

Master Storm Water System Maintenance Program Annual Report

City of San Diego

Transportation & Storm Water Department
Storm Water Division

September 2014



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Executive Summary

Under Council Policy 800-04, the City of San Diego (City) is responsible for maintaining adequate drainage facilities for the protection of life and property. Due to the environmental sensitivity of the flood control channels that the City maintains, the Transportation & Storm Water Department Storm Water Division (Storm Water Division) adopted the Master Storm Water System Maintenance Program (MMP) to perform channel maintenance activities for flood control in a manner that minimizes environmental impacts associated with channel maintenance. The MMP includes storm water facilities, specifically open channels, which the Storm Water Division has the responsibility to maintain.

A Programmatic Environmental Impact Report (PEIR) was prepared to study the MMP, and in August 2013 the City of San Diego approved Site Development Permit (SDP) Number 1134892 for the program. Pursuant to the MMP and in accordance with SDP Mitigation Measure 4.3.7, the Storm Water Division provides this Annual Report to document flood control channel maintenance activities and associated mitigation implemented over the past fiscal year (FY) (July 1, 2013 - June 30, 2014). The maintenance season for the MMP is typically from September to February/March. Work outside of this time period is restricted due to sensitive bird breeding seasons as identified in the MMP.

During FY2014, the Storm Water Division performed maintenance activities in the following channel areas:

- Tijuana River Pilot Channel and Smuggler's Gulch (MMP Maps 138, 139, 138 a,b, and c)
- Sorrento Valley Reach 7 (Flintkote Channel) (MMP Map 9)

Wetlands mitigation for the Tijuana River Pilot Channel and Smuggler's Gulch was implemented this past year within and adjacent to the channel maintenance footprint. Wetlands mitigation for Sorrento Valley Reach 7 has been designed, and is in the City's contracting process. Storm Water Division maintained compliance with all regulatory permits and agreements during the maintenance activities for both channels.

Introduction

The City of San Diego (City) operates and maintains approximately 50 miles of drainage channels to convey storm water and urban runoff for the purpose of reducing flood risk and to provide essential public services. Maintenance of channels primarily involves the removal of vegetation and/or sediment to restore adequate conveyance of storm water.

Under Council Policy 800-04, the City of San Diego is responsible for maintaining adequate drainage facilities to convey storm water runoff in an efficient, economic, environmentally and aesthetically acceptable manner for the protection of property and life. The City's storm water system serves to convey storm water flow in order to protect the life and property of its citizens from potential flooding. The system also serves to convey urban runoff from development such as irrigated landscape areas, driveways, and streets that flow into drainage facilities and, ultimately, into receiving waters and the ocean. Additionally, the City's storm water system helps protect water quality by filtering runoff and removing sediment. Open facilities, such as channels, can support natural resources including wetland habitat. The long-term performance of the entire system is dependent upon ongoing and proper maintenance of channel sections essential for flood control.

Due to the environmental sensitivity of the natural resources associated with some of the flood control channels, the MMP was developed to ensure that the City complied with various federal, state, and local laws intended to protect and/or minimize impacts to environmental resources (City of San Diego 2011a and b, October 2011). These regulations include, but are not limited to the Clean Water Act (CWA), National Environmental Protection Act (NEPA), Endangered Species Act (ESA), California Coastal Act, California Fish and Game Code, California Porter-Cologne Act, California Environmental Quality Act (CEQA), and the San Diego Municipal Code. Additionally, as part of the environmental permitting process, the City works with the public, various stakeholders, non-governmental organizations, and environmental groups, in an effort to avoid, minimize, and/or mitigate impacts.

The goal of the MMP is to provide a comprehensive approach to storm water system maintenance. It is intended to achieve the following major objectives:

1. Fulfill the mandate of Section 26.1 of the San Diego City Charter to provide essential public works and public health services by maintaining the storm water conveyance system for the purpose of reducing flood risk;
2. Develop a comprehensive program that will govern the future maintenance of the City's storm water system in an efficient, economic, environmentally and aesthetically acceptable manner for the protection of property and life, in accordance with Council Policy 800-04;
3. Ensure implementation of Best Management Practices (BMPs) and maintenance protocols during maintenance activities to avoid and/or minimize effects to environmental resources, and incorporate the analysis of the operational and pollution prevention benefits of each proposed project; and

4. Create an integrated comprehensive review process for annual maintenance activities that will facilitate authorizations from local, state and federal regulatory agencies.

With these goals and objectives in mind, the Storm Water Division prioritizes channel maintenance facilities based upon need and risk; conducts the appropriate technical analyses required by the PEIR to determine scope, scale, justification, and environmental impacts of each channel with a proposal for maintenance; permits the channel maintenance activities through up to six environmental regulatory agencies; implements the channel maintenance event; and ensures permit conditions and mitigation measures are met for each project.

The remainder of this report discusses the activities implemented by the Storm Water Division over the past year to meet the goals of the MMP. As required by the MMP and PEIR, this summary includes:

- Tabular summary of the biological resources/sensitive vegetation impacted during maintenance and the mitigation;
- Master table containing the following information for each individual storm water facility or segment which is regularly maintained:
 - Date and type of most recent maintenance;
 - Description of mitigation which has occurred; and
 - Description of the status of mitigation which has been implemented for past maintenance activities.
- Results of water quality tests completed before and/or after maintenance;
- Discussion of vegetation growth and sediment accumulation since last maintenance event; and
- Estimate of the conveyance capacity resulting from the past year's maintenance.
- Scaled map of each affected storm water facility illustrating pre- and post-maintenance vegetation;
- Summary of the status of mitigation which has been carried out during the current and previous years to mitigate for impacts to upland and wetland vegetation, and well as sensitive species;
- Two digital date-stamped photographs of each of the areas that were maintained in the current year;
- Description of any remedial actions and the outcome of their implementation for each affected storm water facility;
- A list of all storm water facilities anticipated to be maintained in the coming year; and
- A preliminary estimate of sensitive biological and/or cultural resources to be impacted in the coming year with each maintenance activity and mitigation required for anticipated impacts.

The results of this report will be presented as an informational item to the Environment Committee (formerly the Natural Resources and Culture Committee) of the San Diego City Council and the Community Planners Committee and will be provided to the City of San Diego Development Services Department, California Department of Fish and Wildlife, Regional Water Quality Control Board, US Fish and Wildlife Service, and US Army Corps of Engineers.

Channel Maintenance Activities

Under the MMP, the City's Storm Water Division (SWD) identifies and prioritizes channel maintenance work for the coming year that considers each segment's ability to meet SWD's flood control objectives. A list of priority channels is prepared that also considers budget constraints, relevant water quality regulations, environmental resources and mitigation opportunities, and pollutant priorities in each watershed in addition to flood risk. Once the priority list has been determined, the City will conduct a number of individual technical assessments of each facility.

