served communities to the Refuges, the Complex should also consider specific goals for each marketing item. For example, capacity could be an issue at events, so the Complex should set a goal for the number of attendees desired at any one event. The marketing effort, therefore, should not be too large that the Refuge attracts more visitors than it can accommodate.

Topic

No matter what the medium, the Complex must decide what topic is to be covered. For example, it can distribute general information about the Refuge/Complex, information to attract visitors to a specific event, information on wildlife dependent recreation, a guide how to get to the Refuge, and other topics. Of course, some marketing material can cover more than one topic, but it is important not to try to get everything in one marketing piece, otherwise, the most important information will be diluted. Furthermore, material covering different topics will be distributed to different audiences. For example, if material is being distributed to birding groups, it may be irrelevant to include that mountain biking is allowed on some of the Refuges.

Scale

One of the challenges for staff at the Complex is determining whether to market each Refuge individually or to market the Complex as a whole. Each has its pros and cons.

Marketing one Refuge individually is easier for the visitor to understand, and can include more specific information in the same amount of marketing material space/time; however, it requires more effort to produce material for each Refuge.

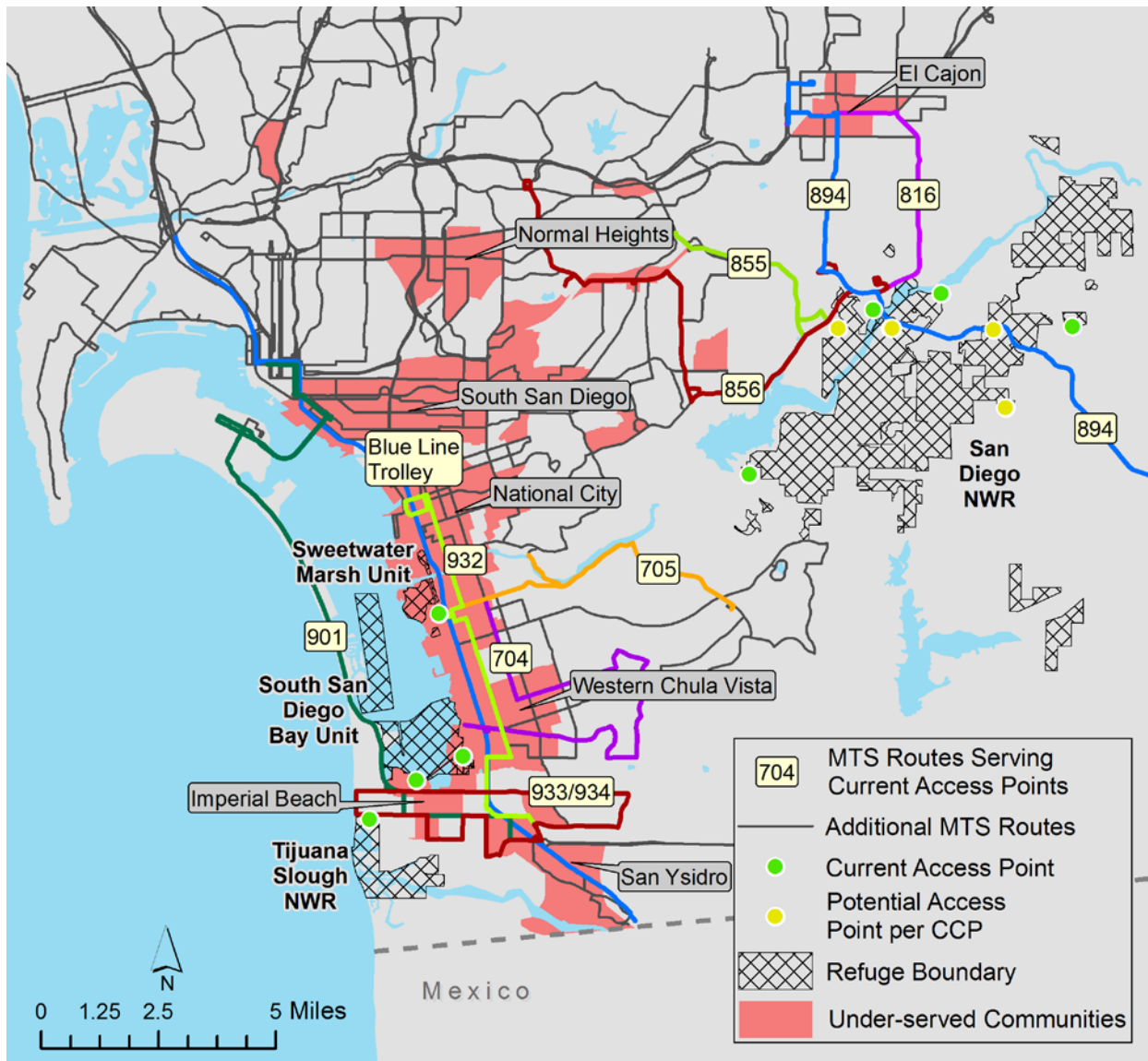


Figure 16. MTS Routes that Serve Current Access Points and Highest Need Communities

Data sources: US Census Bureau (2010), SANGIS (2012), USFWS (2014)

On the other hand, marketing the Complex as a whole makes more people aware of the fact that there are multiple Refuges in the area, and that each is unique and worth a visit. But, this strategy may result in material being diluted, with a smaller chance of people walking away and remembering the message, name, or information about each Refuge.