An Individual Hydraulic and Hydrology Assessment (IHHA) is completed to assess the need for maintenance. When an IHHA is completed for a channel and determines the need for maintenance, an Individual Maintenance Plan (IMP) is developed. Based upon the IMP, technical assessments for biological resources, historical resources, noise, and water quality are completed to determine potential environmental impacts and determine specific mitigation measures to minimize impacts in accordance with the PEIR.

Once these studies are completed, the individual channel projects are permitted through the City of San Diego Substantial Conformance Review (SCR) process as well as through environmental agencies such as the US Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and California Coastal Commission, as appropriate depending on the type of maintenance conducted and the location of the facility.

Channel maintenance activities may commence after all required permits and authorizations are obtained and pre-project permit conditions are met. Channel maintenance is restricted by the MMP and various regulatory permits to occur from September through February/March to avoid sensitive bird breeding seasons unless additional biological surveys are conducted and demonstrate no adverse impacts to nesting birds. In addition, maintenance may be restricted during the rainy season, typically October through April.

Table 1 – MMP Facilities Maintained in Fiscal Year 2014 and Associated Mitigation lists the channels that were maintained during the FY2014 season and summarizes information regarding vegetation impacts and mitigation information. Figure 1 in Appendix D depicts an overview of the location of these facilities and associated mitigation.

Table 1 – MMP Facilities Maintained in Fiscal Year 2014 and Associated Mitigation

Map No.	Facility	Date	Maintenance Type	Vegetation Impacts (acres)		Mitigation
138 a, b, c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	9/2013-3/2014	sediment and vegetation removal	0.01	Open Water	1) 9.43 acres at Tijuana River Emergency Channel Maintenance Wetland Mitigation Project (i.e. mitigation for 1993 Pilot Channel Construction) and 2) 8.62 acres of Enhancement within and adjacent to maintenance footprint
				1.07	Giant Reed	
				0.37	Southern Riparian Forest	
				0.34	disturbed Southern Riparian Forest	
				0.22	Southern Willow Scrub	
				9.24	Disturbed/Ruderal	
				0.04	disturbed Mule Fat Scrub	
				1.36	Non-vegetated Channel	
				0.01	Non-Native Vegetation	
	12.64	**subtotal				
10	Sorrento Valley, Reach 7	3/4/2014-3/14/2014	sediment and vegetation removal	0.01	disturbed habitat	1.91 acres at El Cuervo Del Sur Wetlands Mitigation Site and 5.53 acres at Los Penasquitos Preserve Wetlands Enhancement *
				0.11	freshwater marsh/concrete channel	
				0.12	subtotal	
MMP Total in acres				12.77		25.49
*Mitigation listed is for entire channel maintenance project, including Reach 3						
**Includes permitted staging area impacts in non-sensitive Tier IV areas.						

Additional details regarding channels that were maintained during the 2013-2014 season are provided in subsequent sections of this report. Appendix C includes Figures 1-5 which show the locations of these facilities.

A Master Storm Water Facility and Mitigation List reflecting facilities that have been maintained under the MMP, mitigated, and for which no additional mitigation is required is included in Appendix A.

Tijuana River Pilot Channel and Smuggler's Gulch (MMP Maps 138, 139, 138a, b, and c)

The purpose of periodic maintenance of the Tijuana River Pilot Channel (Pilot Channel) and Smuggler's Gulch is to provide flood protection to surrounding properties and to protect the Tijuana River National Estuarine Research Reserve from impacts due to downstream transport of accumulated sediment, trash, and debris from areas upstream of the project area.

Maintenance was last conducted in fall 2010 under emergency conditions and involved the removal of approximately 13,244 cubic yards of sediment, trash, and vegetation over approximately 1.44 acres of channel. The entire channel was not maintained at that time due to inundation of the channel during storms as well as a court order to cease work. Within the portions of the channel that were previously maintained, vegetation cover went from 0% immediately following the last maintenance event (2010) to approximately 70% cover immediately prior to the current (FY2014) maintenance event. In general, the colonizing vegetation is the non-native invasive species giant reed (*Arundo donax*). Similarly, approximately 5 feet of sediment was removed during the 2010 maintenance event and approximately the same amount of sediment had accumulated in the channel prior to the current maintenance event.

Channel maintenance activities during FY2014 in the Tijuana River Pilot Channel and Smuggler's Gulch consisted of excavating accumulated vegetation, sediment, and trash that significantly restricted the capacity of the channels to convey storm flows. The FY2014 maintenance project was designed to remove approximately 10,000–30,000 cubic yards of material, within 4.31 acres. Smuggler's Gulch and Pilot Channel are depicted in the MMP Maps 138 and 139, and Maps 138a and 138c, respectively (City of San Diego 2011b, October 2011). The full length of Smuggler's Gulch (a historic agricultural ditch), was cleared of vegetation and excavated during the 2013-2014 maintenance period. This included clearing of the culverts beneath Disney Bridge. However, only a portion of the permitted 5,400 linear feet of the Pilot Channel length was able to be maintained due to inundation from rain events. Approximately 5,098 linear feet of the Pilot Channel, including three turnarounds, was cleared of vegetation. Within the area that was cleared of vegetation, approximately 3,095 linear feet of the channel was excavated during this maintenance period. The excavation of the Pilot Channel was to an approximate depth of 5-7 feet with a 15 foot bottom width and a 23 foot top width; Smuggler's Gulch was excavated to a depth of 2-10 feet and a width (top and bottom) of 15 feet. Approximately 2.69 acres of jurisdictional wetlands/waters, consisting of mainly disturbed (giant reed-dominated) vegetation, were impacted during maintenance activities within the Pilot Channel (Dudek 2014a, May 2014). A total of 12.8 acres was disturbed including staging and access areas. Photographs showing pre- and post- maintenance conditions of the channel are included in Appendix C. Maps displaying pre- and post-maintenance vegetation are included in Appendix D.

Approximately 19,863 cubic yards (25,823 tons) of material (i.e., sediment, trash, vegetation, and debris) was excavated from the Smuggler's Gulch and Pilot Channels during the 2013-2014 maintenance cycle and appropriately disposed of at the Miramar landfill as documented in the project's Maintenance Activity Report.

No remedial actions were taken with regard to this facility; the project complied with all permits and agreements.

See Mitigation Projects section within this report for details on the mitigation efforts which include removal of invasive plant material within the channel footprint and adjacent to the channel.

Conveyance Capacity Resulting from Maintenance

The pre-project Individual Hydraulic and Hydrology Assessment results indicated that, in the pre-project condition, the Pilot channel contained less than a 2-year storm event flow within its banks. With the sediment and vegetation removed, the conveyance capacity of the Pilot channel would increase to above a 2-year storm.

The pre-project Individual Hydraulic and Hydrology Assessment results indicated that, in the pre-project condition, Smuggler's Gulch channel contained the 2-year storm event flow within its banks. With the sediment and vegetation removed, the conveyance capacity of Smuggler's Gulch channel would increase to above a 2-year storm.

Water Quality Monitoring Summary

The IWQA for the project noted that a dry weather diversion structure was installed in March 2009 at the Smuggler's Gulch Channel crossing at the international border. This infrastructure prevents dry weather flows from entering Smuggler's Gulch and essentially eliminates direct dry weather input to the Pilot Channel.

Due to the elimination of dry weather flow, combined with the fact that much of the Smuggler's Gulch is void of vegetation and the Pilot Channel harbors primarily non-native and invasive plant species, there is little potential for water quality impacts from channel maintenance resulting from the loss of pollutant assimilative capacity through vegetation removal. Given the unique conditions, including the intermittent/ephemeral stream flow of the project area, the IWQA employed a modified sampling strategy—sediment characterization. The results of the IWQA showed that there is a pollutant reduction benefit due to sediment removal as part of the project. Even so, the City, in accordance with the SDP and CDP, is implementing a suite of water quality improvement activities including the distribution of pollution prevention outreach materials prior to the start of channel maintenance activities; targeted street sweeping; increased inspections of storm drains within the project's drainage area; and several special studies. Coordination with the Tijuana River Valley Recovery Team is ongoing. It is anticipated that application of these activities within the priority channel drainage areas will lead to long-term water quality benefits.

Additionally, water quality monitoring has been required by the Water Quality Certification No. 09C-077 issued by the Regional Water Quality Control Board. Water quality samples were taken at three locations upstream and downstream of the maintenance area in accordance with the *Tijuana River*

Receiving Waters Monitoring and Quality Assurance Project Plan (AMEC, May 2013) at three separate intervals: pre-maintenance, during maintenance, and post-maintenance.

Across each of the sampling events, the upstream Pilot Channel station had higher concentrations of ammonia, Total Kjeldahl Nitrogen (TKN), dissolved orthophosphate, and total phosphorus in comparison to the downstream station. The upstream Pilot Channel station also had elevated levels of *chlorophyll a* which can reflect possible eutrophication of aquatic ecosystems. During the pre-maintenance sampling event, the upstream Pilot Channel station indicated a higher level of nitrate and nitrite in comparison to the downstream station. However, during both subsequent sampling events (during maintenance and post-maintenance) concentrations decreased at the upstream Pilot Channel station resulting in similar levels between the two stations. Chloride concentrations and in-situ conductivity measurements were consistently elevated at the downstream station compared to the upstream Pilot Channel station, likely as a result of tidal influence. Dissolved oxygen was depressed at both Pilot Channel stations, with the upstream station having lower values than the downstream station (AMEC, May 2014).

Preliminarily, the data suggests that the station upstream of the maintenance area in the Pilot Channel has elevated nutrient levels compared to the downstream station. The detailed analysis is documented in the *Tijuana River Valley Channel Maintenance Project Receiving Water Monitoring Report – Final Year One Annual Maintenance Event* (AMEC, May 2014). Water quality samples will continue to be collected and analyzed annually for five years as required.

Sorrento Valley, Reach 7 (MMP Map 9)

The Sorrento/Soledad/Flintkote Channel Maintenance Project was fully permitted in March 2014 to remove 2,000–4,000 cubic yards of accumulated vegetation and sediment from the Soledad Canyon/Sorrento Creek Channel (Reach 3) and 125–175 cubic yards of accumulated vegetation and sediment from the 11000 Roselle Street/11100 Flintkote Avenue Channel (Reach 7), a concrete lined facility.

Prior maintenance occurred along Reach 7 in January 2011 during emergency conditions. All vegetation and sediment (120 cubic yards or 180 tons) was removed down to the concrete channel. Pre-maintenance photographs (Appendix D) show the pre-maintenance 2014 condition which consisted of approximately 90% vegetation cover and approximately 1 to 2 feet of sediment accumulated between the 2011 maintenance and this season's maintenance.

Project maintenance activities were completed for the entire permitted length of Reach 7 from March 4 to March 14, 2014. This included the removal of 108.10 tons of vegetation and sediment from 0.122 acres. All Best Management Practices (gravel bags, authorized access routes, etc.) were implemented during maintenance and removed at the end of the current work period on March 14, 2014.

Photographs showing pre- and post- maintenance conditions of the channel are included in Appendix C. Maps displaying pre- and post-maintenance vegetation are included in Appendix D.

Since the completion of maintenance, periodic inspections of the channel have been conducted. As sediment and debris is found, it is swept up by hand and removed from the channel.

Sediment and vegetation removal for Sorrento Creek Reach 3, a concrete lined facility, is scheduled to begin September 2014 at the end of the nesting bird season (March 15 – September 15) and will likely take 6 to 8 weeks to complete.

No remedial actions were taken with regard to this facility; the project was compliant with all permits.

Wetlands mitigation for this project is being conducted at the Los Penasquitos Canyon Preserve Wetlands Enhancement Project and the El Cuervo Del Sur Wetlands Mitigation Project. See Mitigation Projects Section for details.

Conveyance Capacity Resulting from Maintenance

The pre-project IHHA results indicated that Reach 7, under its pre-project conditions contained the 2-year storm event flows within its banks; however, storm water would back up into Roselle Street through the curb inlets. With sediment and vegetation removed, the conveyance capacity of Reach 7 would increase to between the 2- to 3-year storm event and the storm water will be contained in the Roselle Street culvert.

Water Quality Monitoring Summary

Due to lack of discernible flow during the pre-project IWQA analysis in April 2013, a water quality evaluation for Reach 7 could not be conducted. However, sediment samples were collected and analyzed. The sediment pollutant loading estimates for Reach 7 indicated that the maintenance activities would generate a pollutant reduction benefit through the removal of pollutant-laden sediment. Sediment excavation in Reach 7 is expected to prevent the re-suspension and downstream transport of sediment-bound pollutants during wet weather. However, the City, in accordance with the CDP and SDP, is implementing a suite of water quality improvement activities including the distribution of pollution prevention outreach materials prior to the start of channel maintenance activities; targeted street sweeping; increased inspections of storm drains within the project's drainage area; and several special studies. It is anticipated that application of these activities with the priority channel drainage areas will lead to long-term water quality benefits.

Post project water quality monitoring was not required for this project and was not conducted.

Mitigation Projects

In accordance with applicable local, state, and federal regulations as well as the PEIR, one-time mitigation is required for significant biological impacts resulting from implementation of the MMP. To mitigate these impacts, the Storm Water Division is planning and implementing mitigation in various watersheds where past, current, or future impacts have or may occur. This section describes projects in various stages of design and implementation.

Tijuana River Emergency Channel Maintenance Mitigation

The Tijuana River Emergency Channel Maintenance project occurred in the early 1990's and resulted in construction of the Pilot Channel. Mitigation for the Tijuana River Emergency Channel Maintenance occurred in the mid-1990's and consisted of the creation of a 13.21 acre site, 9.43 acres of which was wetlands creation to compensate for the construction of the Pilot Channel. The mitigation was completed in 2001 with sign-off from all applicable environmental regulatory agencies. In June 2013, DUDEK biologists conducted an assessment of the site to verify the mitigation area is still successful. The results of that assessment confirmed the site is still meeting success criteria and affirmed the presence of least Bell's vireo (*Vireo belli pusillus*), a federally endangered bird species. A mosaic of well-established native riparian and wetland vegetation communities have been established and are suitable for supporting the continued utilization by least Bell's vireo (DUDEK, June 2013).