Active vs. Passive

Some marketing materials can be actively distributed by email, handouts, or public displays, beckoning visitation. Other marketing strategies include passively providing information for those who look for it. Having updated information on the Refuge websites and making sure that partners' websites are also updated regularly will ensure that people looking for accurate information will find it.

Partnerships

One way to reduce cost and increase the pool of viewers is to initiate marketing efforts with partners. One strategy is to market with other public lands or like-minded organizations to inform people of both agencies' amenities. For example, the Complex could partner with the Living Coast Discovery Center to split the cost of material that highlights both agencies' amenities equally.

Another strategy is to partner with external organizations that may have the same missions as the Complex. For example, the Complex could partner with the City of Chula Vista on initiatives to get youth outdoors. The Complex could work with the city to ensure that any marketing or informative material that gets distributed for their initiative includes the logo of the USFWS.

Safety

Safety is a key component in all Refuge operations. It is important that the Complex consider safety before inviting visitors to particular locations or to arrive by particular modes of transportation. For example, even though there may be alternative transportation facilities available to access the Refuges, some may not be developed to the point that they provide a safe and accessible "last mile" experience for users. In other areas, the Refuges are not easily accessible because of the lack of sidewalks and/or controlled road crossings. Refuge staff should consider such conditions before inviting visitors to certain locations. The E Street Trolley Station, for example, is located only 0.25 miles from the entrance to the SMU, but the facilities needed to comfortably accommodate pedestrian access between the two sites are not currently available.

5.3.2 Additional Marketing Opportunities

Although the Complex does market events, and does provide general information about the Refuge, the distribution has been minimal. Following are some additional strategies the Complex could pursue to increase awareness about the Refuges.

Programs and Events

The Refuge can hold additional programs or events to raise awareness and increase visitor engagement on the Refuges. In addition to events on the Refuges, the Complex can also run programs that will incentivize visiting the Refuges with an emphasis on arriving by alternative modes of transportation. Listed below are some programs and events the Complex could pursue:

- Sponsor a child or other donation program that funds bringing under-served youth to the Refuges;
- Provide transportation service in exchange for volunteer hours;
- Prize drawings for pictures posted to Facebook of visitors arriving by transit or bike;
- Develop an ecotour that guides visitors to different areas of the Refuge(s), could be self-lead or guided, on bike or foot;

- Staff information booths at like-minded external events focused on wildlife, conservation, fitness, youth, photography and environmental education;
- Partner with MTS, municipalities, or other agencies to provide subsidized transit to visit the Refuges;
- Provide Refuge staff to meet visitors at transit stations in under-served communities for guided trips to the Refuge via public transportation; and
- Provide Refuge staff to meet visitors along bikeways or trails in under-served communities for guided trips to the Refuge on bikes.

Print

The Complex does post bulletins for its events; however, it does not distribute general information inviting neighboring communities to visit the Refuges on their own. Refuge information could be distributed:

- In buses, trolleys, and transit stops;
- At the airport;
- At like-minded locations (e.g., San Diego Zoo, parks, schools, libraries, museums, fitness centers, bike shops);
- In newspapers, magazines, and newsletters;
- Door to door or on car windshields; and
- By sending fliers home with school children.

For two examples of potential print marketing samples, please see Appendix J.

Multi-media

The Complex does engage in social media and video marketing that includes posts to followers of the Complex's Facebook, Twitter, and YouTube; however, it does not push active multi-media efforts to new audiences. The Complex should continue its current efforts, and also consider the additional active and passive multi-media marketing strategies:

- Television commercials;
- Radio commercials;
- Public service announcements;
- Updating Refuge websites regularly, including Refuge information and accessibility (if conditions change);
- Updating external websites regularly, including websites related to trails, parks, directions (such as Google Maps), biking, wildlife viewing, tourism (specific websites included in Appendix I);and
- Additional internal videos posted to YouTube.

Directional and Welcome Signage

The Complex should consider a Complex-wide signage plan including directional signage to reach the Refuges, welcoming signage at the access points, and trail signage throughout the Refuges and neighboring public lands. Trail signage should be present at every trail intersection, indicating distances to trailheads and other points of interests. Where appropriate, the Complex should work with neighboring public lands to ensure that signage is consistent across borders, for a seamless trail experience for visitors.

Directional signage is used to direct people to the Refuges from off of the property. Signs should be the appropriate scale for each mode of transportation- walking, biking, and driving. The highest priority locations should include corridors between transportation hubs and access points.

Welcome signage should be located at every access point to the Refuges, so visitors know that the area is open and that they are welcome to enjoy the wildlife dependent recreation opportunities available on the Refuge. Welcome signs should be visible from a distance, especially from the nearest transportation facilities. Welcome signage (or nearby informational kiosks) should also include rules and the hours when the Refuge is open for public access.

Marketing to Under-Served Communities

The Outdoor Recreation and Transportation Patterns and Preferences section of the California Alternative Transportation for Recreation- Leisure for Everyone that is Seamless and Sustainable (CAR-LESS California) report highlights various preferences for under-served communities relating to public lands. The report found that minority communities prefer to learn information about public lands (Roberts, 2012):

- In their native language;
- Posted at local businesses (e.g., restaurants, barber shops, grocery stores);
- Distributed through social services agencies;
- At community centers;
- At religious institutions; and
- Through handouts given to children at school.