Tijuana River Valley Channel Maintenance Mitigation Project

In addition to the creation of wetlands described above, wetland enhancement is being conducted as additional mitigation for the continued maintenance in the Pilot Channel and Smuggler's Gulch, including the 2013-2014 channel maintenance activities. The wetland enhancement occurs in two locations per the regulatory permits: 1) Adjacent/Out-of-Channel; and 2) In-Channel.

The 4.31 acre In-Channel mitigation was initiated in September 2013 and involved the mechanized removal of giant reed (*Arundo donax*), castor bean (*Ricinus communis*) and salt cedar (*Tamarix ramosissima*) during the channel maintenance activities.

The 4.31 acre Out-of-Channel mitigation was also initiated concurrently with the channel maintenance activities, and involved herbicide treatment of the same three target species within the City and County of San Diego parcels adjacent to the channel maintenance areas. The initial herbicide application was completed on October 25, 2013, and approximately three months were allowed for the foliar herbicide application to take effect on the plants before initiating biomass removal. Giant reed canes and the other target species were then cut to approximately on-grade, and biomass was removed from the site. Biomass removal began in January 2014; however work was temporarily suspended multiple times due to flooding from precipitation events, which created site access constraints. Biomass removal was conducted as site conditions permitted through the winter, and was concluded on March 14, 2014 due to the start of the sensitive bird breeding season. Biomass removal and herbicide treatments will continue in fall 2014 after the conclusion of the bird breeding season.

Los Penasquitos Canyon Preserve Wetlands Enhancement

This wetlands enhancement project is being designed to remove 7.94 acres of non-native species found within and adjacent to jurisdictional waters in Los Peñasquitos and Lopez canyons. The largest and primary area of focus is a patch of garland daisy (*Glebionis coronarium*) in the upper reach of Lopez Canyon east of the Camino Santa Fe Bridge. This area is targeted due to the large contiguous area available and also because the removal of this species will benefit small populations of state- and federally-listed willow monardella (*Monardella linoioides*) that is also present in this portion of Lopez Canyon. Non-native species will be removed using hand tools with smaller shrubs being removed from the site, while larger, non-native, invasive trees and shrubs may be controlled or girdled with herbicides and left in place. The site will be monitored and maintained for a period of five years.

The project provides wetlands enhancement mitigation for the following channel maintenance locations:

- Sorrento Reach 3 and 7, MMP Maps 10, 11, 12
- Mission Bay High School, MMP Maps 36, 37
- Tripp and Industrial Court, MMP Maps 6, 6a

It is anticipated that the mitigation project will be implemented in Fall 2015 pending the completion of the City's contracting process.

El Cuervo Del Sur Wetlands Mitigation

This wetlands creation project is designed to establish 2.30 acres of wetlands on a currently non-wetland area. The site has been designed in two phases. Phase I is currently being pursued. Phase II may be pursued in the future. This mitigation project is adjacent to previous City of San Diego mitigation projects (El Cuervo, El Cuervo Norte) along Los Penasquitos Creek in the Los Penasquitos Canyon Preserve. The project will involve establishment of two within-floodplain depressional wetland areas through grading and excavation; planting with a mix of herbaceous wetland, riparian scrub and riparian transitional species; installation of a temporary irrigation system; and a five year maintenance and monitoring period.

The project provides wetlands creation mitigation for the following channel maintenance locations:

- Sorrento Reach 3 and 7, MMP Maps 10, 11, 12
- Mission Bay High School, MMP Maps 36, 37
- Tripp and Industrial Court, MMP Maps 6, 6a

It is anticipated that the project will be implemented in Fall 2015 pending the completion of the City's contracting process.

Conclusions and Future Projects

Over the FY2014 maintenance period, two channels were maintained and a total of 25,931 tons of trash, sediment, and debris was removed from flood control channels. Over 25 acres of wetlands mitigation is in various stages of progress to compensate for wetlands impacts associated with channel maintenance in FY2014. Water quality monitoring and assessments indicated no impact to water quality; water quality mitigation is being implemented despite this and as required by the SDP and CDP. The maintenance activities conducted under the MMP maintained compliance with all regulatory permits.

For the FY2015 season, the Storm Water Division is pursuing permits to maintain the following facilities:

- Sorrento Creek Reach 3, MMP Maps 11, 12
- Murphy Canyon Creek, MMP Maps 58, 58a
- Mission Bay High School, MMP Map 36, 37

A preliminary estimate of sensitive biological and cultural resources to be impacted as a result of the anticipated FY2015 channel maintenance projects is included in Appendix B. Storm Water Division will continue to implement the MMP by planning channel maintenance and mitigation activities, pursuing environmental permits, conducting appropriate technical assessments, and conducting channel maintenance.

References

- AMEC. 2014. Tijuana River Valley Channel Maintenance Project Receiving Water Monitoring Report – Final Year One Annual Maintenance Event. May 30, 2014.
- AMEC. 2013. Tijuana River Receiving Waters Monitoring and Quality Assurance Project Plan. May 2013.
- City of San Diego. 2011a. Master Storm Water Maintenance Program. October 2011
- City of San Diego. 2011b. Final Recirculated Master Storm Water System Maintenance Program PEIR. October 2011.
- City of San Diego. 2014. Individual Maintenance Activity Report for Smuggler’s Gulch and Tijuana River Pilot Channels. May, 12, 2014.
- DUDEK. 2014a. Final Monitoring Report for the Tijuana River Valley Channel Maintenance Project (2013-2014). May 2014.
- DUDEK. 2014b. Additional Information Regarding Maintenance Activities for the Tijuana River and Sorrento Valley (Reach 7) Channels for City of San Diego Master Storm Water System Maintenance Program 2013-2014 Annual Report. June 20, 2014.
- DUDEK. 2013a. Individual Water Quality Assessment for Soledad Canyon/Sorrento Creek & Flintkote Channel. October 15, 2013.
- DUDEK. 2013b. Current Condition Verification Report for the Tijuana River Emergency Channel Maintenance Wetland Mitigation Project. July 2013.
- URS. 2013. Individual Hydrologic & Hydraulic Assessment Report for Sorrento Creek-Flintkote-Soledad-Los Penasquitos Channel. June 14, 2013.
- URS. 2012a. Individual Hydrologic & Hydraulic Assessment Report for Tijuana River Pilot and Smuggler’s Gulch Channels. December 21, 2012.
- URS. 2012b. Individual Water Quality Assessment for Tijuana River Pilot and Smuggler’s Gulch Channels. December 21, 2012.