Incorporating information about the benefits of outdoor recreation as they relate to health, culture, and education was also found to be important.

6. Plan Implementation

The San Diego National Wildlife Refuge Complex MMTP is intended to guide the strategic implementation of coordinated and cooperative transportation partnerships for the purpose of improving accessibility to and between three of the four Refuges within Complex using multiple modes of transportation. Implementation of the MMTP will support the mission of the USFWS by connecting people to fish, wildlife, and their habitats.

Implementation of the recommendations provided within the MMTP cannot be done alone. Because improving access to the Refuges requires enhancements outside of Refuge boundaries, many recommendations within the MMTP will require support from and partnerships with other agencies and organizations. For some projects, permits, reviews, or environmental analysis may be required. Finally, funding of most projects will require securing grants, which, again, may involve coordination between partners.

The Plan Implementation chapter is not a specific set of actions to take to implement recommendations within the MMTP. It is, rather, a guiding description of some of the elements that must be taken into consideration when developing projects that achieve the goals of the MMTP. Each of the elements listed below is dependent upon one another and implementation of any project may require consideration of any or all of them:

- Project prioritization;
- Partnership opportunities;
- Potential funding sources; and
- Need for future permits, approvals, and/or reviews.

6.1 Project Prioritization

There are many external factors that make prioritizing projects within the MMTP particularly difficult within the planning process. Without an allocation of funds already designated to implement projects within the MMTP, prioritization will rely on funding/grant opportunities as they become available in the future. Because the qualification criteria for grants tend to change every year, the Complex must prioritize projects based on their likeliness to meet the evaluation criteria for each available grant opportunity individually.

Furthermore, many of the recommendations within the MMTP involve coordination with partners to implement projects outside of the Refuges' boundaries. While the Complex can work with partners to advocate for the recommended projects in the MMTP, ultimately, the neighboring municipalities, County, or other land management agencies will develop the projects independent of the Complex's influence, and projects may be reprioritized based on future conditions.

Finally, projects may be reprioritized based on future understanding of their impact on the wildlife or habitat. For example, a bike trail that may seem appropriate now could be considered too damaging to wildlife or habitat in the future, based on changing biological or environmental conditions on the Refuges.

Once a funding source is identified, the Complex should select a project based on the relative degree to which the project satisfies the following criteria:

- Improves access by all modes of transportation within corridors between transportation hubs and Refuge access points;
- Improves access to under-served communities;
- Improves safety;
- Completes a gap in the transportation system;
- Completes a last mile connection to an access point; and
- Markets the Refuges to under-served communities and additional new markets.

6.2 Potential Partnerships

As mentioned previously, implementation of recommended projects within the MMTP will require coordination between many different agencies. Because many of the recommendations involve projects that would take place in public rights-of-way, the Complex could not implement the MMTP without its partners.

The following list summarizes partnerships that would need to be pursued by project type:

6.2.1 Bayshore Bikeway

The Bayshore Bikeway Working Group is the primary partner for projects related to the Bayshore Bikeway. It was established by SANDAG to promote improvements to the Bikeway. It consists of an elected official from the cities of Chula Vista, Coronado, Imperial Beach, National City, and San Diego, and from the County of San Diego. Working Group members on the committee include the MTS, the San Diego Unified Port District, and a SANDAG representative of the region's bicycling community.

6.2.2 Sweetwater Bikeway

The Sweetwater Bikeway does not have a working group. The primary partners for continuing to develop the Sweetwater Bikeway include: National City, Chula Vista, and San Diego County.

6.2.3 Facilities within the Public Right-of-Way

Bicycle, pedestrian, and vehicle facilities that are off of Refuge property will primarily be developed in coordination with the municipalities, San Diego County, and/or Caltrans depending upon location and facility ownership.

6.2.4 Transit

SANDAG is the agency responsible for transit service planning, while MTS is responsible for operations. The Complex can also work with municipalities for support of transit related projects.

6.2.5 Non-Motorized Trails

The primary partner for coordinating projects for the regional non-motorized trails is the County of San Diego and the local municipalities. For the coastal Refuges, the California Coastal Conservancy is also a great partner for assistance in implementing projects. The TSNWR also partners with the California State Parks, where trails are shared across property lines.

6.3 Potential Funding Sources for Implementing Recommended Projects

The MMTP does not have any funding allocated toward its implementation. Funding will need to be sought out strategically on a project by project basis. In some cases, internal funding may be provided in the future to pay for projects that qualify for inclusion in the annual budget. In other cases the Complex or its partners will need to apply for grants, as they become available, to fund projects. The following sections summarize potential funding sources.

6.3.1 Annual Complex Budget

Although it is not expected that the annual budget will allocate funds towards implementation of any of the recommendation within the MMTP, some of the projects do qualify for inclusion in the annual budget. Those projects must be lower cost items located on Refuge property. Examples could include directional, welcoming, or trail signage; trail enhancements; bike racks; or information kiosks.

6.3.2 Visitor Facilities Enhancement (VFE) Funding

VFE funding is periodically allocated to Refuges for projects that meet one or more visitor services objectives. Each Refuge Complex maintains a prioritized list of projects eligible for VFE funding. The Complex should periodically evaluate how the projects on this list have been prioritized to ensure that the priorities listed continue to reflect current Refuge needs. Additionally, the project descriptions should include a discussion of how the project meets the goals of the MMTP.

6.3.3 Shared Costs with Partners

Working closely with partners to implement projects of shared interest will benefit both the Complex and the partner. For each project included in the MTTP, the Complex should consider strategic ways to share costs with other agencies, using both work program funds and grant funds, as available. Many grants are only available to certain types of agencies, and in some cases, the Complex may not be allowed to apply. For example, the USFWS cannot be the applicant for the Federal Lands Access Program, but the Complex and the Regional Federal Lands Transportation Program Coordinator can assist a local municipality in applying for the grant.

In many cases, a local municipality's grant application can be strengthened by the inclusion of a support letter from the Refuge Complex, particularly if that letter states that the project will assist in achieving the goals and recommendations of the MMTP and specific CCPs. Routine communication with neighboring agencies regarding mutual transportation needs

will allow the Complex and the municipalities to identify potential funding sources and work together in an effort to successfully acquire needed funding.

6.3.4 Grant Opportunities

Grant opportunities are always changing and the Complex should continue to research additional grant funding sources. Many of the projects within the MMTP qualify for the following opportunities available at the time of writing:

Federal

- Challenge Cost Share (USFWS)

A grant administered through the Department of the Interior that matches federal funding for projects that have a non-federal match.¹

- Connecting People with Nature (USFWS)

This program provides funding to projects that connect people with nature. Typical projects for the program include education and events, but could also include interpretive and trail elements.

- Urban Wildlife Refuge Initiative (USFWS)

Programs that connect urban communities could be funded through the Urban Wildlife Refuge Initiative.

- Congestion Mitigation and Air Quality Improvement Program (CMAQ)

CMAQ can fund a variety of transit, bicycle, and pedestrian projects that contribute to the attainment of ambient air quality standards and congestion mitigation. Although the projects must be tied to a plan adopted by the State of California and SANDAG, the Complex can support local projects that improve access to the Refuges.

- Community Development Block Grants (CDBG)

CDBG provides annual grants to local municipalities on a formula basis for community-based projects. The majority of funds must be used on activities that benefit low- and moderate-income persons. Examples of the types of projects these grants fund are: commercial district streetscape improvements; sidewalk improvements; safe routes to school; and neighborhood-based bicycling and walking facilities that improve local transportation options or help revitalize neighborhoods.²

¹ <http://www.fws.gov/policy/m0327.pdf>

²

http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs

- Community Transformation Grants (CTG)

The Centers for Disease Control and Prevention awards CTGs to entities working to improve community health. Many of these projects are transportation-related. Eligible applicants include State and local governments, tribes and territories, nonprofit organizations, and community organizations.³

State of California

- Active Transportation Program

The ATP consolidates existing Federal and State transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program. The ATP is administered by the Division of Local Assistance, Office of Active Transportation and Special Programs. The purpose of the ATP is to encourage increased use of active modes of transportation by achieving the following goals:

- Increase the proportion of trips accomplished by biking and walking;
- Increase safety and mobility for non-motorized users;
- Advance the active transportation efforts of regional agencies to achieve greenhouse gas (GHG) reduction goals;
- Enhance public health;
- Ensure that disadvantaged communities fully share in the benefits of the program; and
- Provide a broad spectrum of projects to benefit many types of active transportation users.

The Call for Projects is expected to begin on 3/26/15 and applications are expected to be due 6/1/15. The Call for Projects is issued in the beginning months of every odd year; however, the California Transportation Commission may choose to issue the Active Transportation Program annually.⁴

- Recreational Trails Program (RTP)

The Recreational Trails Program provides funds annually for recreational trails and trails-related projects. The RTP is administered at the Federal level by the Federal Highway Administration (FHWA). It is administered at the State level by the California Department of Parks and Recreation (DPR). Non-motorized projects are administered by the Department's Office of Grants and Local Services.

³ http://www.pedbikeinfo.org/planning/funding_government.cfm

⁴ <http://www.dot.ca.gov/hq/LocalPrograms/atp/>

RTP requires a 12% match and does not have a minimum or maximum request amount. The next cycle of funding in California is unknown, but will not be before January 2016.⁵

- **Environmental Enhancement and Mitigation Program (EEMP)**

EEMP funds are allocated to projects that mitigate environmental impacts of new or modified public transportation facilities.

- **Transportation Development Act**

Primary projects are for development of transit service; however, it can also fund bicycle and pedestrian projects if the municipality or County can prove that there are no transit needs in the area.

- **California Coastal Conservancy**

The Coastal Conservancy funds projects that help people get to coast and bay shores by building trails and stairways and by acquiring land and easements. Applications are accepted on a rolling basis, and there is no minimum or maximum request amount.

Regional

- **Smart Growth Incentive Program (SGIP)**

The SGIP is funded through the SANDAG Transnet tax. It provides funding for transportation-related infrastructure improvements and planning efforts that support smart growth development in Smart Growth Opportunity Areas.

- **Active Transportation Grant Program (ATGP)**

The goal of the ATGP is to encourage local jurisdictions to plan and build facilities that promote multiple travel choices for residents and connectivity to transit, schools, retail centers, parks, work, and other community gathering places. The grant program also encourages local jurisdictions to provide bicycle parking, education, encouragement, and awareness programs that support pedestrian and bicycle infrastructure.