Appendix A

Master Storm Water Facility and Mitigation List

Master Storm Water Facility and Mitigation List for FY2014

Map No.	Facility	Date/Type of Most Recent Maintenance	Mitigation Site	Mitigation Location	Mitigation Type	Mitigation Acreage	Status
137a,b,c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	2013-2014	Tijuana River Valley	adjacent to site	Wetlands Creation	9.43	Complete in 2001
			Tijuana River Valley	adjacent to site	Wetlands Enhancement	8.62	M&M Year 1
9, 11, and 12	Sorrento Creek Reaches 3 and 7	Reach 7, 2014 and Reach 3, 2010-2011	El Cuervo Del Sur	off site in watershed	Wetlands Creation	1.91	Design & Permitting
			LPC Preserve Wetlands Enhancement	off site in watershed	Wetlands Enhancement	5.53	Design & Permitting

Appendix B

2014-2015 List of Storm Water Facilities Anticipated
to be Maintained and Preliminary Estimate of
Biological and Cultural Resources to be Impacted

2014-2015 List of Storm Water Facilities Anticipated to be Maintained and Preliminary Estimate of Biological Resources To Be Impacted

Biological					
Map No.	Facility	Proposed Maintenance Type	Vegetation Impacts (acres)		Mitigation
11-12	Sorrento, Reach 3	sediment and vegetation removal	0.63	freshwater marsh	1.91 acres at El Cuervo Del Sur Wetlands Mitigation Site and 5.53 acres at Los Penasquitos Preserve Wetlands Enhancement *
			2.65	developed	
			3.28	<i>subtotal</i>	
58 and 58a	Murphy Canyon Creek	sediment and vegetation removal	0.72	freshwater marsh	4.55 acres of wetlands restoration at the Stadium Mitigation Site
			0.21	Southern Riparian Forest	
			0.25	disturbed Southern Willow Scrub	
			0.04	Open Water/Natural Flood Channel	
			0.02	Developed Concrete Channel	
			0.15	Disturbed/Ruderal	
			1.29	Developed Land	
			2.68	<i>subtotal</i>	
36-37	Mission Bay High School & PB/Olney Channels	sediment and vegetation removal	0.31	freshwater marsh	0.34 acres at El Cuervo Del Sur Wetlands Mitigation Site and 0.96 acres at Los Penasquitos Preserve Wetlands Enhancement
			0.3	non-native grasslands	Payment into Habitat Acquisition Fund
MMP Total in acres			5.96		
*Mitigation listed is for entire channel maintenance project, including Reach 3					

2014-2015 List of Storm Water Facilities Anticipated to be Maintained and Preliminary Estimate of Cultural Resources To Be Impacted

Cultural			
Map No.	Facility	Proposed Maintenance Type	Cultural Resources Impacts
11-12	Sorrento, Reach 3	sediment and vegetation removal	None
58 and 58a	Murphy Canyon Creek	sediment and vegetation removal	None
36-37	Mission Bay High School & PB/Olney Channels	sediment and vegetation removal	None

Appendix C

Pre- and Post-Maintenance Photos

Pre- and Post- Maintenance Photographs



Photo 1. Tijuana River Pilot Channel and Smuggler's Gulch Pre-Maintenance 09/13/2013



Photo 2. Tijuana River Pilot Channel and Smuggler's Gulch Post-Maintenance 03/22/2014



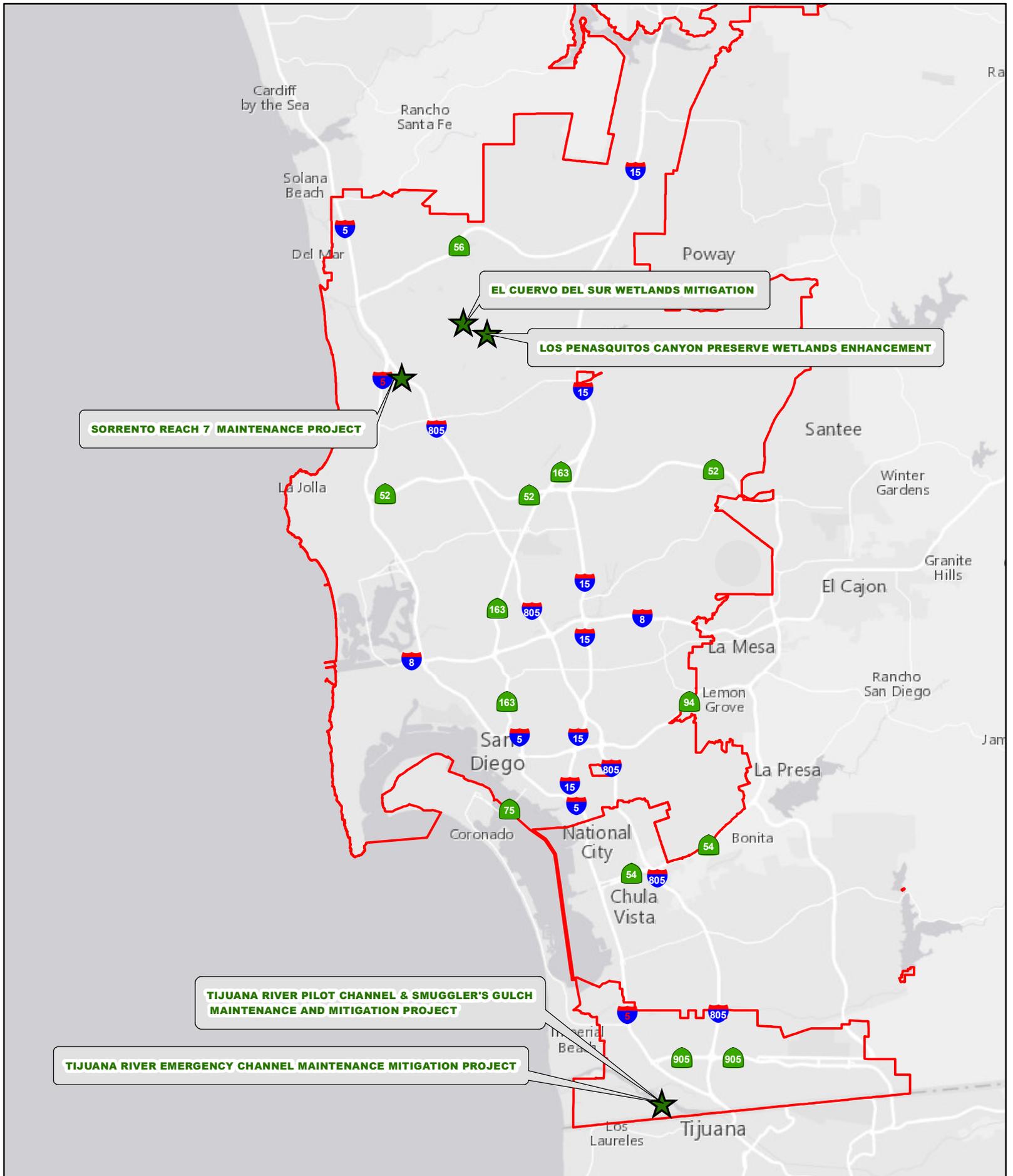
Photo 3. Sorrento Creek Reach 7 (Flintkote Channel) Pre-Maintenance 03/13/2014



Photo 4. Sorrento Creek Reach 7 (Flintkote Channel) Post-Maintenance 03/14/2014

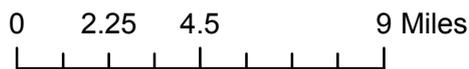
Appendix D

Pre- and Post-Maintenance Maps



SOURCES:
 Roads (SanGIS, 2011). Aerial imagery (ESRI, 2014)
 City Boundary (SanGIS, 2014)

CITY OF SAN DIEGO MASTER STORM WATER SYSTEM MAINTENANCE PROGRAM 2013-2014 OVERVIEW



CREATED BY: TE

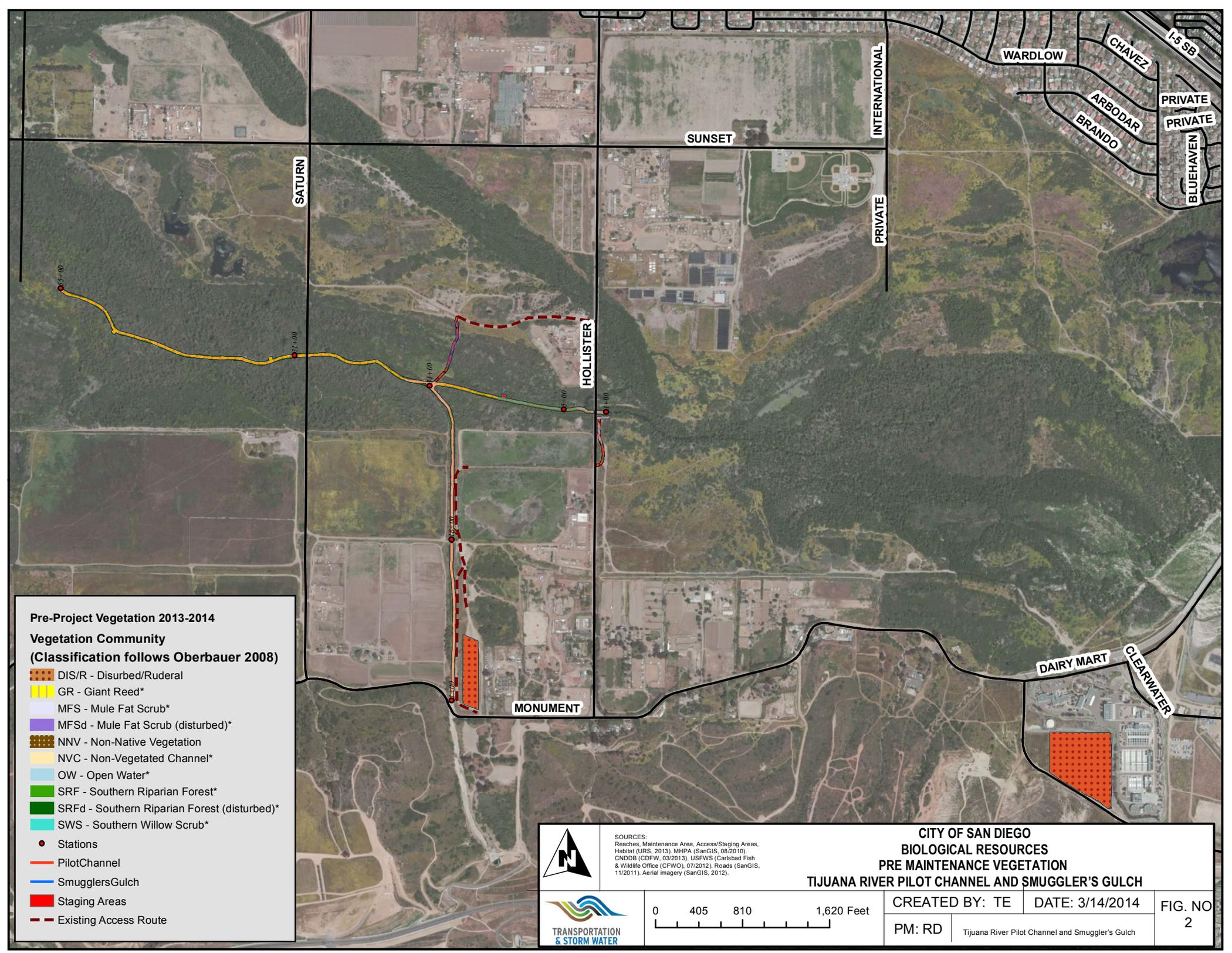
DATE: 3/14/2014

FIG. NO.:

PM: RD

City Of San Diego Municipal Boundary

1



Pre-Project Vegetation 2013-2014

**Vegetation Community
(Classification follows Oberbauer 2008)**

- DIS/R - Disturbed/Ruderal
- GR - Giant Reed*
- MFS - Mule Fat Scrub*
- MFSd - Mule Fat Scrub (disturbed)*
- NNV - Non-Native Vegetation
- NVC - Non-Vegetated Channel*
- OW - Open Water*
- SRF - Southern Riparian Forest*
- SRFd - Southern Riparian Forest (disturbed)*
- SWS - Southern Willow Scrub*
- Stations
- Pilot Channel
- Smuggler's Gulch
- Staging Areas
- Existing Access Route



SOURCES:
Reaches, Maintenance Area, Access/Staging Areas,
Habitat (URS, 2013), MHFA (SanGIS, 08/2010),
CNDDB (CDFW, 03/2013), USFWS (Carlebach Fish
& Wildlife Office (CFWO), 07/2012), Roads (SanGIS,
11/2011), Aerial Imagery (SanGIS, 2012).