Non-profit Grants

- **Opening the Outdoors**

The Opening the Outdoors grant is administered through the San Diego Foundation. Its goal is to advance community-driven efforts to develop an interconnected network of natural areas, gathering places, and trails across the County. Applicants must have a 501(c)(3) status, which requires the Refuges to partner with the Friends of the San Diego Refuges or other local non-profit organizations.

⁵ http://www.parks.ca.gov/?page_id=24324

Additional Information

The above grants are not an exhaustive list. Grant opportunities change yearly, and some grants are only available once. Please refer to the California Bicycle Coalition website for additional funding sources for bicycle, pedestrian, and trail projects at this link: <https://calbike.org/tools-for-advocates/funding-sources/>. Additional information about upcoming grant and other funding opportunities can be obtained from the Federal Lands Transportation Program Coordinator.

The Federal government has also established a website to inform the public about federal grant opportunities. This website is not strictly transportation related, but should be reviewed periodically to check for appropriate grants:
<http://www.grants.gov/>.

6.4 Need for Future Permits, Approvals, and/or Reviews

The implementation of some actions described in the MMTP may require additional analysis and review under NEPA. Additionally, prior to implementation of the specific action, the Service may be required to obtain local, State, or Federal permits or approvals. Potential permits, approvals, or reviews that may be required include (taken from the SDNWR CCP):

- USFWS, Refuges - Project level internal Section 7 consultation, as appropriate under the authorities of the Endangered Species Act, prior to implementing any actions that may affect federally listed endangered or threatened species.
- USFWS, Regional Cultural Resources Team - Project level internal review of actions that could have an adverse effect on cultural resources pursuant to the National Historic Preservation Act and/or other regulations related to the protection of cultural resources.
- U.S. Army Corps of Engineers - Clean Water Act Section 404 for projects, such as bridges, that could discharge dredged or fill material into waters of the U.S.
- California State Water Resources Control Board, San Diego Region - Clean Water Act Section 401 certification for discharges into waters of the U.S. and/or a General Permit for Discharges of Storm Water Associated with Construction Activity.
- California State Historic Preservation Office - Section 106 consultations under the authorities of the National Historic Preservation Act for any actions that may affect historic properties or cultural resources associated with listed properties (or those eligible for listing) on the National Register of Historic Places.
- Caltrans - Coordination and approval of encroachment permits and any associated traffic improvements (e.g., traffic signals, acceleration/deceleration lanes) from Caltrans for proposals that will encroach into the right-of-way of a State highway such as Highway 94.
- MTS – Coordination and approval of any lease agreements or permission to access an MTS facility during construction.

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APPENDIX II: OPENING THE OUTDOORS GRANT APPLICATION

Tijuana Slough National Wildlife Refuge - Community Gateway Deck Project



Introduction

The Friends of the San Diego Wildlife Refuges (Friends) together with staff from the San Diego National Wildlife Refuge Complex (Complex) have been working for more than 14 years to ensure that the Tijuana Slough, San Diego Bay, and San Diego National Wildlife Refuges are an integrated part of San Diego County's south bay communities, as well as the greater San Diego County region. Introducing kids and families to the natural resources within the Tijuana Slough National Wildlife Refuge involves ongoing interpretive and educational programs, as well as volunteer events, conducted by the Complex in association with the Friends, as well as by California State Parks' staff working out of the Tijuana Estuary Visitor Center. These programs introduce students and residents to the abundance of natural resources within their own neighborhoods.

An essential component of our effort to connect kids and families to nature is realizing our vision of creating a welcoming gateway into the Tijuana Slough NWR at the corner of Imperial Beach Boulevard and 3rd Street, in Imperial Beach. The Friends, Refuge staff, and California State Parks have been working together to acquire funding for this project, and have had many successes in securing the funds necessary to transform this corner into a major focal point within the community of Imperial Beach. There is however one last hurdle which must be overcome if we are to realize our vision of improving accessibility into the Refuge and to the Tijuana Estuary Visitor Center – funding to construct a safe and accessible viewing and interpretive deck at this corner and to provide a trail connection between the street corner and an existing accessible trail that leads visitors into the Refuge.

Organizational Mission, History, and Current Activities and Accomplishments

The Friends of San Diego Wildlife Refuges (the Friends) was established in 2000 as a non-profit citizen's organization [501(c)3] for the purpose of assisting the U.S. Fish and Wildlife Service (USFWS) in the educational, interpretive, and biological activities occurring on the Refuges in San Diego County. Our mission is to support conservation and promote awareness and appreciation of the National Wildlife Refuges of San Diego County, including the Tijuana Slough, San Diego, and San Diego Bay Refuges.

Our goals include: assisting the USFWS in carrying out the mandates of the refuge enabling legislation; promoting public understanding and appreciation of the environment and natural resources found within the refuges; and establishing, maintaining, and expanding support for the refuges and the Friends organization through membership activities, funding raising, and outreach programs. To achieve these goals, we work closely with Refuge staff in the development and implementation of Refuge programs and events. We support and participate in Refuge events countywide; manage a small bookstore within the Tijuana Estuary Visitor Center to raise funds for projects, seek grant funding to support Refuge projects, and publicize Refuge programs and the educational and wildlife-dependent recreational opportunities provided on each Refuge. We also partner with California State Parks and other San Diego natural resource agencies and organizations in support of habitat and wildlife conservation. The current project is a partnership with both Refuges and California State Parks, as the gateway project will support

educational and interpretive programs, such as the Estuary Explorers program, which are conducted by both agencies.

Here are just a few of our accomplishments related to increasing children's interest in the outdoors and connecting people with nature:

- Secured an EDCO Community Grant from the City of Imperial Beach to create a pollinator garden within the gateway project;
- Regularly support Refuge programs and events by supplying refreshments and staffing Refuge information tables at various events and gatherings throughout the region; and
- Secured funding for interpretative panels to be installed along the soon to be completed Bayside Birding and Walking Trail.

Organizational Budget - The following table presents our income and expenses from our 2014 budget.

Income

Bookstore profits	3,000.00
Contributions	2,200.00
Investments	120.00
Memberships	2,700.00
	<hr/> <hr/>
	8,020.00

Expenses

Memberships	130.00
Operations	1,350.00
Insurance	1,630.00
Travel & Conferences	335.00
Volunteer Support	3,000.00
Refuge Publications	1,500.00
Uncommitted	75.00
	<hr/> <hr/>
	8,020.00

Demographic Analysis

Although the events and programs will be advertised county-wide, the residents of Imperial Beach, a historically under-served community, will have daily access to the deck and associated programs. Residents of Imperial Beach are relatively young, with 25.4% of the population under the age of 18, compared to 22.6% countywide. Imperial Beach's median household income is lower than that of San Diego County as a whole, \$49,268 and \$62,962, respectively. The city has a significantly larger racial minority population with 49.0% of the community indicating Hispanic or Latino in the 2013 census count; the county is 32.9% Latino or Hispanic (US Census, 2013 5 year American Community Survey). Imperial Beach also has the 3rd highest childhood obesity rate in the county with 39.8% of 6th, 7th, and 9th graders being over-weight or obese (California Dept. of Education, Physical Fitness Test 2010). With a new deck, we will be able to provide an accessible outdoor education space to our neighboring under-served communities so children in the neighborhood can receive the same opportunity to learn and be active as other communities in the county.



Existing Conditions

This intersection was strategically chosen as the gateway to the Refuge as it is accessible by vehicle, bus, bike, and foot. Imperial Beach Blvd. has a bike lane and signage, while 3rd Street is equipped with sharrows (decals on the pavement to indicate a bike route) and signage. The corner is served by bus route 933/934, which provides local, frequent service that circulates throughout the communities of Imperial Beach, Nestor, and Otay Mesa West. The route includes stops at both the Iris Ave. and Palm Ave. Blue Line Trolley Stations. The area

is also accessible, with curb-cuts (smooth surface from street to sidewalk) and compact surface trails. There is also plenty of street parking along Imperial Beach Blvd.

From the intersection, the formal trail currently leads to two unsafe, inaccessible decks, with steps between them. Due to the condition of the decks, and the fact that they are inaccessible to wheelchairs, bikes, and strollers, visitors have begun to bypass them. This has created wide, informal trails which have grown in size over the years, disturbing sensitive native habitat. Beyond the decks, visitors reach the accessible trail which leads to the Tijuana Estuary Visitor Center, less than 0.5 miles to the southeast.



Project Description

A new deck at this location will create a meeting place and outdoor classroom opportunity for interpreting and providing information about the new pollinator garden, migratory and local birds, the purpose of the Refuge and the National Wildlife Refuge System, and the general work that the Refuge staff and partners do on a daily basis to protect this unique habitat. It will also serve as a meeting and focal point to conduct new “Hike with a Ranger” hikes and community volunteer events.

With the funds requested, we will demolish the two existing

decks and replace them with a single 20’ by 20’ deck (400 square feet). The entrance to the new deck will be level, allowing easy access for wheelchairs, strollers, and those with other mobility concerns. Due

to the existing topography, the south end of the deck will be elevated about 6 feet, providing opportunities for wildlife observation and scenic views of the sensitive coastal salt marsh habitat protected on the Refuge. A formal accessible trail will be constructed from the deck down to an existing accessible trail that provides access to both the Visitor Center and the Refuge. Following completion of the deck and trail project, volunteer events sponsored by the Complex and California State Parks will be conducted to rehabilitate existing informal trails and the old deck footprint to native habitat.

Additional Projects to be Implemented at the Gateway

Working with Refuge staff, we have already secured funding for other elements of the Gateway project, including a pollinator garden to be located near the corner of the site and interpretation panels, which will be installed following completion of the new deck and trail. Once we are able to secure funding for the deck and trail, we can schedule the installation of these elements. The deck and trail must be constructed first to avoid potential damage to the pollinator garden as a result of construction activity.

Positive Impacts of the Project

Once funding for a new deck has been secured, the Tijuana Slough NWR Gateway project can be completed. The welcome sign and interpretive panels will be installed and planting of the pollinator garden and rehabilitation areas will commence. The deck will serve as the gathering point for future interpretive and educational programs conducted by Refuge staff and California State Parks. This new facility will help the Friends and Refuge staff meet the USFWS' goals of connecting people with nature, promoting an appreciation of natural places, and increasing the public's awareness of the mission of the National Wildlife Refuge System. We will measure our success by the number of kids and families participating in activities and events staged at the gateway by Refuge and State Parks staff.

Staff Roles and Responsibilities

The following table describes roles and responsibilities that will help achieve the goals of the new deck and gateway.