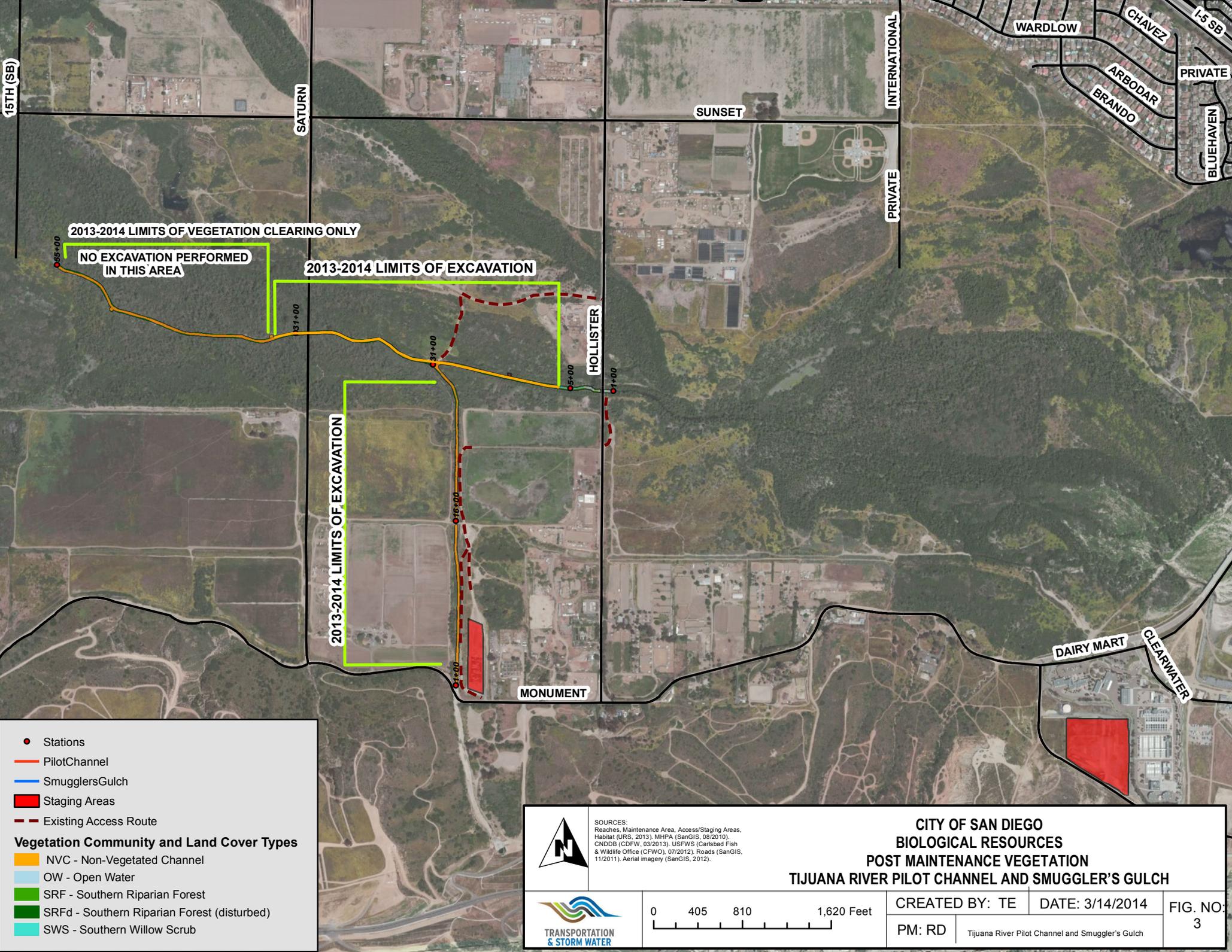


0 405 810 1,620 Feet

**CITY OF SAN DIEGO
BIOLOGICAL RESOURCES
PRE MAINTENANCE VEGETATION
TIJUANA RIVER PILOT CHANNEL AND SMUGGLER'S GULCH**

CREATED BY: TE DATE: 3/14/2014
PM: RD Tijuana River Pilot Channel and Smuggler's Gulch

FIG. NO
2



- Stations
- PilotChannel
- SmugglersGulch
- Staging Areas
- Existing Access Route

Vegetation Community and Land Cover Types

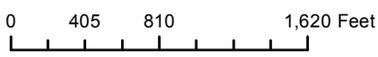
- NVC - Non-Vegetated Channel
- OW - Open Water
- SRF - Southern Riparian Forest
- SRFd - Southern Riparian Forest (disturbed)
- SWS - Southern Willow Scrub



SOURCES:
Reaches: Maintenance Area, Access/Staging Areas, Habitat (URS, 2013), MHPA (SanGIS, 08/2010), CNDDB (CDFW, 03/2013), USFWS (Carlsbad Fish & Wildlife Office (CFWO), 07/2012), Roads (SanGIS, 11/2011), Aerial imagery (SanGIS, 2012).

CITY OF SAN DIEGO
BIOLOGICAL RESOURCES
POST MAINTENANCE VEGETATION
TIJUANA RIVER PILOT CHANNEL AND SMUGGLER'S GULCH





CREATED BY: TE

DATE: 3/14/2014

FIG. NO:
3

PM: RD

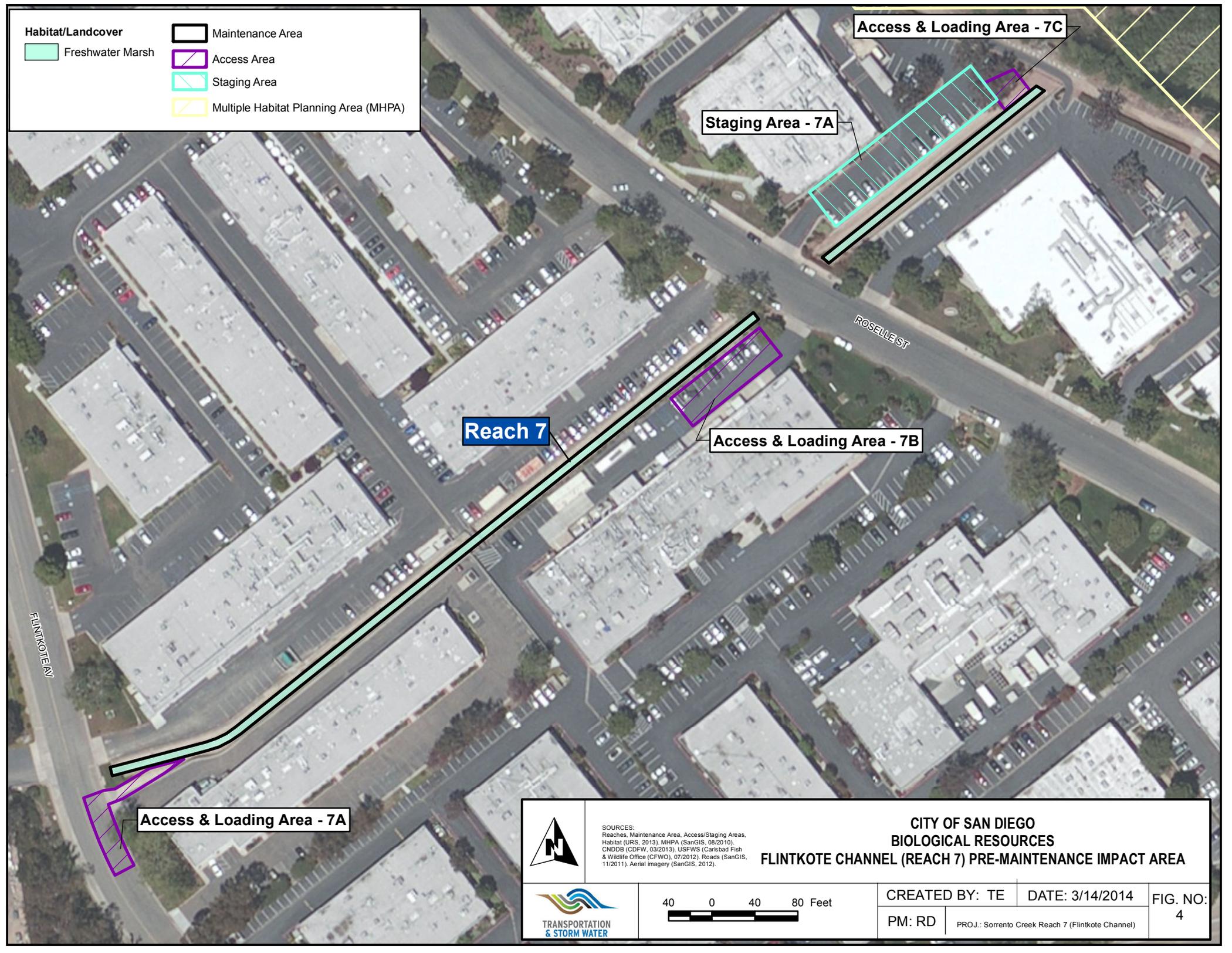
Tijuana River Pilot Channel and Smuggler's Gulch