Name	Organization	Title	Roles
George Dowden	Friends of San Diego Wildlife Refuges	President	•Administer funding
Brian Collins	San Diego National Wildlife Refuge Complex	Refuge Manager	•Oversee project implementation
Kurt Roblek	San Diego National Wildlife Refuge Complex	Assistant Refuge Manager	•Project management
Victoria Touchstone	San Diego National Wildlife Refuge Complex	Refuge Planner	•Complete NEPA and Project Permitting
Lisa Cox	San Diego National Wildlife Refuge Complex	Public Information and Outreach Specialist	•Conduct "Hike with a Ranger" program
Chantel Jimenez	San Diego National Wildlife Refuge Complex	Environmental Education Specialist	•Manage "Engaging Communities in Stewardship" program •Conduct "Connecting Neighborhood Schools with Wildlife Refuges" program
California State Parks Staff	California State Parks	-	•Assist in volunteer planting days •Conduct ongoing educational and Interpretive programs

Project Budget

As indicated below, we are requesting a total amount of \$53,848 to demolish two existing decks, build one new 20' x 20' deck, and construct a 120' segment of accessible trail. The Refuge staff will contribute

an in-kind match of \$4,812 in staff time for project management, NEPA compliance, and permitting. Following completion of the deck and trail, volunteer events will be scheduled to revegetate the previously disturbed areas around the new deck and trail with native vegetation and the Complex and California State Parks will then begin using the area as starting points for interpretive and educational programs and Hikes with the Ranger.

Budget Item	Requested Funding Amount (\$)	Proposed Matching Funds (\$)	Description
Demolition of existing decks	2,360	-	Contracted service to demolish existing deck and haul out material
Design, Materials, and Construction of New Deck	45,008	-	Contracted service will design, provide the materials, and construct the new deck
Design, Materials, and Construction of Trail	3,432	-	Contracted service will design, provide the materials, and construct the new trail
Staff Time	-	4,812	Project management, NEPA compliance, permitting
Subtotal	50,800	4,812	
Indirect Costs (6%)	3,048	-	All indirect charges (overhead) on the project
Total	53,848	4,812	

Total Amount Requested	53,848
In-Kind Match	4,812
Total Project Cost	58,660

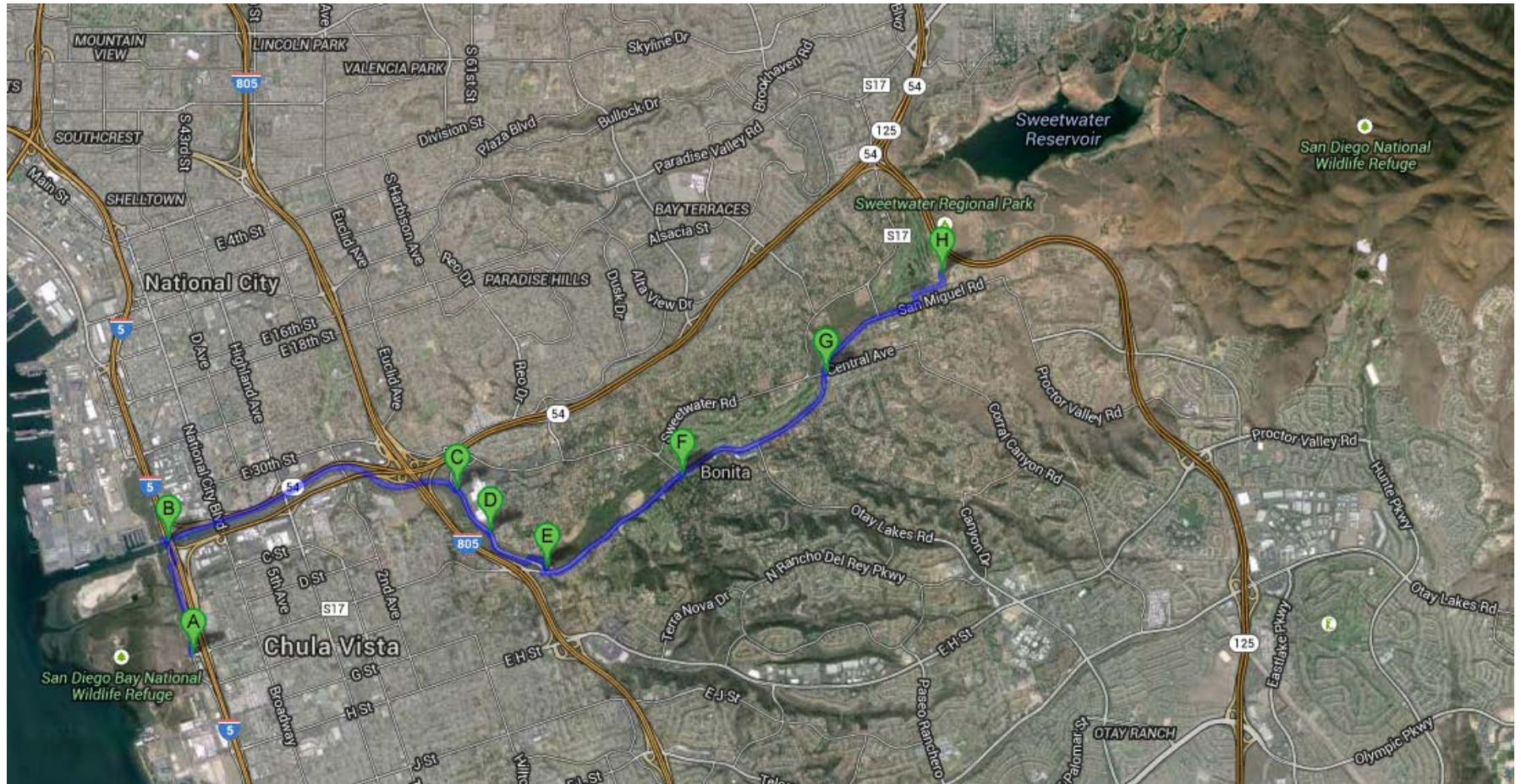
Proposed Timeline

Proposed Project Schedule - Assumes April 2015 Notice to Proceed (NTP)				
Task Number	Task Name	Proposed Start Date	Months Needed to Complete Task	Task End Date
1	Permitting/NEPA Compliance	1 month from NTP	3 months from NTP	July 2015
2	Finalize deck design and trail alignment	3 months from NTP	5 months from NTP	Sept 2015
3	Removal of existing decks ¹	5 months from NTP	6 months from NTP	Oct 2015
4	Construction of new deck	6 months from NTP	8 months from NTP	Dec 2015
5	Construction of new trail	7 months from NTP	9 months from NTP	Jan 2016

¹ Due to the location of the project site, construction is not permitted during the bird nesting season, therefore, project construction cannot begin until September.

APPENDIX III: SWEETWATER BIKEWAY POTENTIAL PROJECT DESCRIPTION

Sweetwater Bikeway Potential Project Description



The Sweetwater River Corridor runs east/west from the Bayshore Bikeway to the multi-use bridge that crosses over the SR-125 and into the Sweetwater Summit County Park and ultimately the San Diego National Wildlife Refuge. It can be biked now; however, some sections are unpaved or on a high-speed road.

This proposal completes gaps for a Class 1, off-street, paved surface multi-use path between the San Diego NWR and the Sweetwater Marsh Unit of the San Diego Bay NWR. We also think including directional signage along the route to indicate that riders are on their way to a NWR, and a welcoming kiosk on either end to welcome visitors upon arrival will strengthen the application.

The most important criteria for a strong application:

- Improves safety
- Positive economic impact
- High usage
- Written endorsement by multiple partners, political entities, and elected officials
- Credible proof of match
 - Over-match gets extra points
- Increased visitation to Wildlife Refuges

The completed bikeway will:

- Pass through traditionally under-served communities in Chula Vista and National City
- Provide access to major retail and employment centers including the Plaza Bonita Shopping Center and industrial centers on the San Diego Bay
- Improve safety for accessing both Refuges by non-motorized modes of transportation
- Connect to existing and planned transit, parking facilities, and additional bike facilities along the Bikeway
- Connect to existing and planned transit, parking facilities, and additional bike facilities on refuge property
- Maintain consistency with many local planning efforts
- Be built simultaneously with other projects that improve the corridor

The table on the following page describes each segment on the map.

Segment	Current Condition	Existing Relevant Projects	Planning Consistency	Proposed Condition for FLAP	Approx. Length (mi)	Jurisdiction	Rough Cost Estimate (\$1M x mi)	Match (11.47% x Cost\$)
A - B	Class 1, paved, off-street facility that ends at the parking lot for the Sweetwater Marsh Unit	N/A	N/A	No Change	0.9	National City Chula Vista	N/A	N/A
B - C	Class 1, paved, off-street facility	N/A	N/A	No Change	2.4	National City Chula Vista	N/A	N/A
C - D	Class 2, on-street bike lane	This segment is funded by SANDAG and construction of a class 1, paved, off-street facility is expected to be completed in March, 2015	N/A	No Change	0.4	National City	N/A	N/A
D - E	Class 1, paved, off-street facility	N/A	N/A	No Change	0.6	National City	N/A	N/A
E - F	Class 2, on-street bike lane	Construction of the new Willow Street Bridge and under-pass is scheduled to start soon	Consistent with City of Chula Vista Bicycle Master Plan, San Diego County Bicycle Transportation Plan	Class 1, paved, off-street facility that runs parallel to Bonita Rd. and runs under the Willow Street Bridge	1.5	County of San Diego	1,500,000	172,050
F - G	Class 1, compact crushed stone running parallel to Bonita Rd.	Construction of the new Willow Street Bridge and under-pass is scheduled to start soon	Consistent with City of Chula Vista Bicycle Master Plan, San Diego County Bicycle Transportation Plan	Class 1, paved, off-street facility that runs parallel to Bonita Rd. from the Willow Street Bridge to the existing underpass at Central Ave.	1.5	City of Chula Vista	1,500,000	172,050
G - H	Class 1, compact crushed stone running parallel to Bonita Rd.	N/A	Consistent with City of Chula Vista Bicycle Master Plan, San Diego County Bicycle Transportation Plan	Class 1, paved, off-street facility that runs parallel to Bonita Rd. from the underpass at Central Ave. to the multi-use bridge that crosses SR-125	1.4	County of Sand Diego	1,400,000	160,580
East of H	Off- road, compact dirt, recreational reagonal trail that continues across San Diego National Wildlife Refuge property to the proposed parking area at Campo Rd and SR-94	N/A	N/A	N/A	7	County of San Diego Sweetwater Authority San Diego NWR	N/A	N/A