Habitat/Landcover

- Freshwater Marsh

Maintenance Area

- Access Area
- Staging Area
- Multiple Habitat Planning Area (MHPA)



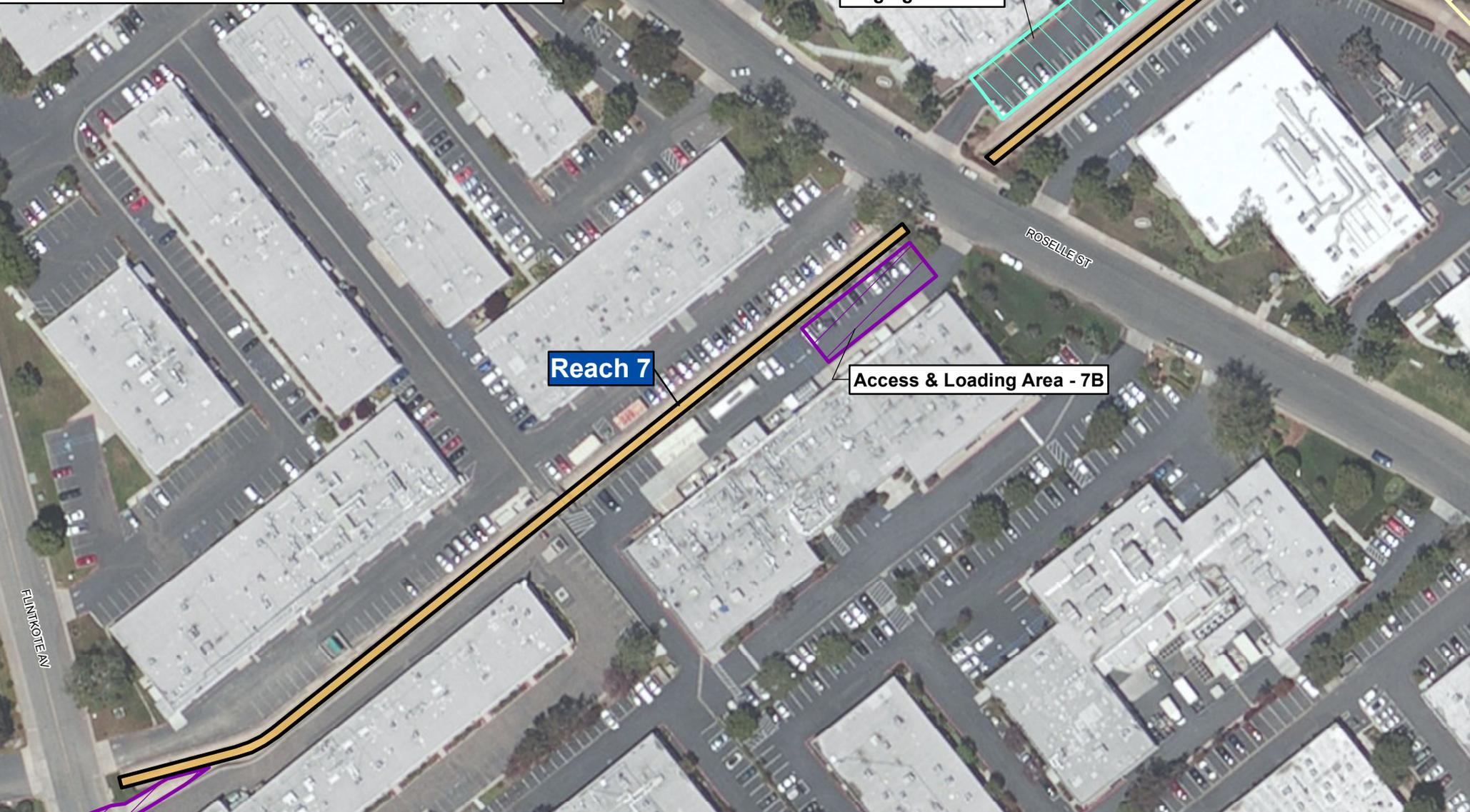
SOURCES:
 Reaches, Maintenance Area, Access/Staging Areas,
 Habitat (URS, 2013), MHPA (SanGIS, 08/2010),
 CNDDB (CDFW, 03/2013), USFWS (Carr/Saad Fish
 & Wildlife Office (CFWO), 07/2012), Roads (SanGIS,
 11/2011), Aerial imagery (SanGIS, 2012).

**CITY OF SAN DIEGO
 BIOLOGICAL RESOURCES
 FLINTKOTE CHANNEL (REACH 7) PRE-MAINTENANCE IMPACT AREA**



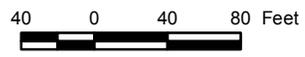
CREATED BY: TE	DATE: 3/14/2014	FIG. NO:
PM: RD	PROJ.: Sorrento Creek Reach 7 (Flintkote Channel)	4

Habitat/Landcover	Maintenance Area
Developed/Concrete-Channel	Access Area
	Staging Area
	Multiple Habitat Planning Area (MHPA)



SOURCES:
 Reaches, Maintenance Area, Access/Staging Areas.
 Habitat (URS, 2013), MHPA (SanGIS, 09/2010).
 CNDDB (CDFW, 03/2013), USFWS (Carlsbad Fish & Wildlife Office (CFWO), 07/2012), Roads (SanGIS, 11/2011), Aerial imagery (SanGIS, 2012).

**CITY OF SAN DIEGO
 BIOLOGICAL RESOURCES
 FLINTKOTE CHANNEL (REACH 7) POST-MAINTENANCE IMPACT AREA**



CREATED BY: TE	DATE: 3/14/2014	FIG. NO: 5
PM: RD	PROJ.: Sorrento Creek Reach 7 (Flintkote Channel)	